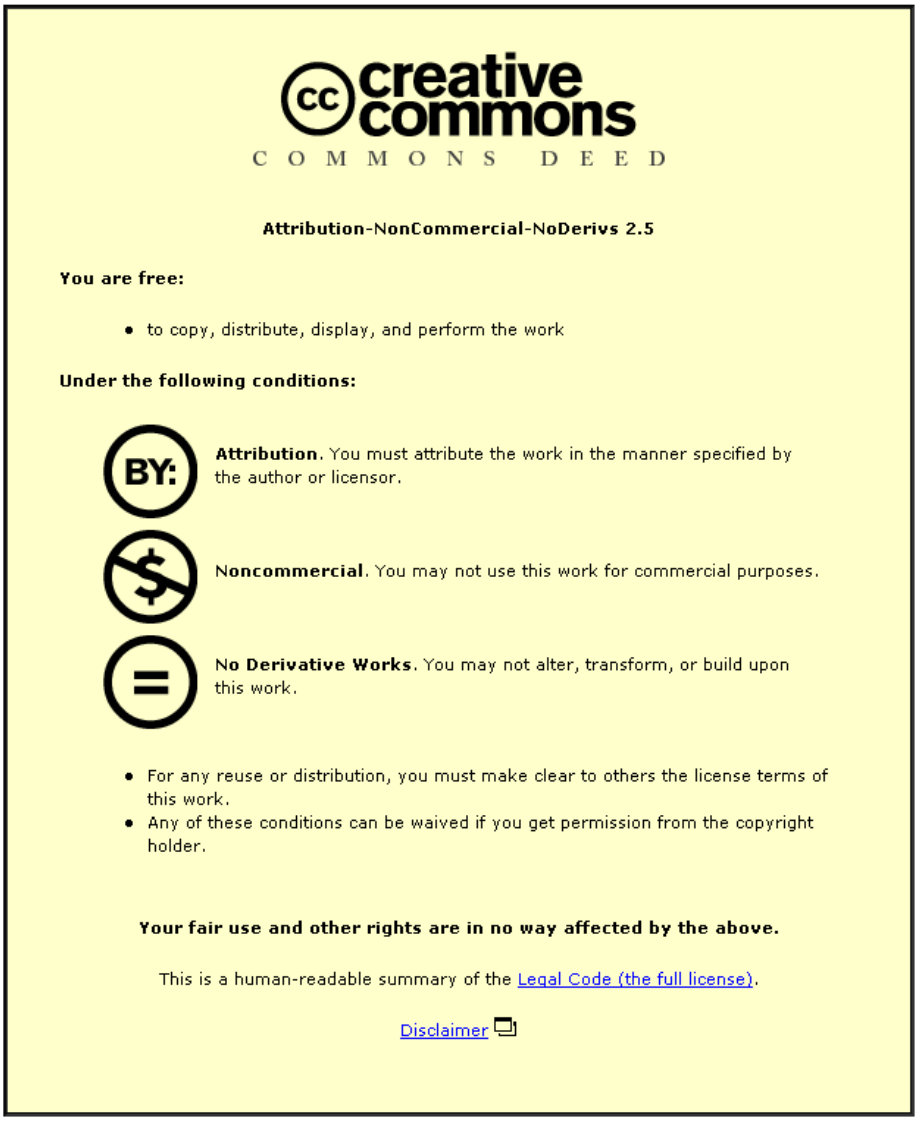

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Evaluation of Mobile and Communication Technologies for Language Learning

By

Mashanum Osman

MPhil Thesis

Submitted in partial fulfilment of the requirements for the degree

of Master of Philosophy of Loughborough University

2013

ABSTRACT

Results from a study by the Ministry of Higher Education in Malaysia indicate that the English language performance of Malaysian university students and graduates is a cause of concern. The National Higher Education Strategic Plan was launched by the Malaysian government in 2007 as a response to the challenges of the education sector that needs to be more internationalised and industry driven. In the strategic plan, the English language is identified as a crucial element in the effort to achieve a developed country status by the year 2020. Therefore, academicians and researchers are actively finding ways to improve students' English skills in reading, listening, writing and speaking.

Mobile Learning (or m-learning) is a new approach to enhance the learning experience utilising mobile technologies. For example, in order to learn new words the brain requires repeated reminders. The use of mobile devices can help to reinforce the learning process. The use of mobile devices to deliver learning in chunks or nugget sizes, on the move, at any time and anywhere, have shown to engage the learners very effectively in some research projects.

Communication technologies such as blogs and Wikis also hold promises for enhancing learning. For instance, writing for a wider audience encourages students' ownership and responsibility. Moreover, comments and feedback from peers can motivate and encourage students. This, in turn, will lead to more active participation. Recognising the potential of these technologies for language learning, the aim of this study is to evaluate the effects of using mobile phones and communication technologies for English language learning with Malaysian students.

Two experiments were carried out in this study. The initial pilot experiment was carried out with a small group of students to determine the feasibility of using mobile and communication technologies for language learning for Malaysian students in higher education. The main experiment was conducted after addressing the lessons learned

from the initial experiment. An experimental group and a control group from a public higher education institution in Malaysia took part in the study. Quantitative and qualitative data were gathered and analysed. The quantitative results show that the experimental group performed significantly better than the control group in the post written test. The experimental group is in favour of receiving lesson reminders and quizzes that were sent to their mobile phones. However, they did not like receiving messages about web resources. They also did not like reading learning material on a wiki and updating wiki entries.

Three themes are derived from the interviews and questionnaires: 1) access, 2) communication, and 3) usability. Access to learning focuses on the ease of use to access learning materials. Students agreed that mobile phones and wikis allowed them to access learning material easily. However, the use of wiki did not engage the students. In terms of communication, lecturers and students can use mobile phone and wiki platforms for communication. However, students were not keen to communicate with the lecturer. As for usability, the students have no problems using a mobile phone but the problem is with the small screen size and it is difficult to type long replies. The students did not want to invest time in learning how to use a wiki as they see it as being irrelevant because they did not want to publish and share their ideas with others.

In conclusion, the use of a mobile phone and wiki for language learning is feasible, but further investigation is required regarding student engagement. The lessons learned from this study can help practitioners, in particular those in Malaysia, to adapt their language learning processes when integrating mobile and communication technologies

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In the name of Allah The Most Gracious and The Most Merciful
First and foremost, thanks and praise to Allah s.w.t, the Most Gracious and the Most Merciful.

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This thesis is dedicated to my late youngest brother and nephew who passed away during this journey. May Allah bless your souls and place you amongst the companions and believers, amin.

List of Publications

Osman, M and Chung P.W.H., "Feasibility Study on Mobile and Communication Technologies for Language Learning", *Proceedings of IADIS International Conference on Mobile Learning, IADIS 2010*, Porto, Portugal, 19 – 21 March 2010, pp. 265-268, ISBN:978-972-8294-99-7.

Osman, M and Chung P.W.H., "Language Learning Using Texting and Wiki: A Malaysian Context", *Proceedings of the International Conference on e-Commerce, e-Administration,e-Society,e-Education and e-Technology*, E-Case & E-Tech 2011 International Conference. January 18 – 20, Tokyo, Japan, pp. 1888-1903, ISSN:2074-5710 – received an award from the organiser : Distinguished Paper Award

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1 INTRODUCTION

1.1 Why Mobile Learning (m-learning)?

Out in the woods
Or in the city
It's all the same to me
When I'm driving free
The world's my home
When I'm mobile
- Pete Townshend

In Malaysia, the Ministry of Higher Education launched its own National Higher Education Strategic Plan(2008) in 2007, in response to the challenge of making the education sector more internationalised and industry driven. As part of this challenge, Malaysian universities need to be able to compete effectively at a global level. The English language is a crucial element in the effort to achieve developed country status by 2020. Sarudin & Zubairy (2008) report that the results of a study by the ministry indicates that Malaysian university students and graduates are average users of English.

This thesis presents a study on mobile and communication technology and its impact on the experience of language learning for Malaysian students in higher education. The Malaysian Communications and Multimedia Commissions (2008) found that for every 100 Malaysians, there are 90.6 mobile phones. Moreover the number of broadband subscriptions in Malaysia increased by nearly 50% between 2007 and 2008. Another current study done by the same agency (Malaysian Communications and Multimedia Commissions, 2010) found that in the third quarter of 2010, the penetration rate for mobile phone in Malaysia was 110.6%. The penetration rate is translated as the total subscription divided by the total population and multiplied by 100. The value is over 100 because of multiple subscriptions. More than two million (13.1%)

mobile phone users in Malaysia were 19 years old or younger (Malaysian Communications and Multimedia Commission, 2010). Mobile Learning in Malaysia is still considered to be at an infancy stage and has a lot of potential because of the high number of young people using mobile technologies.

There is, therefore, a big opportunity to embed mobile learning in higher education and help students to improve their language skills. There are existing m-learning applications created by several bodies in Malaysia. A product named SMS-Me-English (Wemel, 2007), launched in August 2004 by LTT Global Communication in Malaysia uses a short messaging service through the mobile phone to help people to learn English. Another product, Pocket Islam (2008) by Smartnet, a Malaysian company, is concentrating on Islamic reference and educational tools in English. Also Salam (2008) proposes some more m-learning products, for example multimedia courseware for young children and professional certification courses (e.g. Oracle Certified Programmer), which are being developed for the Malaysian market. The rapid growth of m-learning products for learners marks the beginning of acceptance of the new learning paradigm in the Malaysian education sector.

Mobile learning or m-learning is a development of electronic–learning (e-learning). Our daily lives are now somehow related to the usage of mobile technologies. For instance, communicating through mobile phones and Personal Digital Assistants (PDAs) are actually influencing our daily lives (Love, 2005). Many researchers (Cobcroft et al, 2006; Attewell, 2004; Love, 2005; Traxler & David, 2007; Thornton & Houser, 2004; Moss, 2004) define m-learning as learning at any time, anywhere and through any wireless devices such as mobile phones, personal digital assistants or laptop computers, which focuses on those devices. Sharma & Kitchens (2004), further elaborate it as

"….learning supported by mobile devices, ubiquitous communications and intelligent user interfaces".

Naismith *et al.* (2004) identified five properties of mobile devices that produce unique educational advantages:

- Portability – the small size and weight of mobile devices mean they can be taken to different sites or easily moved around within a site.
- Social interactivity – learners can collaborate with other learners for example exchanging data.
- Context sensitivity – mobile devices can both gather and respond to real or simulated data that are unique to the current location, environment and time.
- Connectivity – a shared network can be created by connecting mobile devices to data collection devices, other devices or to a common network.
- Individuality – learning activities can be personalised for example scaffolding.

A basic mobile phone can receive and send messages which are currently being used within education to further assist and support learning material (Cheung, 2004; Horstmanshof, 2004 and Jamieson, 2004). For language learning, the use of text messaging (SMS) can promote reinforcement learning which can help the construction of knowledge (Vygotsky, 1978). This is inline with a brain study by Genesee (2000) suggests that for language learning, repetitive experience can help in learning new words.

Figure 1.1 and Figure 1.2 are simple diagrams showing the differences between e-learning and m-learning in terms of connection. In e-learning environment the connection is usually wired connection. Therefore, the user needs to be

situated in a certain place in order to learn and use the facilities. In m-learning environment the user is not constrained to a specific place because the device is not wired and the user can move anywhere to learn and use the facilities.

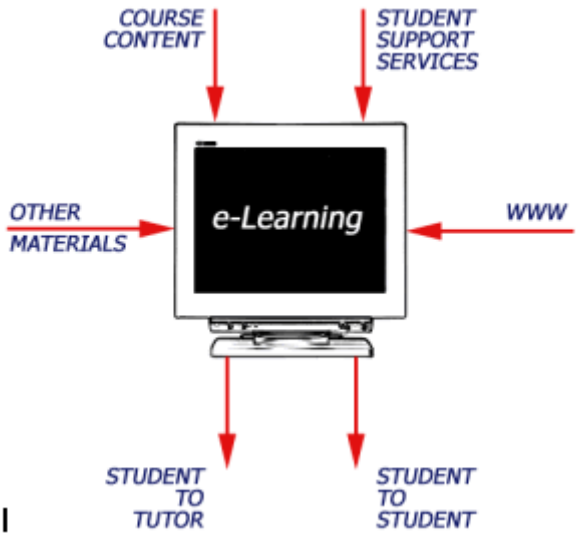


Figure 1.1 Wireless Virtual Learning Environment of Tomorrow (2007)

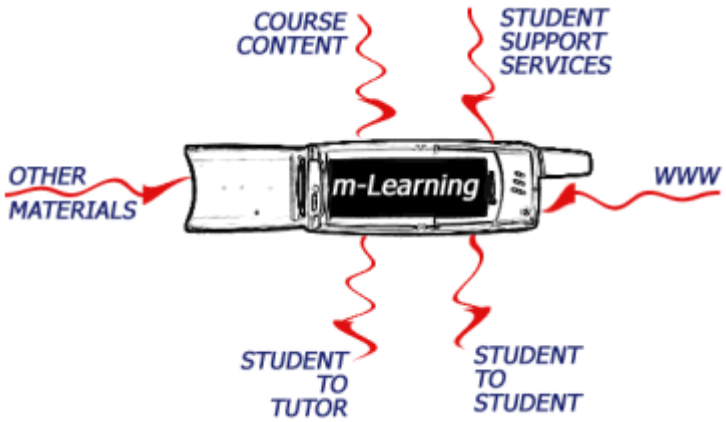


Figure 1.2 Wireless Virtual Learning Environment of Tomorrow (2007)

According to Georgiev *et al.* (2004), m-learning is the combination of distance learning (d-learning) and e-learning as illustrated in Figure 1.3.

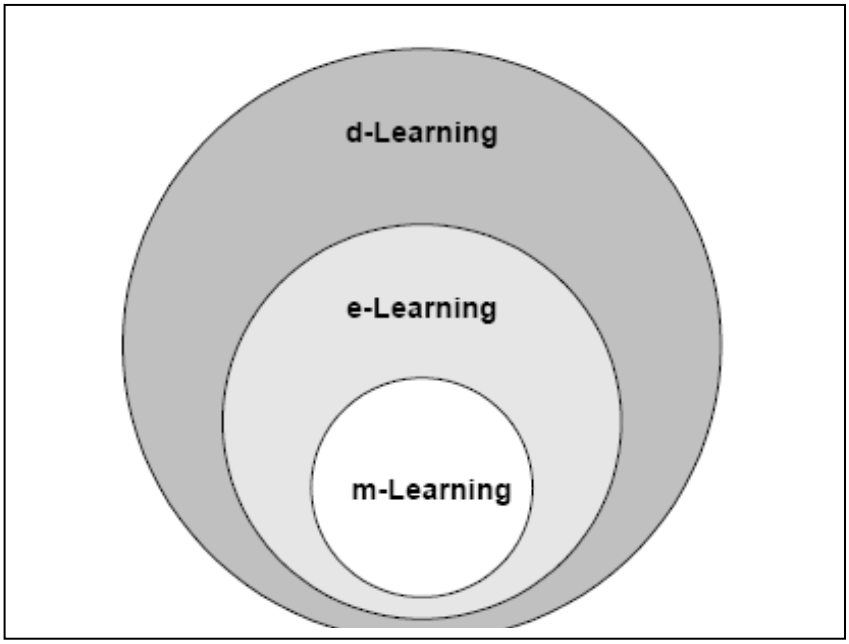


Figure 1.3 The place of m-learning as part of e-learning and d-learning.

The transformation from e-learning to m-learning, however, changes the terminology that we have been used to for e-learning. Figure 1.4 shows the changes (Laouris & Eteokleous, 2005)

Figure 1.4 Terminology comparison between e-learning and m-learning

e-learning terminology	**m-learning terminology**
Computer	mobile
Bandwitdth	GPRS, G3, Bluetooth
Multimedia	Objects
Interactive	Spontaneous
Hyperlinked	Connected
Collaborative	Networked
Media-rich	Lightweight
Distance learning	Situated learning
More formal	Informal
Simulated situation	Realistic situation
Hyperlearning	Constructivism Situationism Collaborative

From the table we can see the changes to the terms. In particular the terms used in m-learning are more context related. From the usage of computers in e-learning, education has changed to the usage of mobile devices in m-learning. There are also other terms showing the emergence and improvement of technology and it is hoped that this process can improve the quality of learning. The characteristics of m-learning are believed to have facilitated the development of new ideas by academics and researchers to create new educational models, pedagogy and learning framework.

Chen *et.al* (2003) lists the unique characteristics of m-learning:

- Urgency of learning need
- Just-in-time information
- Knowledge acquisition
- Mobility of learning setting
- Learning can be done anywhere, any time
- Interactivity of the learning process
- Effective communication using mobile devices.
- Situating of instructional activity
- Embedded learning activity
- Integration of instructional content
- Different type of resources which enable learner to learn in non-linear way or multidimensional way.

Looking at all the definitions provided by academics and researchers, mobile learning can be defined as the combination of mobile technologies and e-learning. The combination provides a learning environment that is free of location and time constraints.

With the emergence of mobile learning and the new media for language learning would undoubtedly prove helpful especially among students in higher

education in Malaysia. Mobile devices tend to be personal and familiar thus should not hinder the learning process. As mobile devices are also pervasive, m-learning seems to be very promising.

1.2 Aim and Objectives of the Research

The overall aim of the project is to investigate the use of mobile phone for texting and communication technologies i.e. wiki and blog to help Malaysian students in higher education learn English as a second language in reading and writing. Students in this study will use computers and laptops for activities using wiki and blog. The objectives are to:

- design learning activities that involve using mobile and communication technologies to engage students in learning, thus making it fun and increase their concentration span based on the existing learning module used in their classroom.
- help improve students' communication and collaboration skills by involving them in group activities.
- evaluate the effects of using mobile and communication technology in learning activities. This is done by performing quasi experimental approach that uses two phases of study: pilot and main study.
- Make recommendations to use mobile phone and wiki in second language learning for Malaysian students in higher education.

1.3 Research Questions

The questions that the study addressed are:

- What makes good and suitable learning activities that involve using mobile and communication technology for second language learning?

- Can the use of mobile and communication technology help improve students' communication and collaboration skills by involving them in group activities?
- Is there any difference in writing scores between a control group and an experimental group after the study?
- Has the experimental group's perception and use of mobile and communication technology changed after the study?
- Is there any significant difference between the control group and the experimental group in terms of their perception and use of the mobile and communication technology after the experiment?
- What are the favourite learning activities using mobile devices for second language learning?

1.4 Structure of the Thesis

This thesis is structured as follows. Chapter 2 looks into available examples of mobile and communication technologies. Chapter 3 covers theories, activities and best practice in language learning. Chapter 4 looks into how people use mobile and communication technology for learning. Chapter 5 narrows down into the way people use mobile and communication technology for language learning. Chapter 6 discusses and proposes research methodology followed by pilot study in Chapter 7. An evaluation study and statistical analysis are discussed in Chapter 8, and further qualitative analysis is discussed in Chapter 9. Finally, Chapter 10 draws together the findings and contributions of the thesis.

2 Mobile and Communication Technologies

2.1 Introduction

This chapter discusses different types of mobile devices and their potential to support learning. It is necessary to look at how these devices work in order to maximise their benefits. A brief overview of network generations is outlined, and is followed by further discussion of the kinds of communication technologies that can be applied with mobile devices.

2.2 Mobile Devices

As the name implies, a mobile device is one that is easily portable. Examples of mobile devices are usually mobile Information Technology (IT) devices. For example laptops, personal digital assistants (PDAs), mobile phones, smart phones and global positioning systems (GPS). Table 2.1 is an updated categorisation of mobile devices based on Clark (2006) and Trinder (2005).

Table 2.1 Updated categorisation on mobile devices.

Mobile devices	Common function /	Example Brands	User profile	Learning potential	Challenges for mobile learning
Mobile phones	Voice, texting, games, camera	Nokia, Sony Ericson, Vodafone	Market saturated, all ages	Voice and texting	Connectivity, battery life, screen size
Smart phones	Largely for email on the move and web browsing, with a full keyboard	Blackberry	Preferred choice for young people. Although not everybody can afford but their use is on the increase.	Send text files and email for learning support and reinforcement Photos and videos are quite commonly used.	Connectivity, battery life,
PDAs	Handheld PCs with either Microsoft Pocket PC or Palm Software to deliver all media types and e-learning content	HP, Fujitsu, I-Mate, Palmone	Low numbers, narrow range of users (largely male managers)	Delivers high functionality, essentially a mini-PC with up to 640x480 screen resolution with a memory expansion slot that can take huge amounts of data	Connectivity, battery life, screen size
Media players	Can record straight from TV, watch TV and movies, listen to music, play games, view photos, store and share data	Archos, Mustek	Very low numbers, narrow range of users	Essentially a large hard drive which delivers all media types on screen. Up to 400 hours of video, 55,000 songs, 1 million photos and games	Content security or copyright issues, less interactivity and communication

Portable games consoles	Deliver highly interactive computer games, specific to the console and MP and DVD playback	Sony, Nintendo	Vary large numbers	Sophisticated proprietary devices that deliver pre-designed games, some of which are and will be educational	Screen size, possibilities to meet required bandwidth for fast streaming, majority for games, less communication
MP3 players	Audio playback of 80 to 10,000 songs, some have an FM radio and voice recording function built in	PackardBell, Creative, Sony, Samsung, Philips, Logik, Rio, Archos, I-River	Medium numbers, all ages	Medium size, not really a pocket device, delivers audio playback and recording functionality only from 80 to 10,000 audio files for audio learning, audio books and podcasting	Content security or copyright issues, less communication and interactivity
iPods	Audio and video playback of 200 to 10,000 songs, shuffle, minis and full iPods	Apple	Medium numbers, all ages	Iconic, lifestyle device that gave rise to podcasting	Content security or copyright issues, less communication and interactivity
Pen drives	Stores files (text, video, graphics, PowerPoint, e-learning) for playback on a computer	Lexar, Impact	Medium numbers, all ages	Small and very portable, can be carried anywhere but need computer for use (laptop computer at work or at home)	Less interactivity and communication, need to be connected/wired

Different mobile devices are used by different groups of people depending on their function. The basic mobile phones are the most accessible to all groups. They have common functions like texting, voice, games and camera which are easy to use for all ages. Portable games consoles are also among the favourites for a large number of users. Since these two types of devices are popular with a large portion of users, especially among youngsters, they have the potential to be devices for learning besides the entertainment they offer.

Mobile phones need network services. Different generations of mobile phones and network services are (Gans *et al.* ,2005):

- first generation (1G) – transmit voice using analog signals, the handsets are big, heavy and expensive.
- second generation (2G) – uses digital signals to transmit voice, which is more accurate, reliable and scalable. This technology enables text messages known as SMS (Short Messaging Service).
- second and a half generation (2.5G) – uses a packet switch infrastructure to provide internet connection and access. The data speed is much faster than 2G networks. Mobile phones with this technology can support data centric applications such as email, MMS (Multimedia Messaging Service) and generic web service.
- third generation (3G) – provides high speed communication and supports other digital technologies such as real time video phoning and video conferencing.

For PDA, the first generation are Palm Pilots. A PDA is a standalone device and functions like an electronic organiser. They can be connected to the internet. With the embedded programming capabilities they can be made into "smart" devices.

A smartphone functions like an integrated PDA and mobile phone. In other words, it is a PDA with built-in mobile phone and broadband network connectivity and phone functionalities. In Table 2.1 the different types of mobile devices are categorised according to their common functions, example brands, user profile, learning potentials and challenges for mobile learning. In relation to that, Naismith *et al*. (2004) used four quadrants (see figure 2.1) to classify mobile technologies and evaluated how this categorisation can be applied to education.

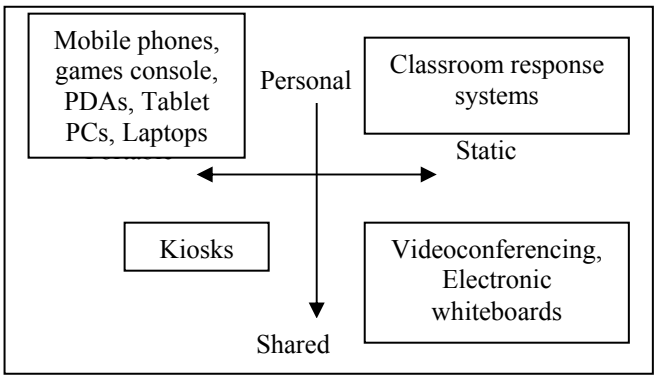


Figure 2.1 Classification of mobile technologies

Quadrant 1 is the personal and portable technologies. Examples are mobile phones, games consoles, PDAs, tablet PCs and laptops. These devices support a single user and are perceived as mobile technologies, accessible anywhere, any time.

Quadrant 2 is the personal and static technologies. The example given is a classroom response system. In such a system, a teacher administers a central server which requires their students to respond anonymously to multiple choice questions, for example.

In contrast, quadrant 3 shows portable and shared technologies. Examples are street kiosks and interactive museum displays. In these examples, the learner

needs to move and not the technologies. The technologies can be shared by many users.

Quadrant 4 is the static and shared technologies. Naismith *et al.* (2004) believes that for learners to be more engaged in the experience of sharing, the device itself must become larger and less portable, like interactive classroom whiteboards and video conferencing facilities. As this category of technologies is static they do not fall into the mobile category. Technologies in this quadrant are not suitable for m-learning as defined earlier.

The classifications outlined in Table 2.1 and Figure 2.1 provide a way of assessing the unique capabilities of mobile technologies to enable new and engaging forms of learning.

2.3 Communication Technologies and Mobile Devices

Information and Communication Technology (ICT) is the umbrella term which includes all the technologies tasked with the manipulation and communication of information. New technologies are being introduced all the time. Current technologies include: blogging, wikis, RSS, virtual worlds, e-mail, voice mail on-line chats, instant messaging, and text. Mobile devices such as laptops and mobile phones are among the popular devices that employ these communication technologies.

Below is a brief overview of some the available communication technologies for mobile devices.

2.3.1 Blogging

Blogging has become one of the popular tools of online discourse. A blog is a website, usually maintained by an individual. Blogging has been around for a number of years and now it comes in different languages. Blogs can be created by anybody often at no cost. For academic purposes blogs can be created for individual students, for a group of students or for the entire class. Technorati (2008) is a search engine for blogs. As of June 2008, Technorati indexes 112.8 million blogs. After three years as of July 2011, the number has increased to 127.6 million blogs. There are many blog hosting services available on the internet, the most popular of these include Blogger, Yahoo!360, MSN Spaces, Livejournal, Edublogs, ESL Blogs, Blogmeister and 21 Classes.

It appears that blogging is a popular tool among students in education. Students use blog as a platform to share their ideas and comments. Therefore, it is believed the use of blog would have potential to improve second language learning among students in higher education.

2.3.2 Wiki

Ward Cunningham, the creator of Wiki, in 1994 described this tool as the "simplest online database that possibly works". Arreguin (2004) defined Wiki as a group of web pages that allows users to add content. The difference between wikis and blogs is that they also allow others to edit the content. Wiki are often used for creating collaborative websites among users. The most popular wiki at present is Wikipedia, a collaborative online encyclopedia. The list of wikis using the wiki model is fast growing. As listed by Wikiversity (2008), nearly 100 wikis were then already in existence. The top wikis according to Wikiversity (2008) are encyclopedias with names such as Wikipedia, Citizendium, Scholarpedia and Knol.

Wiki is another favourite online tool. Wiki is a good platform for collaboration. Users can use wiki to work with each other in a group for example. Wiki might have also have the potential to improve second language learning for higher education.

2.3.3 RSS

RSS stands for Rich Site Summary or Real Simple Syndication. It provides information in a standardised format which allows a user to subscribe to a website's content. RSS can help readers and web publishers to get the latest updates and save on surfing time. Unlike email subscriptions, RSS is spam free because it does not use the email address to send updates. It is easy to subscribe to RSS, but as a more recent technology, many sites still do not support RSS features. Kimble (2006) lists the disadvantages of RSS as: users' preference for using emails rather than RSS, no graphics and photos, confusing identity of the source website, and publishers cannot use RSS to determine how many users there are or the frequency of visits.

RSS is described as informative tool to user. It provide list of headlines. However, RSS in still not a preference tool because not all sites support RSS.

2.3.4 Second Life

Second life is a 3-D virtual world created by its Residents. Started in 2003, there are millions of users, called residents, around the globe. The residents must be aged above 18. In second life, Residents can meet and communicate with each other in different places in the virtual world. As an educational tool, there are some concerns raised. It takes a long time to learn to use Second Life proficiently. Jeffers (2008) recommends at least 40 hours for the average user to learn about the navigation and 3-D spaces. Using the Second Life virtual world is different from playing online games as it does not have a distinct,

goal-oriented intent; it provides a space to explore and visit. However, as suggested by Jeffers (2008), Second Life offers an alternative, exciting learning experience and paradigm.

Second life is another technology deployed in education. However this technology requires user to learn on how to use it in certain length of time.

2.3.5 Email

Email, abbreviated from electronic mail, is another form for communication. With email, people can send, receive and save messages over electronic communication systems. Email is cheaper and faster than a letter, less hassle than using a fax and far less distracting than a phone call.

However, Sherwood (2007) argues that people might not understand the messages correctly. Emails do not convey emotions compared to face-to-face or telephone conversations, but they could contribute to helping students enhance their learning experience. In education there are more and more initiatives to deploy this technology.

An early study by Jones & Madden (2002) shows that all 16 to 18 year old college students in their study had already started using the computer and internet. The most popular activities include using emails, with 72% of students checking their emails at least once a day. The researchers find that the internet has enhanced the college students' academic experience.

Using emails to communicate with lecturers is a common activity among students. Emails messages are delivered slow in a matter of seconds or minutes. This might hinder the learning experience.

2.3.6 Voice mail

Voice mail mimics the functions of an answering machine. It uses a standard telephone handset for the user interface, but is centralised, computerised and more advanced than an answering machine. Like any other technology, voice mail has its own advantages and disadvantages. Voice mail prevents missed calls. On the other hand, it can delay in providing feedback. Palen and Salzman (2002) chose this technology to capture data under mobile conditions. The participants in the project used mobile phones to call into a voice-mail line to record their activities. Researchers have instant access to the reports without having to meet the participants face-to-face.

It is a convenient method of capturing naturalistic, in the moment experiences. Participants can record their activities using a mobile phone or landline phone which is a much easier way of reporting compared to paper-based recording.

2.3.7 Instant messaging

Instant messaging (IM) happens when two or more people communicate in real time. They type text which is conveyed via computers or other devices over a network, for instance the Internet. Jokipelto (2007) explains that some IM systems support features such as sharing of files and remote viewing of desktops. IM has become popular among young people because the application is easy to install, set up and use. In education, Jokipelto suggests that IM promotes learning by a "doing approach" which allows the instructor to view the student's desktop and use annotations and text messages to guide the student.

However, the major obstacle of using IM is that the advanced features are not supported by mobile phones. This issue might hinder the learning experience.

2.3.8 Texting

Text messaging or texting is sending short texts from mobile phones using the Short Message Service (SMS). SMS are popular among users because it is simple, affordable and familiar. SMS benefits include: delivery of notification and alerts, guaranteed message delivery, reliability, low cost, and the ability to screen messages and return calls.

However, SMS can cause addiction and increase monthly phone bills as argued by Zulkefly and Baharudin (2009) and James and Drennan (2005). The potential of SMS is believed can add value to support second language learning.

2.3.9 Twitter

Twitter is an emerging communication technology less than three years old for social networking. It is a kind of micro blogging. Twitter allows users to keep updating each other by sending short text messages with a maximum of 140 characters in length. Each communication is called a "tweet" to the user's friends or followers (Twitter Explained, 2011). Twitter messages tend to reflect a variety of events in real-time. Twitter can act as both social network and news media (Kwak et.al 2010).

This technology gives quick update to the user and limit the user to use characters of certain length.

2.4 Technologies for Mobile Learning

In order to embed mobile learning into a learning environment the appropriate technologies have to be used. Attewell (2005a) states that five categories of technologies have to be considered. The categories are transport options, delivery options, platform options, media options and development languages (see figure 2.2). The selection is based on initial research and experimentation to choose which available technology best serves the purpose of learning.

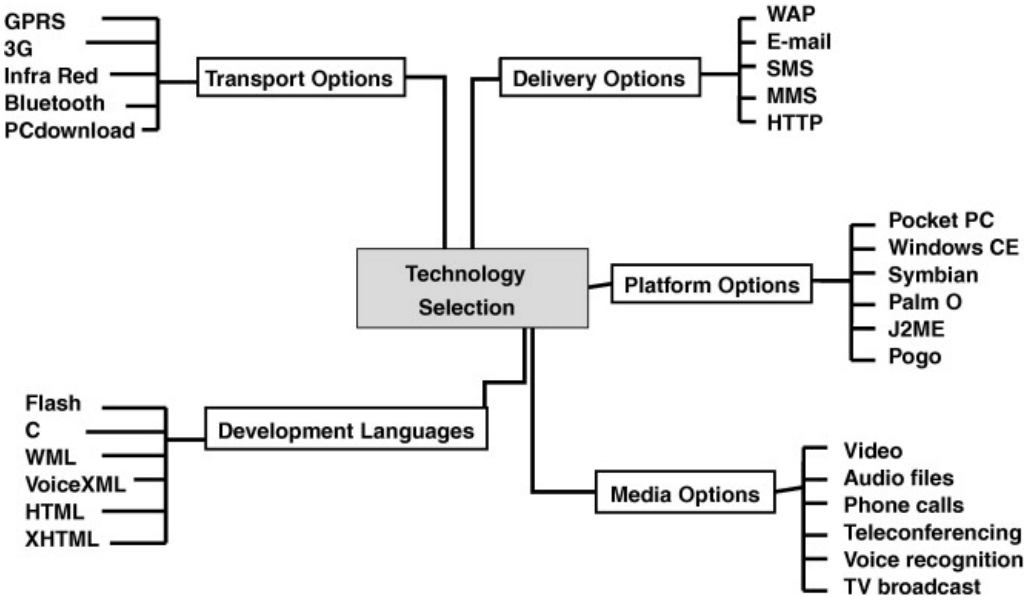


Figure 2.2 Technology Selections.

Attewell (2005) outlines the criteria needed when selecting the technology:

- usefulness of the features offered by the technology
- cost
- availability in the partner countries and patterns of availability within those countries
- reliability
- robustness
- ease of use for both users and developers
- standardisation of the materials

- likely longevity in the market place
- likely popularity

To select a suitable technology, a score is given to each technology by individual team members, and after discussion the team members will agree on a set of common scores. Attewell (2005a) believes that this so called Technology Selection Roadmap process would help to encourage detailed discussion of each technology and identify the pros and cons of each.

Goh & Kinshuk (2004) investigated the appropriate implementation for mobile learning particularly for existing learning modules. They say that the transformation from e-learning to m-learning is not possible as most e-learning systems target PC users. PCs and mobile learning technology are different, and in mobile learning the use of mobile devices is a priority. A mobile device such as a mobile phone typically has a small screen size, low bandwidth and small memory. Therefore, a mechanism needs to be developed that can adapt to a mobile learning environment. A summary of the relevant mobile learning systems implementations is shown in Table 2.2 :

Table 2.2 Survey of Mobile Learning Systems.

Reference	Objective	Content	Device	Environment	Implementation Technologies	Categories of learning
Waycott (2002)	Impact study	Text	PDA palm m105	Mobile	File transfer	Formal education
Stone et. al (2002)	Effectiveness of two ways sms	SMS Text	Mobile phone	Mobile	Existing device capability	Formal education
Vavoula & Sharples(2002)	Knowledge and learning organisation system (KLEOS)	Text	PC Laptop	Fix mobile	Java application	Personal use
Seppälä et. al (2002)	Discussion collaborative learning	Text Picture	Nokia Communicator	Mobile	WAP browser Digital picture	Teacher training
Smørdal et.al (2002)	KNOWMOBILE PDA in medical education and clinical practice	Text Voice	PDA, HP Jornada 710/548	Mobile Fixed	Use existing technology Notetaker, offline e-mail, offline web browser, voice recorder, e-book	Medical Education and Practice
Milrad et. al (2002)	C-Note Collaborative knowledge building	Text	PDA IPAQ C-PEN Java enable phone PC	Mobile	Sun personal Java, XML, XSL No SWING Cocoon Text base Database	Formal education

Ketamo (2003)	x-task Adaptive working environment	Text	PC PDA Nokia 9210	Fixed Mobile	Mysql Active perl Apache web server HTML (simple)	Kindergarten
Attewell (2002)	M-learning Attract young adult to learn	Text	Mobile phone	Mobile	Lecando Server 5 J2EE HTML WAP VoiceXML	Adult learning
Ketamo (2002)	Geometry game Matching game	Text Graphic	PC IPAQ	Fixed Mobile	Wireless LAN HTML	Kindergarten
Chen et. al (2003)	Bird watching Mobile Scaffolding bird watching learning system	Text Picture	IPAQ	Mobile	802.11b Database CE window form Mobile Ad-hoc network	Formal education

Goh and Kinshuk (2006) observe that mobile learning systems have improved between 2004 and 2006 as shown in Table 2.3.

Table 2.3 Observation of Mobile learning systems between 2002 - 2006

Goh and Kinshuk (2004)	Goh and Kinshuk (2006)
Mobile learning is in its infancy stage. Researchers are still exploring every aspect of mobile learning.	Mobile learning is moving from its infancy stage. Researchers are moving quickly to explore many aspects of mobile learning
Mobile content can be as simple as SMS or as sophisticated such as a multimedia still picture.	The content is still similar but situation context and pedagogy are used as the guidance.
No video or flash applications on mobile devices have been used and evaluated by the researchers.	Similar
Mobile applications are simple in nature. Most researchers use existing device software such as browser, file transfer, note taker, voice recorder, or e-mail to conduct their respective experiments.	Similar
Slightly more sophisticated applications involve technologies using database, Java, Active Perl and forms development.	More technologies using RFID and multi sensor
Most applications directly target towards mobile devices. Couple applications started with PC and have moved to mobile devices with redesign.	Similar
A variety of mobile devices is being used.	Similar.
Most mobile applications are run in both mobile and fixed mobile environments.	Most mobile learning applications run in fixed mobile environment.
Discussions on implementation issues are very limited in scope by the researchers.	Similar.
Most papers evaluate end users experience.	Most papers evaluate end users experience with limited quantitative and qualitative approaches.

M-learning is still considered to be at an experimentation stage. Improvements for mobile learning signal the next significant wave of learning environments.

2.5 Conclusions

Research has shown that mobile and communication technologies could be used to broaden and enhance learning in and outside the classroom. Every technology has its own advantages and disadvantages. College students belong to a group that is eager to use technologies, though not necessarily for learning. Each type of technologies described in Section 2.3 has its own benefits and limitations. However this study is constrained to several things such as time, nature of research and cost. Thus, blogging , wiki and texting is the most suitable technologies to be evaluated.

In Malaysia for example, young people dominate the mobile technologies market, which is on a steep rise. Mobile phone survey by Malaysian Communications and Multimedia Commissions (2010) reported that more than two million (13.1%) mobile phone users in Malaysia were 19 years old or younger. The findings also indicate that texting was popular among young people.

The next chapter will discuss types of learning in education, particularly English as a second language. The discussions will cover how mobile and communication technologies can facilitate language learning.

3 Language Learning

3.1 Introduction

This chapter discusses types of general learning and language learning theories in education, how they are applied to activities involving mobile devices and how the theories are used in language learning, particularly English second language learning.

3.2 Learners and pedagogy

What is learning? Atherton (2005) defines learning as "a relatively permanent change in behaviour that results from practice." In education generally there are three sets of learning theories: the behaviourist, humanistic and cognitive (Atherton, 2005). The behaviourist (Jarvis, 2003) theory evolve d from Pavlov and Skinner, and it enables measurement of intelligence and learning by test and examination. Pavlov came up with his experiment about a dog and salivation to look into classical conditioning (see Figure 3.1).

Unconditioned Stimulus (food) -→ Unconditioned Response (salivation)

Unconditioned Stimulus (food) together with Conditioned Stimulus (bell)-→ Unconditioned Response

Conditioned Stimulus (bell) -→ Conditioned Response (salivation)

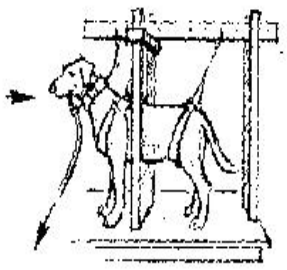


Figure 3.1 Classical Conditioning as presented by Pavlov.

In the experiment, Pavlov used a dog to associate stimulus and response. After several tests, the dog was conditioned by its experience. An everyday example is when a person sees a luxury car one assumes that the driver is wealthy, because the view formed is based on one's past experience.

The humanistic approach is said to be learning that tends to be highly value-driven: prescription versus description. The idea of humanistic models of learning evolved from Rogers, Holt and Freire (Atherton, 2011). Humanistic models argue that all individuals are subjective and each individual is personal, that learners should have control over the learning process. Teachers in this approach are best regarded as facilitators.

The third theory is cognitive, and it is concerned in a variety ways with human development. This theory was introduced and influenced by Piaget in the 1929 (Jarvis, 2003). The cognitive approach is concerned with how learners understand the learning material. It looks deeper into ability and capacity to learn, and learning styles. Piaget's theory is also the basis of the educational approach known as constructivism. Piaget's key ideas include dividing cognitive development into five stages as shown in table 3.1.

Table 3.1 Summary of stages of cognitive development.

Stage	Age (in years)	Characteristics
Sensori-motor	0 -2	Infant learns to differentiate between self and objects in the external world.
Pre-operational thought	2 - 4	Child ego-centric but classifies objects by single salient features.
Intuitive	4 - 7	Child thinks in classificatory way but may be unaware of classifications.
Concrete operations	7 - 11	Child able to use logical operations such as reversibility, classification and serialization.
Formal operations	11 - 15	A trial step towards abstract conceptualization occurs.

Naismith *et al.* (2004) identify six theory-based categories of activity.

- Behaviourist – activities promoting learning and changing learners through observable actions, for example sending learners the content of learning by text message.

- Constructivist – activities where learners actively develop new ideas or concepts based on their previous or current knowledge. An example of such activities is games, where learners act as problem solvers.

- Situated – activities that happen in authentic context and culture, for example a museum tour guide using mobile technologies to convey more information about exhibits and displays.

- Collaborative – activities that promote learning through interaction with other learners. An example is that learners communicate with each other and agree on an answer before proceeding to the next stage of problem solving.

- Informal and lifelong – activities that happen outside the so-called classroom. Learning happens all of the time and it can be accidental or informal learning. Mobile technologies have the advantage of being small and ease to use so that they can be conveniently blended in with everyday life.

- Learning and teaching support – activities that help in managing resources and coordinating learning activities, for example the use of mobile devices by teachers to record attendance, review students' marks and manage their schedule.

As can be seen from the examples above, mobile technologies can be used for a variety of learning activities which utilize the theory of learning.

3.3 Language Learning

Language learning and teaching has been characterized in a variety of ways and has undergone various changes over the last four decades (Rodgers, 2001; Power and Shrestra, 2010). Rodgers states that a language teaching methodology should include links between theories of language and learning and institutional design features, which in turn are linked to actual teaching and
learning environments (see Figure 3.2).

Figure 3.2 Language Teaching Methodology .

In a methodology, methods are fixed teaching systems with prescribed techniques and practices, whilst approaches are teaching philosophies that can be applied in many ways in the actual classroom situations. The need for instruction in a second language (L2) has led to a variety of teaching and learning approaches and methods. For decades, the methods have been moving on from traditional grammar-translation method to more student-centred methods (Power and Shrestra, 2010). Student-centred methods range from Total Physical Response (TPR), Communicative Language Teaching (CLT) and Task-Based Learning (TBL). These methods are explained below.

Total Physical Response (TPR) - The objectives of this method is to make the learning more enjoyable and less stressful (Renshaw, 2009). Mora (2011) and Asher (1979) define the key features of the TPR method as below:

- The teacher gives the commands and he himself acts in response,
- The teacher gives the commands and both the teacher and learners act in response,
- The teacher gives the commands but only learners act in response,
- The teacher tells one learner at a time to perform an action,

- The students now give commands to the teacher and to other learners to act in response;
- The teacher and learners can now expand the commands or produce new sentences.

Communicative Language Teaching (CLT) - This method, as described by Mora, (2011) *"is the progressive acquisition of the ability to use a language to achieve one's communicative purpose"*. In Renshaw (2009), David (1991: 279) outlines five basic characteristics of CLT:

- Emphasizing learning by communicating through interaction in the target language,
- Introducing the authentic texts into the learning situation,
- Learners not only learning the language but also on the learning process itself,
- Using the learner's own experience in the learning process;
- Linking classroom language learning with the activities outside the classroom.

Task-Based Learning (TBL) - TBL is the idea of doing a language learning task (Renshaw, 2009). The primary focus of the classroom activity is that the task and language is the instrument which the learners use to complete it. Each task will be organized in the following way (Willis, 2005):

- Pre-task activity – Introduction to topic and task
    - Teacher helps learners to understand the task instructions by exploring the topics with class. This can be done by listening to a recording or reading part of the text.

- Task cycle – Task -> Planning -> Report
    - During the task cycle, learners execute the task without having to worry about making mistakes. In the planning cycle, learners report to the classroom on how they will perform the task. At this point, the teacher will help to give language advice. At the last stage, each group

will exchange and compare reports and the teacher will give comments.

- Language Focus – Analysis -> Practice
    - In analysis stage, learners examine and learn new words and phrases. The teacher at the last stage will conduct practice of new words and patterns.

According to Power and Shrestra (2010), CLT appears to be very popular amongst educators and teachers.

However, learning a second language (L2) is fundamentally different from a first language (L1) (Yule, 2010). According to Yule, the acquisition barriers include the learner's age and insufficient time. Usually learners encounter L2 during their teenage or adult years and in a few hours each week of school or learning time, and with an already known language available for most of their daily communication.

Therefore, L2 learning can take a long time, with the result that students can easily become discouraged and bored. The National Capital Language Resource Centre (2007) outlines several tips to motivate students and engage them in language learning. It suggests that students need to be able to use the target language to communicate, comprehend and think about what they do with their first language (L1). There are stages of learning. The quickest skills to learn are the interpretive skills (listening and reading) while the active skills, speaking and reading, need more time to develop.

To increase motivation in learning, learners need to relate to what they do in the classroom and what they can do with the language in the future, for example in telephone conversations, reading signs and informational materials.

In learning a foreign language, Milton (2002) states there is no hard-and-fast rule about how to learn or the best-tailored teaching material. However according to Milton, to develop a language teaching material, whether using the technology or not, one must include as the basis:

- An approach : assumptions based on empirical research with regard to the nature of L2 learning context, learning and teaching
- A method or design : on how to select the appropriate sequence of language items for teaching and learning
- A set of techniques or procedures: on how to implement the method or design.

Milton further indicates that there are several criteria for good language materials, whether they are technology-based or not:

- Are they the product of an intelligently thought out approach and method?
- Do they possess a clear set of objectives within that method and approach?
- Do they set an appropriate language level for the learner?
- Are they appropriate to the age and interests of the learner?
- Are they motivating for the learner?
- Do they possess an appropriate range of relevant activities?
- Do they engage the learner in a meaningful use of the language?
- Do they provide sufficient meaningful repetition for learning to take place?
- Are they understandable, quick and easy to use for both learners and, where appropriate their teachers?
- Can they provide useful feedback to the learner's responses?

Other researchers state that when language is contextualised, speech is used productively, background knowledge is exploited and the language thinking pattern is assimilated (Paredes *et al,* 2008).

Miller and Gildea (1987) conducted an experiment on vocabulary teaching for kids. They described that the children acquire vocabulary faster when learning outside the classroom, by relating words to ordinary conversations rather than using only the traditional methods, in this case based on abstract definitions and sentences taken from external contexts.

Having looked at the different methods in language learning, CLT approach is more appropriate to be implemented using mobile learning. The use of mobile and communication technologies for example mobile phone can help to assist and engage students in language learning. Sending short messages using mobile phone which require feedback from the students can emphasize learning.

3.4 Learning English

Abduljabr (2006) observed a group of students learning English at the University of Bahrain. They were listening to lectures, taking notes, asking questions and doing some exercises. Abduljabr (2006) described this learning as "spoon feeding" and postulated that is why Arab students after studying English for twelve years at school still demonstrate deficient proficiency in English.

Esberger (2011) states that in learning English, the learner needs to balance his listening, reading, writing and speaking skills. The author uses the input and output analogies to explain further these skills. For input, the learner requires listening and reading skills, while for output, the learner needs to speak and write. According to Essberger the input and output process doesn't necessarily flow in a specific order. The learner can learn in various ways. For example, the learner may listen for a long time before speaking.

Another method to learn English is outlined by Waack (2008). The author lists four steps in learning English using technology. They are as follows:

- Step One – Preparation

  Assuming that a learner has knowledge of English, the learner needs to identify the aspect which he/she wants to improve. The key here is to stay focussed.

- Step Two – Practice

  After identifying which skills to improve , the learner needs to use search tools and browse for interesting topics and resources, such as audio files, video files, exercises and tests to help the learner practise.

- Step Three – Use

  As in real life, as suggested by Waack, the learner tries to use a forum, and participate frequently; possibly thirty times to assimilate the skills that you want to learn.

- Step Four – Evaluate

  Evaluating how much the learner did in a day. If the work is still weak, repeat those steps and the skills should improve.

Waack's steps also recommend a cyclic flow which is similar to Essberger (2011). In this case practice is the key to language learning.

A popular website for English language learning, British Council (2008) is a dedicated website that provides a platform for learning English. Learners can choose to learn English online from the website or to attend courses offered in participating countries. Learning English for Kids (2008) provided by the British Council allows parents and children to learn online. There are lots of activities such as games, listening to songs, practising writing and reading stories. As well as the British Council, there are lots of other online websites dedicated to learning English for example: *http://www.englishlink.com*, *http://www.englishclub.com/learn-english.htm, http://www.learnenglish.de/, www.talkenglish.com/* and *www.elearnenglishlanguage.com/*.

Besides online websites, interactive television is also providing English language teaching and learning. The iTV project is one of the projects developed by Pemberton *et al.* (2004). It is language learning through interactive television. Below is an example of where the projects promote different learning theories. The author uses the most influential current language learning theories: the behaviourist approach, the cognitive approach, the creative constructionist approach and the constructivist approach.

The table below shows how iTV applications can put learning theories into practice through the activities they suggest.

Table 3.2 iTV Applications and Language Learning Theories.

Learning theories and approaches	Learning through	iTV applications
Behaviourist	Repetition and drill	Not suitable
Cognitive	Practice, learning grammar, cloze-exercises	Not suitable
Constructionist	Acquisition of comprehensible input	Scaffolding understanding by supplying word meanings and labelling objects in scenes. Electronic dictionary via iTV. Support learner's autonomy and flexibility.
Constructivist	Construction of new knowledge based upon current and past and through the negotiation of meaning through dialogue	iTV based personal learning space, e.g. "My language learning" to store and retrieve learning content.
Socio-cultural	Language play and social interaction	iTV based discussion fora and chat-rooms to supports social interactions.
Discovery and experiential	Reflection on your experience and by living environments	Language learning games. Authentic material from television itself is useful for learning to occur.

Pemberton *et al.* (2004) in their study found that some of the learning theories and approaches are possible for iTV applications and have the potential to facilitate informal language learning. This is because television is a familiar media technologies and is perceived as leisure rather than work related.

3.5 Conclusions

As explained above, language learning is a process that needs practice and repetition and as a result it can change the behaviour of the learner. Learners have different learning styles and preferences. In learning any language, especially a second language, there is no single theory that can be used as the best approach.

In conventional learning, learners attend classes in specific places and time. There are some restrictions that may have a negative psychological influence on learners and their learning styles. If learners are not in a good mood, this may increase tension, stress and anxiety, thus affecting the learning process.

With different learning platforms, the process of language learning can be a two way-flow of leaning skills instead of the learner acting as a one-way recipient of learning skills. Some researchers (Esberger 2011, Waack 2008, Milton 2002, Paredes *et al.* 2008, Permberton *et al.* 2004) have demonstrated that combining learning theories and methods can improve a language learners' performance. Mobile phones and communication technologies can be used as learning tools that combine the different learning theories and approaches. For example by sending different types of text messages as learning activities, learners can learn through behaviourist (drill and repetition), cognitive (answering quizzes) and constructivist (construction of new knowledge) approaches.

Mobile technologies also have the advantage of not being dependent on the infrastructure of the learning site, thus learners can learn at anywhere and at any time. With the help of mobile and communication technologies, a wide variety of activities and experiences that can support language learning and arouse the learner's motivation can be readily accessed.

4 The Use of Mobile and Communication Technologies for Learning

4.1 Introduction

In recent years, the use of mobile and communication technologies has become a potential learning and teaching instrument. Today, learners have easy access to digital technology, especially mobile devices. More than five billion mobile phone connections have been added worldwide in 2010 as reported by BBC News Technology (2010). According to BBC, many regions in the UK have exceeded 100% penetration which translates to more than one connection per person in the country. In Malaysia, as reported by the Malaysian Communications and Multimedia Commission (2010), in 2010 the penetration rate for mobile phone is 110.6%. The continuous development of mobile technologies has allowed the creation of a new platform for supporting learning.

4.2 Learning with Mobile Technologies

Mobile technologies are becoming more and more ubiquitous and embedded with powerful network services that support collaboration and social interaction. Their accessibility and capability can have a great impact on learning. Naismith *et al.,* (2004) state that "Learning and teaching with mobile technologies is beginning to make a breakthrough." They also identified five properties of mobile devices that produce unique educational advantages:

- Portability – the small size and weight of mobile devices mean they can be taken to different sites or easily moved around within a site.

- Social interactivity – data exchange and collaboration with other learners can happen face-to-face.
- Context sensitivity – mobile devices can both gather and respond to real or simulated data that are unique to the current location, environment and time.
- Connectivity – a shared network can be created by connecting mobile devices to data collection devices, other devices or to a common network.
- Individuality – difficult activities can be customized for individual learners.

To further appreciate the characteristics of mobile devices, they suggest that mobile devices could be more exploited and embedded in formal learning and informal learning.

Apart from 24/7 access to learning resources and the characteristics described above, there are other beneficial characteristics as identified by Starr (2003):

- Location- specific learning support
    - where access to a PC may not be possible;
    - the applications could be used on a field trip, on job training, and recording questionnaires while on the move;
- Bite –size, learning on the move
    - learning resources chunked into bite size;
    - the learning can be suitable for lunch breaks, on the train, while relaxing in the garden;
- Interactivity in contact sessions
    - allows maximum VLE (virtual learning environment) and encourages greater participation in a group;
- Study organisation and support

- help learners to organise their studies while on the move.

Table 4.1 gives examples of existing applications and devices according to characteristics discussed by Starr (2003). In addition to PDA, laptops and mobile phones, devices such as RFID tag reader, video camera and player have also been introduced in mobile learning. The activities range from vocabulary learning, field trips to hands on learning such as electronic circuit experiments. Target users are now more focussing on teenage learners who are studying at universities and colleges.

Table 4.1Examples of application and mobile devices for mobile learning

Applications	Activities	Mobile Devices	Example / Subject Taught	Target audience
Location – specific learning support	Field trips	PDAs	School field trip to historic site (Tan and Liu, 2004).	Students aged 11
		Mobile phone camera	Science teaching and learning (Ekanayake and Wishart , 2011)	Teachers from different school in Sri Lanka, students from grade 11 in science curriculum in Sri Lanka
	on-the-job training	PDAs and smartphone	Manual skills for veterinary students (Royal Veterinary College, 2006)	Veterinary students
Bite–size, on the move learning	Vocabulary learning, language learning	Mobile phones	Language teaching (Markett, 2003)	Not specific
		Mobile phones	Grammar and vocabulary (Malliou *et al,* 2002)	Not specific
	Bite size learning in other subject	Mobile phone	Financial Information for Business (McGuigan *et al,* 2010)	First year university students
Interactivity in contact sessions	Anonymous discussions, forums, brainstorms	Laptops, interactive voice response (IVR) using the mobile phone	Irish language (Pincas, 2005)	Irish second level education
	Share and reuse learning experiences by linking	PSA, RFID tag reader, video camera	Toy making handicraft (Ogata *et al*, 2010)	Postgraduate students

	movies to environmental subjects	and wireless access to the Internet		
Study organisation and support	Note taking, reference materials, mind mapping, assistive features, planning	Pocket pc handheld computer	Access course materials, view time tables, communicate via text, organise ideas and notes (Sharples, 2000).	MSc Student, Birmingham University
	Mobile learning portal for computing students	Mobile phone	Access course content, learning activities and demos, exercises, link to texting and feedback system (Olasoji and Draganove, 2010)	Computing students at University of East London
	Mobile educational support system for circuit experiments	Mobile computer, CCD Camera, circuit, access to wireless internet	Circuits experiment (Takemura, 2010)	Students at Tokyo University of Agriculture and Technology.

Findings from Attewell (2005b) gave an answer on how to encourage young people to reform from reluctant learners to enthusiastic learners. The use of smartphones and PDAs was viewed as interesting and unthreatening especially for young learners who would not have succeeded through traditional education.

The key findings after conducting mobile learning trials in 3 different European countries, i.e. UK, Italy and Sweden, among 16 – 24 year old learners show that learning with mobile devices can help young people to:

- engage in learning especially those who have been left behind in traditional educational methods;
- improve their literacy and numeracy skills,
- learn at their own time and at their own pace,
- become literate in mobile phone and ICT technologies,
- increase their learning concentration span;
- improve their self-confidence.

There are six themes that can be classified around the learning theories relevant to learning with mobile technologies (Naismith *et al*., 2004).

- Behaviourist – activities that promote learning as a change in observable actions.
- Constructivist – activities in which learners actively construct new ideas or concepts based on both their previous and current knowledge.
- Situated – activities that promote learning within an authentic context and culture.

- Collaborative – activities that promote learning through social interaction.
- Informal and lifelong – activities that support learning outside a dedicated learning environment and formal curriculum.
- Learning and teaching support – activities that assist in the coordination of learners and resources for learning activities.

Basic to complex activities can be embedded in mobile devices within a meaningful learning context. Table 4.2 lists examples of mobile devices and activities that are suited to the learning themes.

Table 4.2 Learning Themes and activities.

Theme	Key Theorist	Activities	Mobile devices
Behaviourist learning	Skinner (1968)	drill and feedback (e.g Matematics video games) classroom response systems (e.g 'Classtalk' in Naismith *et al.*, 2004)	Laptops, mobile phones, PDA
Constructivist learning	Piaget (1929), Bruner (1966), Papert (1980)	participatory simulations (e.g 'Savannah' in Naismith *et al.*, 2004)	PDA
Situated learning	Lave (1991), Brown (1989)	problem and case-based learning context awareness (e.g 'MobiLearn' in Naismith *et al.*, 2004)	Laptops, PDA, Mobile phone
Collaborative learning	Vygotsky (1978)	mobile computer-supported collaborative learning (e.g 'MCSCL', Zurita *et*	PDA

		al., 2003)	
Informal and lifelong learning	Eraut (2000)	supporting intentional and accidental (Attewell , 2005b) learning episodes (e.g mobile devices for breast cancer, (Naismith, *et al.,* 2005)	PDA, laptops, mobile phones
Learning and teaching support learning	n/a	personal organization (Sharples *et al.,* 2005) support for administrative duties for example attendance record	PDA, mobile phones, laptops

Mobile technologies can support a wide range of activities for all ages and groups to help in learning by providing personal interaction turning 'shy' learners into enthusiastic learners. Reaching drop-out learners also proved to be successful as reported by Attewell, (2005b) and Naismith *et al*., (2004).

4.3 Learning with Communication Technologies

Communication technology was introduced in the teaching and learning environment a long time ago. Duffy and Bruns (2006) call the present era "the socially mobile learning environment," where it is not enough just to rely on online learning and teaching technologies. One needs to explore more the delivery of flexible mobile learning in terms of critical assessment, evaluation of information and collaborative purposes (Duffy and Bruns 2006).

The list of communication technology is growing and not exclusive to:

- Blogging
- Wikis
- RSS
- Virtual Worlds
- Email
- Voice Mail
- Instant Messaging
- Texting
- Microblogging

4.3.1 Blogging

In the cyberspace world, Blogs have gained increasing attention. Its ease of use enables people without programming experience to easily update and publish their personal websites. There are many blogs available on the internet, the most popular including Blogger, Yahoo!360, MSN Spaces, Livejournal, Edublogs, ESL Blogs, Blogmeister and 21 Classes.

A blog directory, Higher Education Blog Retrieved (2008) can be found at http://www.blogged.com/directory/. All topics ranging from technology, entertainment, sports, and politics to education are listed. Also, ratings for each blog are given. The ratings are provided by professional editors who evaluate a blog based on the following criteria: frequency of updates, relevance of content, site design, and writing style.

The top 5 listed blogs for education category as retrieved on September 9, 2011 at http://www.blogged.com/directory/education/ are given in Table 4.3. Blogging provides a platform for users to collaborate with each other on line or off line. Downes (2006) suggests that blogs for learning purposes can help teachers and learners:

- as a replacement for a typical course web page
- link items to related course
- organise in-class discussions
- organise seminars and readings – group blogs
- students create blogs as part of course work and assignment

Table 4.3 List of top 10 blogs.

Reference	Target audience	Topic Discussed	Popularity
Starting Over (http://www.blogged.com/blogs/starting-over-71.html)	Public	The author's experience in starting a new educational program at New Orleans.	9.5 - Excellent
Bridging Differences (http://www.blogged.com/blogs/bridging-differences.html)	Not specific	The author's opinions and insights on what matters most in education.	9.5 - Excellent
Learning the Language http://www.blogged.com/blogs/learning-the-language.html	Not specific	Exploring learning innovations and social issues among English-language learners in United States's schools.	9.5 - Excellent
NCLB: Act II Blog http://www.blogged.com/blogs/nclb-act-ii.html	Not specific	Reporting and discussing latest news on K-12 education in United States.	9.3 - Excellent
Career Quips http://www.blogged.com/blogs/career-quips.html	University Students	A blog that gives students information and guidelines for getting a job.	9.3 - Excellent

The popularity ratings of the top five blogs ranged from 9.3 to 9.5. The scores are evidence of high traffic unique visitors to the blogs. However, the top topics are more on giving information and opinions on certain issues on education rather than acting as a course like webpage. The target audience are the general public rather than specific groups of learners.

For learning and collaboration purposes the blog that has the highest rating of 8.2 is eap2. The blog can be retrieved at http://www.blogged.com/blogs/eap2.html. It is a place where a group of students from Southern Illinois University, United States publish their work such as videos and stories for a language learning subject.

4.3.2 Wiki

A platform similar to blogs is the wiki. However, there are differences between them. Wikis allow page content to be edited thus making them an effective tool for collaborative authoring. They are easy and free to use. As a result of these features, Wikis has grown rapidly and has spawned its different communities ranging from an online collaborative encyclopedia (Wikipedia), textbooks (Wikibooks), general knowledge (Wikianswers) to business and product comparison (ShopWiki).

Sze (2008) used wikis with ESL learners in a secondary school in Hong Kong. The results show that the students were motivated and excited about the writing project for the following reasons:

- The Wiki was a new medium for them to express their ideas in writing.
- It was easy for them to learn and work with wikis.
- Their group report would be read by other groups; there was a real audience for their writing.
- They enjoyed the process of sharing ideas.
- They enjoyed the online contact with each other outside of their class.
- The writing project led to a visible product on the Web: the completed wiki.

Sze (2008) concluded that a Wiki is useful for promoting collaborative writing for ESL learners.

On the other hand, Cole (2009) and Zorko (2009) find that a wiki is not always the preferred choice for students to collaborate with their friends. Cole points out that, in the educational context, a wiki is perceived differently from in ordinary use. Zorko further outlines several factors that hinder students from collaborating online with their friends including frequent face-to-face meetings, a preference for other social-networking communications, technical glitches and a preference for publishing only the finished product.

However, in academia, Wikiversity helps support learning communities, their learning materials and the activities (Wikiversity, 2008). In Wikiversity, there are collections of wiki webpages and the primary goals of Wikiversity are to create and host a range of free-content, multilingual learning materials for all ages, and to host learning projects and communities that support these materials (Wikiversity , 2008).

4.3.3 RSS

RSS stands for Rich Site Summary or Real Simple Syndication. RSS allows users to subscribe to a website's content and provide the information in a standardised format. Examples are online news and the BBC. It acts as a reader that helps users to save time by selecting any headline or feed of their interest. RSS topics are still new in learning and is not widely used. Cold (2006) states that only 9% of Americans understand what RSS is all about. RSS can be embedded in websites and blogs. Cold (2006) used RSS to enhance student research projects. Previously students had subscribed to information using emails, resulting in their email boxes getting filled with spam, and had visited other portals which contain loads of pop-ups and advertisements. With RSS, students only receive information relevant to their research topics.

4.3.4 Virtual Worlds

The use of virtual worlds such as Second life for education is now emerging as a form of active learning. Second life is an online virtual world developed by Linden Lab. In Second Life world, the users are called Residents and they can interact with each other through avatars. There are diverse categories in Second Life applications for learning, ranging from distance and flexible education; self paced tutorials, displays and exhibits to urban planning and design.

Aesthetic Computing class at the University of Florida is a learning application that uses Second Life to provide a virtual class. Students need to create some part of a computer program and represent it in 3D with user interaction (Aesthetic Computing class, 2007).

However, there are potential barriers for using Second Life as a learning platform:

- the need for appropriate graphics cards;
- skill in using the software, the learning curve is quite time consuming (Jeffers, 2008). For an average learner, it will take 40 hours to grasp the navigation and an understanding of the usage;
- users need to be aged 18 or over;
- fees are required to lease an island in Second Life before learning sites can be constructed.

4.3.5 Email

With email (abbreviated from electronic mail), people can send, receive and save messages over an electronic communication system. Email permits the integration of scheduling, task and contact management, and also sharing calendars and mail folders between users. Also, offline and online activities can be combined, which can be useful for students with dialup connections.

Jones & Madden (2002) in his findings state that the most popular activities among college students are looking up emails with 72% of them checking their emails at least

once a day. Emails also help students to communicate effectively among their friends and teachers.

Lan and Sie (2010) studied the effectiveness of sending and receiving learning activities through email to learners. The results suggest that email is suitable and may be applied to provide exhaustive information delivery and non-time sensitive information notification for example learning materials and assignments.

4.3.6 Voice mail

Voice mail mimics the functions of an answering machine. It uses a telephone handset as the user interface but it is centralised, computerised and more advanced than answering machines.

Kettering University (2008) provides an example of the use of voice mail for distance learning. It used voice mail to alleviate the distance gap, where students have personal access to their professors by recording their queries using voice mail. However, voice mail can also cause student frustration if the voice mails are not answered.

4.3.7 Instant messaging

Instant messaging (IM) happens when two or more people communicate in real time by typing text conveyed via computers over a network such as the Internet, which is a form of synchronous communication and refers to real time communication, interaction with live audiences (Gonzalez, 2003).

Jokipelto (2007) outlines an experiment conducted in a university in Sweden. The findings show that students used IM to keep in touch socially and coordinate group assignments. From the total number of messages, 70% were sent between different laboratory rooms within the same building, 8% were sent between different computers in the same laboratory and 22% of the messages were sent outside the university building. The informal and communicative nature of IM actually supports workplace environment and reinforces the social ties between people.

4.3.8 Texting

Text messaging, or texting, is sending short texts from mobile phones using the Short Message Service (SMS). Using SMS learning resources can be delivered in nugget sizes or chunks. Learners can retrieve the resources at any time and any where. SMS is a familiar and a popular technology among young people. SMS is widely used for language learning as many services now offer learning a foreign language by SMS, for example the BBC (British Council, 2008 and British Council, 2011). Learners can subscribe to access the resources and learn at their convenience.

However, Stockwell (2010) finds that not all students are willing to engage with technology for learning. He categorised users into different types of learners using mobile phones: non-users, try-and-quit users, sporadic users and heavy users. A FRAME (**F**ramework for the **R**ational **A**nalysis of **M**obile **E**ducation) model by Koole (2009) suggests that there are three aspects that need to be concentrated: device, learner and social aspects. According to the framework, it is important to assess learner skills, the experience of mobile learning and the learner's feelings towards such activities

4.3.9 Microblogging

Twitter is a microblogging type of communication started around three years ago. This technology, allows users to keep updating each other by sending text (tweets) messages with 140 characters in length.

Kwak *et al.* (2010) found that there were 41.7 million users, 1.47 billion social relations, 4262 trending topics and 106 million tweets. Twitter is popular for information sharing and updating recent happenings. A user can follow other users and the user being followed has the option not to follow back. A follower in a twitter will receive all the messages from those the user follows (Kwak *et al.*, 2010).

The use of twitter for learning has been investigated by Schuck *et al. (*2010). In their study, twitter was used in a field trip among pre-service teachers to report and share their findings. The results show that twitter is good for networking but it hinders the participant's learning experience. This is due to time taken to understand the "twitter literacy" to read and understand the post. The participants would rather use discussion forum than twitter.

4.4 Conclusions

The use of mobile devices and communication technologies has the potential to facilitate learning. Some of the studies have shown positive results while others found limitations. Texting is a good way of reaching students. The literature study has shown that the use of texting can reach drop out learners (Attewell, 2005b and Naismith *et al*., 2004). Therefore, the use of the mobile phone is chosen for this study. Collaboration can enhance learning, wikis and blogs are the most common tools. Sze (2008) found that a Wiki is useful to promote and encourage students to improve their writing. Therefore, they are also chosen for the study. If benefits are to be gained the devices and technologies have to be used appropriately for different types of learning activities.

5 The use of Mobile and Communication Technology for Language Learning

5.1 Introduction

Different uses of mobile and communication technologies for language learning are reviewed in this chapter. The examples chosen are divided into the Malaysian and the worldwide context. An existing m-learning application in Malaysia is a product named SMS-Me-English (Salam, 2008; Telekom Malaysia Berhad , 2011), which was launched on 3 August 2004 by LTT Global Communication in Malaysia. It uses a short messaging service via the mobile phone to help learners to study English. According to Salam (2008) new m-learning products, such as multimedia courseware for young children to learn idioms, are being proposed.

5.2 Malaysian Context

In Malaysia, m-learning is emerging (Abas *et al.,* (2009); Mahamad *et al.* (2010); Mohamad and Wollard (2009)), researchers are poised to take full advantage of mobile technology to help students in higher education to study English as a second language. By acquiring a good command of the English language, students could easily access the internet, read articles and research papers, and other materials published in English.

As mentioned in Chapter 1, Sarudin and Zubairy (2008) report the results of a study by the Ministry of Education which indicates that Malaysian university students and graduates do not have particularly good command of the English language. This is one of the motivations for the present study.

Not many m-learning applications have been implemented in Malaysia. Most of the studies considered the learner's readiness to use mobile phones for learning (Abas *et al.,* (2009); Mahamad *et al.* (2010); Mohamad and Wollard (2009)).
A study done by Abas *et al.* (2009) in the last quarter of 2008 concludes that 63.71% percent of the students are ready for m-learning within the next 12 months. The study was done by distributing questionnaires randomly to learners undertaking various programmes. The participants were between 31 and 35 years old from open and distance learning (ODL) education programmes in Malaysia. In terms of mobile phone ownership, 98.91% have their own mobile phone. The learners in this study were willing to spend a certain amount of money to buy new devices and subscriptions to enable them to learn through an m-learning system. In terms of type of course preference, learners preferred to learn non-technical courses through m-learning.

Another study on the potential of implementing mobile learning in Malaysia was conducted by Mahamad *et al.* (2010). This study focuses on the possibility of implementing mobile learning for primary school pupils. The study finds that 48% of respondents owned a mobile phone and used text- messaging. In terms of readiness to start m-learning, more than 50% are in agreement. However, m-learning still might not be positively accepted because the respondents are new to the idea. The authors suggested that mobile phones could be useful in learning. The activities could include doing exercise, quizzes, tests and viewing their performances using automated graph.

Malaysia shows the beginning of acceptance of a new learning paradigm among learners.

5.2.1 Mobile Technologies

Not many applications of mobile technologies for language learning are reported in Malaysia. This only known application is SMS-Me-English by Telekom Malaysia Berhad (2011), which costs a learner RM10/month (approximately

£2.08/month). This application helps learners to speak English by sending out text messages to the learners daily from Monday to Friday. The lesson's packages range from Basic, Intermediate and Advanced. The target audience is not specific.

An implementation strategy is being developed by Mohamad and Wollard (2009) for Malaysian secondary schools for English language learning. The researchers are finding out the potential of mobile technologies in education especially in language learning therefore, in order to implement mobile technologies in Malaysian context, the researchers are investigating several issues involving policies and stakeholders to make sure the implementation will complement the existing policy of schools in Malaysia.

5.2.2 Communication Technologies

The British Council's website for Malaysia (British Council, 2011) provides access to a global English language learning programme. However, the target learners are not specified. University students may find that the content is not catered according to their need. A private-sector initiative is called Score A Program (2011), which is a paid application based on the official Malaysian government English syllabus for primary and secondary schools in Malaysia. The target learners are from age 7 to 15.

5.2.3 Conclusions

Recent research studies signal that, as well as communication technologies, Malaysia should consider the potential of using mobile technology, such as mobile phones which is both affordable and accessible. However, more research is required to evaluate different ways of using the technologies.

5.3 Worldwide Context

5.3.1 Mobile Technologies

In Japan and other countries in Europe there have been numerous language learning developments through mobile devices. In general the results show that the learners improved and their learning experience is positive. Table 5.1 gives a summary of the relevant projects.

A project by Thornton (2004) on the use of mobile technology to learn languages has shown positive results. The study was conducted among 333 Japanese university students who all owned a mobile phone and almost all of them use other facilities provided by their phones such as email. The study involved using Short Messaging Service (SMS), videos and 3D animations to teach English to the group. The same lessons can be accessed using the PC. The results show that the method benefited them more than the PCs. It signalled that the use mobile phones motivated the students to learn English better than using PCs.

Research on the brain by Genesee (2000) on language learning suggests that to learn a new word repetition is required. By repeating the learning activities, the neural network will be developed to remember the word. Since learning activities during classes are limited, other means of practice and exposure using mobile devices should therefore be explored. Cavus and Ibrahim (2009) state that because of the nature of mobile technology, students would learn faster and easier especially for English language learning. Studies investigating the potential of mobile devices pertaining to language learning include Godwin Jones (2004), Kadyte (2003), Malliou (2002) Tan (2004).

The project AD-HOC by Malliou *et al.* (2002) aimed at developing a mobile language learning environment to facilitate 'learning on demand' for European travellers who wish to communicate with other countries' native speakers. The

AD-HOC system acts as a tutor and teaches linguistic and cultural knowledge through the use of various media presentations, for instance text, sound, picture and video. This environment offers representations of contextualised, authentic, real-life situations for different levels of competency and different fields for business travel, and also for young travellers. The underpinning pedagogical principle of the AD-HOC project is self-directed learning. So the study has shown that the use of a mobile phone can help learners to learn in their own pace and improve the traveller's language with native speakers.

In Finland, The Mobile Learning System (Kadyte, 2003) delivers lessons using sound and text to teach grammar and vocabulary. It tracks the learner's progress and integrates voice technology for user interaction. This is another positive outcome for using technology for learning a second language. However the target audience is not specific.

BBC News Technology (2010) provides an English Language teaching service via mobile phone in China. Learners receive a daily text message on their mobiles containing a phrase in English together with the Chinese translation. The system can help busy people learn authentic spoken English. This technology signals that texting can facilitate learning for busy people.

A project conducted in Taiwan developed a mobile interactive language learning environment using PDAs for elementary school children learning English as a second language. The activities aimed to help students learn listening, reading and writing skills. For example, a scenario to teach words related to images showing a body part provides a word's pronunciation and spelling when the image is clicked by the user. Evaluation showed a positive response from learners and indicates that the use of mobile devices can significantly increase student motivation and interest (Tan, 2004). This is another positive outcome for using a mobile device.

Table 5.1Examples of language learning through mobile devices

Reference	Target people	Language taught	Content/Mode of delivery	Device
Thornton (2004)	Japanese University students	English	SMS at regular interval, vidiom (video to explain idiom)	Mobile phone
Malliou *et al.* (2002)	European Travellers	English	Written text, audio, animations, video, communication, interactive exercises	PDA, GPRS
Kadyte (2008)	Not specificied	Finnish	Sound and text to teach grammar and vocabulary	Mobile devices
Tan (2004)	Elementary school English learning	English	Download learning materials, act as scheduler, learner can interact with the course – listening, reading and writing	Mobile devices – notebook computer, PDA
BBC News Technology (2010)	Not specified	English	Text daily basis with Chinese translation, can log on to Sina.com to further listen and read more of the language	Mobile phone
Pincas (2005)	Tourist to Greek	Greek	text regularly and can be based on learner's request	Mobile phone
Cooney & Keogh (2007)	Irish second level education	Irish	Interactive voice response (IVR) using the mobile phone, text everyday Irish vocabulary, text chat	Mobile phone, laptop
Zurita & Nussbaum (2004)	First grade students (6-7 years old)	Spanish	Establish words from 3 students, each with handheld device	Handheld device

The Speak My Speak project investigated the use of Short Messaging Service (SMS) as a communication tool between adult English language learners and native English tutors. It concluded that using SMS in language learning is feasible and promising. Students reflected on texts sent and received, and were active in constructing the content of communication (Markett, 2003).

The INLET project (Lingua) developed a mobile phone support system to encourage tourists to learn the Greek language at the Athens Olympic Games, 2004 (Pincas, 2005). The system provided a number of facilities for learning useful Greek phrases in a just-in time manner. They can get the response immediately. Language categories judged most beneficial for tourists were: 'basic' (e.g. greetings, numbers, basic words), 'where' (e.g. phrases for asking directions, going by bus, taxi and train), 'when' (e.g. asking times, today, now, tomorrow), 'Olympic Sport' (athletics, fencing, etc.) and 'buying' (asking the price, money, expressions like expensive, cheap, etc.). Users, recruited at the airport in many cases, were able to register for SMS messages to be sent to their mobile phones freely and regularly containing useful phrases. Users could also request SMS translations of other languages into Greek. Sending bite size or chunked learning content using SMS has been shown to assist learners in learning a new language.

In Ireland, a five-week pilot project was implemented to facilitate school-based oral assessment and motivate students to learn Irish (Cooney and Keogh, 2007). The project took place in rural areas, aiming at students aged between 14 and 15. They used mobile telephones, laptops, the internet and a text-based web chat application in this trial. The result was that 67% of the respondents had made notable progress in speaking Irish and they had enjoyed using the technologies to learn the language. This study introduced the integration of mobile technologies as opposed to learning in the traditional way. The results after the study indicate

that the integration of mobile phones, laptops, internet and text-based chat motivated students to learn and improve their second language learning.

The Syllable – MCSCL (Mobile Computer-Supported Collaborative Learning) is the model to help students recognise and build words in Spanish using wireless interconnected handhelds (Zurita and Nussbaum, 2004). An example of the learning interface is shown below:

Figure 5.1The interface learning for Syllable-MCSCL.

In the learning process, a group of three students will get a handheld device each. The sun icon in the upper right corner shows identification that these three students are in the same group. Each student will be given different syllables and they need to construct a new word. By using the handheld and in sequence, student (a) needs to start first by pressing a button followed by student (b) and student (c). The formed word now is "silaba" and the handheld will ask for confirmation. It the answer is right they will get the clapping sound. Otherwise, a message will appear stating the word is wrong.

The authors state that even though students could have learned without mobile technology, they found that students benefit more when deploying handhelds in their learning process. From the observation, students who used mobile technology for learning scored higher marks in word construction tests compared to students who did not use mobile technology.

In the worldwide context, a lot more research has been done on language learning using mobile devices and communication technologies. The focus of these works is largely on teaching and learning vocabulary. This study is aimed at students in higher education in Malaysia. Besides improving their vocabulary, it is also necessary to improve writing skills and collaboration among the students. The positive outcomes from the previous studies and projects might be beneficial to be deployed in this study.

5.3.2 Communication Technologies

Communication technologies are the range of technologies used for gathering, processing, transmitting and analysing information. The list includes blog, wiki and personal computers.

Blogging has become a popular tool for online discourse (*Blog*.com What's Your Story? 2012). A blog is a website, usually maintained by an individual. Blogging has been around for a number of years and now it comes in different languages. Blogs can be set up by anybody, often at no cost. For academic purposes, blogs can be setup for individual students, for a group of students or for an entire class or year of students.

Godwin-Jones (2006) identifies that students in the class used blogs for four specific aspects of the writing process: peer responding (feedback), editing, revising, and publishing their written assignments. Godwin-Jones (2003) states that by publishing writings on a blog, the student has the possibility of writing for readers beyond classmates who are not in a discussion forum. Besides that, self publishing can encourage ownership and responsibility on the part of the student. However, Godwin-Jones (2003) also found that a limitation of blog is that it is difficult to find information. There is no trackback and history lists. Other innovations known as RSS and Wiki can enhance the ability to find blog-based

information. RSS readers can help subscribers in alerting new postings from multiple blogs and other Internet resources. For an excellent collaborative environment, Godwin-Jones (2003) suggests a Wiki be used, where the changes are logged along with the identification of the author. He also suggests that blogs can be highly personal, Wikis are intensely collaborative so is suitable for group writers.

Stevens (2005) produced the ESL/EFL website which allows experts in ESL/EFL to develop "a community of practice" (COP). The goal of the website is to expand knowledge and improve practice in specific areas

Campbell (2003) introduces the three ways in which blogs can be used to support ESL classroom learning. He mentions that for further immediate use, blogs come in three types: the tutor blog, the learner blog and the class blog. The tutor blog is run by the tutor for the learners. It serves the following purposes (Campbell, 2003):

- Gives daily reading practice to the learners.

  Helps and directs student for further reading by providing material related to what has been taught in the classroom, and recycles vocabulary used in the classroom.
- Promotes exploration of English websites.

  The tutor can encourage learners to further explore other English websites at leisure.
- Encourages online verbal exchange by use of comment buttons.

  The tutor can ask questions, create riddles or puzzles or challenge their views so that learners can give feedback by using the comment button.
- Provides class or syllabus information.

  Also entries in a blog can always act as reminders about homework, assignments, discussions and quizzes.
- Serves as a resource for links for self-study.

In a blog the tutor can add links and resources that can aid learners in their study.

Another type of blog is the learner blog, run by the individual learners themselves or by small collaborative groups of learners (Campbell, 2003). Activities include common reading assignments, writing practice, posting thoughts of each learner or group. Indirectly, the learner is likely to explore more over the Internet to get resources. Campbell (2003) also found that by developing a blog a learner will practise writing, and develop a sense of ownership.

The third type of blog as suggested by Campbell (2003) is the class blog. This acts as the result of the collaborative effort of an entire class. The possible uses of this type of blog are (Campbell, 2003):

- As a free form bulletin board for learners
- Facilitates project based language learning
- Acts as a virtual space for an international classroom language exchange.

Ryan (2008) also put forward some ideas on how to improve writing for ESL using blogs:

- To start own blog
- Join a mailing list on a topic one is interested in
- Get a pen-pal
- Create a website
- Contribute to Wikipedia
- Write reviews of local restaurants and hotels.

Godwin-Jones (2003) insists that a Wiki is best suited to a COP where it can enhance the collaboration and sharing of knowledge.

In Hong Kong, Sze (2008) conducted a pilot study on using a Wiki by his students in ESL. He suggests that the writing procedure is in a few stages, which include: introduction to a wiki and writing, initial writing in groups, revising the initial draft, proofreading their group's report, editing and finally publishing the final writing on the wiki. The results show that the students were motivated and excited about the writing project for the following reasons:

- The Wiki was a new medium for them to express their ideas in writing.
- It was easy for them to learn and work with wikis.
- Their group report would be read by other groups; there was a real audience for their writings.
- They enjoyed the process of sharing ideas.
- They enjoyed the online contact with each other outside of class.
- The writing project led to a visible product on the Web: the completed wiki.

However, Cole (2009) and Zorko (2009) find that the use of wiki has its own drawbacks. Cole points out that participants have a different perception when using wiki in an educational rather than social context. Zorko suggests several factors that inhibit participants from using wiki, which include: a preference for another type of social networking, technical glitches, and a preference to publish the finalised product.

5.3.3 Conclusions

This chapter has reported studies and examples carried out in Malaysia and in a worldwide context. It is obvious that mobile learning in Malaysia is still at its infant stage. A number of studies have been done on evaluating the readiness to implement mobile learning for primary schools, higher education and working adults, but little has been done on language learning although there is a

commercial tool. Studies on the use of communication technologies for language learning have also not been carried out extensively. The limited results gathered so far suggests that Malaysia is ready to embark on mobile learning in the next few years.

5.4 Summary and Conclusions

From the surveys and findings in this and previous chapters, the use of mobile devices (Thornton (2004); Mallio (2002); Kadyte (2008); Tan (2004); BBC News Technology (2010); Pincas (2005); Cooney and Keogh (2007); Zurita& Nussbaum(2004)) show positive and motivating outcomes for learners.

In the Malaysian context, the use of mobile and communication technology for writing especially ESL is still at its infancy stage. However, in the world-wide context, the use of mobile devices for language learning has demonstrated positive and encouraging outcome. Students of ESL/EFL can use discussion forum to exchange writing among class members (Godwin-Jones 2003). Language teachers found that students at different levels benefited from the extra writing done in the forum. Since the learning activities during a class are limited, the use of new technologies is worthwhile exploring. The potential of learning using mobile devices such as laptops, mobile phones and PDAs and the popularity of communication technologies such as blogs, wikis and RSS all hold the potential of enhancing the learning experience and promote better collaboration and motivation. The findings from readiness surveys done in previous years showed that Malaysia is ready to embark on mobile learning in the near future.

6 Research Methodology

This chapter provides an explanation of the research methods of the study, which consists of the phases of the study, research questions, participants, research design and analysis method.

The main focus of this research is to design and evaluate the effects of using mobile phone and communication technologies in language learning. The aim of the study is to find out whether these technologies are effective for learning. The research is organised into two phases: a pilot study followed by a main study. The participants for both studies were similar in their abilities and understanding to minimise differences that could affect the results.

6.1 Research Questions of the Pilot Study

There are many reasons for undertaking a pilot study. The reasons include (Teijlingen & Hundrey , 2001):

- Developing and testing the adequacy of research instruments.
- Assessing the feasibility of a (full-scale) study
- Assessing the proposed data analysis techniques to uncover potential problems
- Training a researcher in as many elements of the research process as possible
- Developing research questions and a research plan

The questions used in the pilot study are different from those listed in chapter 1 for the main study because the purpose of a pilot study is to assess the feasibility of the study and other reasons as stated above. Therefore the research questions in the pilot study might be changed depending on the findings and result after the study.

The research questions that guided this pilot study are:

- Is the use of mobile phone and communication technologies beneficial in language learning?

- Is there any noticeable difference between the use of wikis and blogs?
- Does the use of communication technologies facilitate communication and collaboration between group mates?
- Do students benefit from receiving lesson reminders and quizzes on their mobile phone?

6.2 The Pilot Study

A quasi experimental research design was used in this study. Muijs (2004) and Clarke & Dawson (2005) suggest that quasi experimental research is best suited in an educational setting, especially when looking for the effects of educational intervention. To bridge the difference gap between two groups, it is important to make sure that both experimented group possess as similar characteristics as possible.

The pilot study was conducted in two groups with a total of six students from Malaysia for whom English is their second language. The pilot study was done in United Kingdom. This is because researcher has constraints in terms of time and cost to conduct the study in Malaysia. There were three students in the blog group and 3 in the wiki group. Students in this study will use computer and laptops for activities using wiki and blog. This small sample was chosen to test and get input on whether the use of mobile and communication technologies for language learning was feasible. If it proved unworkable then the research would need to be substantially modified. The entry log and the mobile phone messages related to the study were all recorded. Students were also asked to complete two questionnaires – one at the beginning of day 1 and the other at the end of day 10. The sequence is shown in Table 6.1.

Table 6.1 Quasi Experimental Design for the Pilot Study

	Pre study	**Activities during study**			**Post study**
	Questionnaire	**Texting (SMS)**	**Update learning activities on wiki**	**Update learning activities on blog**	**Questionnaire**
Experimental group 1	X	X	X		X
Experimental Group 2	X	X		X	X

6.2.1 Learning Activities

The learning activities were taken from the module used for teaching and learning in one of the higher education institutions in Malaysia. The module was chosen because the proposed main study would take place in that institution. The module is designed to acquaint students with some of the important basic writing skills such as writing a letter, memo, resume and a research paper. Only a few activities were used in the study. No modification was made to the content, however, the content delivery was designed to suit the technologies used in this study. For this purpose, storyboards were used to organise the content. Examples of storyboards are shown in Figures 6.1 to 6.3.

Title : The Fundamentals of Writing a Research Paper
Choosing a topic.

The most important thing in writing a paper is to select and clarify your topic. You need to choose a topic that:

- Fulfills the course requirements; and
- is doable

Figure 6.1 Example of learning content for the Pilot Study

Title : The Fundamentals of Writing a Research Paper

Language practice.

1. Which of the following is appropriate infinitives?

The study intends _____ the cause of the earthquake.

a. to investigate
b. investigate

Figure 6.2 Example of quiz for the Pilot Study

Title : The Fundamentals of Writing a Research Paper

Work in your group. Read the following problem.

Problem

Choosing a 'researchable' topic for your project is always a problem for a novice researcher. So, what are the steps you should take before you come up with a good topic? State the reasons for your choice and your expectations of the outcome of the research.

Publish your final answer on your site by midnight XX June 2009

Figure 6.3 Example group activity for the Pilot Study

6.2.2 Use of technologies

The technologies and activities used for this study are texting (SMS) using the mobile phone, and updating learning activities using the wiki or blog. Students received text messages during the experimental period. The messages were of five different types as shown in Table 6.2.

SMS Gateway provided by TM4B SMS Gateway (http://www.tm4b.com) was used for sending the messages to participants (see Figure 6.4). The gateway provides standard service platforms for sending and receiving SMS. For sending SMS, recipients' data can be uploaded and stored, such as phone numbers and name. Message templates can be customised and personalised. Another core function includes expiry date and time, where the researcher use this facility to set the sending and expiry time for bulk messages to the students. Another function is delivery report, which enables the sender (researcher) to get the real-time delivery status from every network. For receiving SMS, the gateway provides message handling. SMS handling determines how we want to handle the SMS, for example a response to answers given by the students. In this study, static responses were used where pre-written replies were set up, which can be sent back immediately upon receipt of an SMS.

Table 6.2 Types of SMS message and Sample of messages to participants

Purpose of SMS	Example
SMS as update reminder	Update reminder from tutor. Have you updated your site? - Tutor
SMS as cue for choosing a title	How to get the right title for your proposal: Example 1 : Weak title : Three plays by A.Samad Said Better title : A Comparison of Female Characters in Three A.Samad Said Example 2 : Weak title : Improving English Education in Primary Schools Better title : Innovative Instructional Materials to Improve English Education in Primary Schools
SMS to give multiple choice questions to support choice of title	Q1 .Which is a better title for a proposal? a). New Perspectives in Learning b). New Perspectives in Learning: A Programme to Facilitate the Retention and Graduation of Distant Learners at Open University Malaysia Q2. Which one is a better title for a proposal? a). Improving English Education in Secondary Schools b). Innovative Instructional Materials to Improve English Education in Secondary Schools
SMS to share resources such as weblinks	This link will bring you to an online quiz on tenses. Feel free to share your experience and share with your friends. You also are welcome to share any web links and resources on your site. http://www.englishlearner.com/tests/tense.html
SMS to get and give feedback to the Researcher regarding the content uploaded to wiki or blog.	How do you rate the content and presentation?. (for topic Writing Collaboratively) 1. Easy to understand 2. Moderate 3. Difficult to understand. Send your answer by typing Feedback 1 or Feedback 2 or Feedback 3 to 07712345678

The gateway provider was willing to sponsor the cost of sending bulk messages to participant during the period of study.

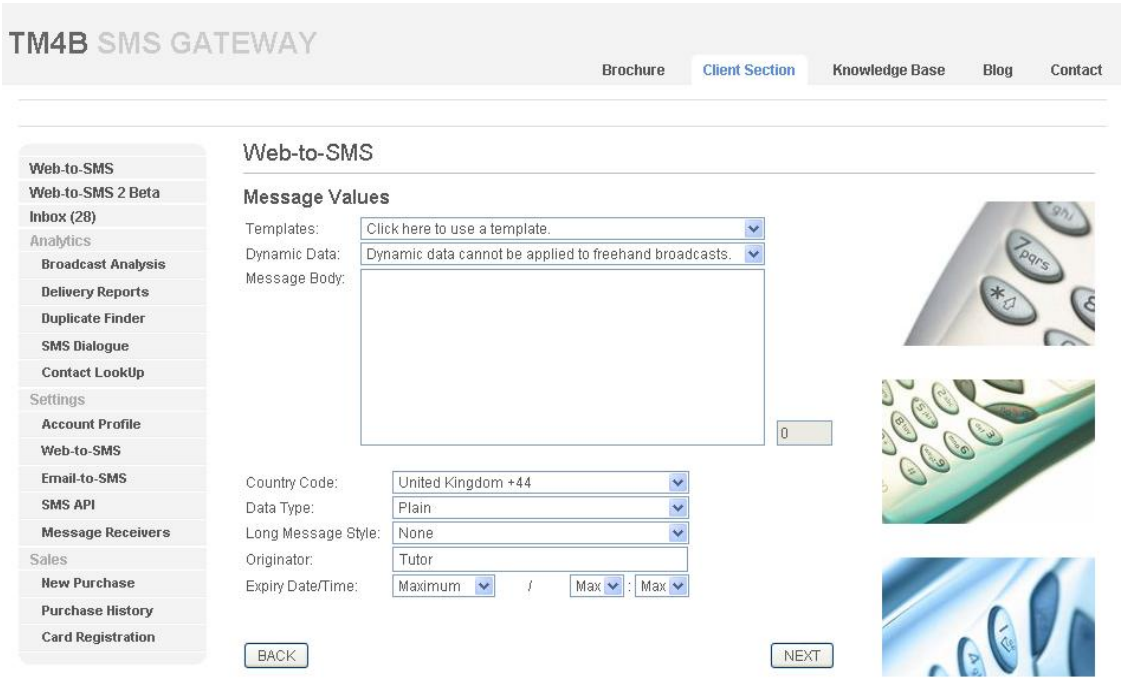
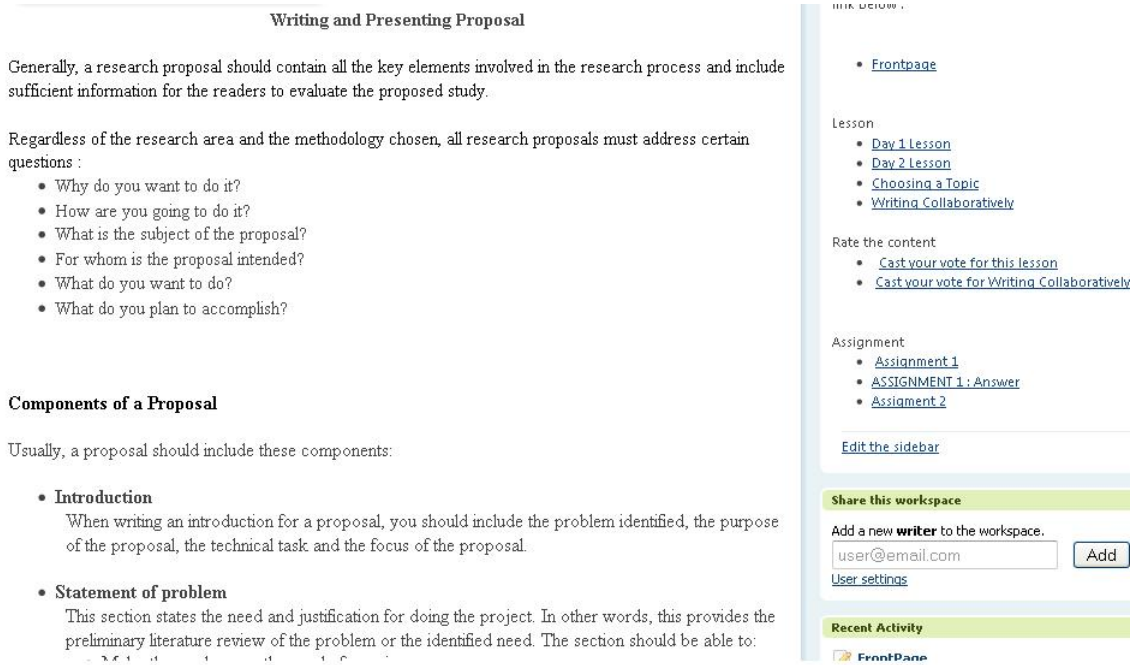


Figure 6.4 The SMS Gateway for text messaging.

In order to assess the value of the two technologies, the researcher prepared a wiki site (https://mypbworks.com) and a blog site (http://englishandwriting.blogspot.com) with the same content. The students were divided into a wiki group and a blog group. Each student needed to login with the provided username and password, and was expected to update the page according to the instructions supplied by the researcher on the wiki and blog pages. Figures 6.5 and 6.6 are examples of some of the learning activities that can be found on the wiki and blog pages.



Writing and Presenting Proposal

Generally, a research proposal should contain all the key elements involved in the research process and include sufficient information for the readers to evaluate the proposed study.

Regardless of the research area and the methodology chosen, all research proposals must address certain questions :

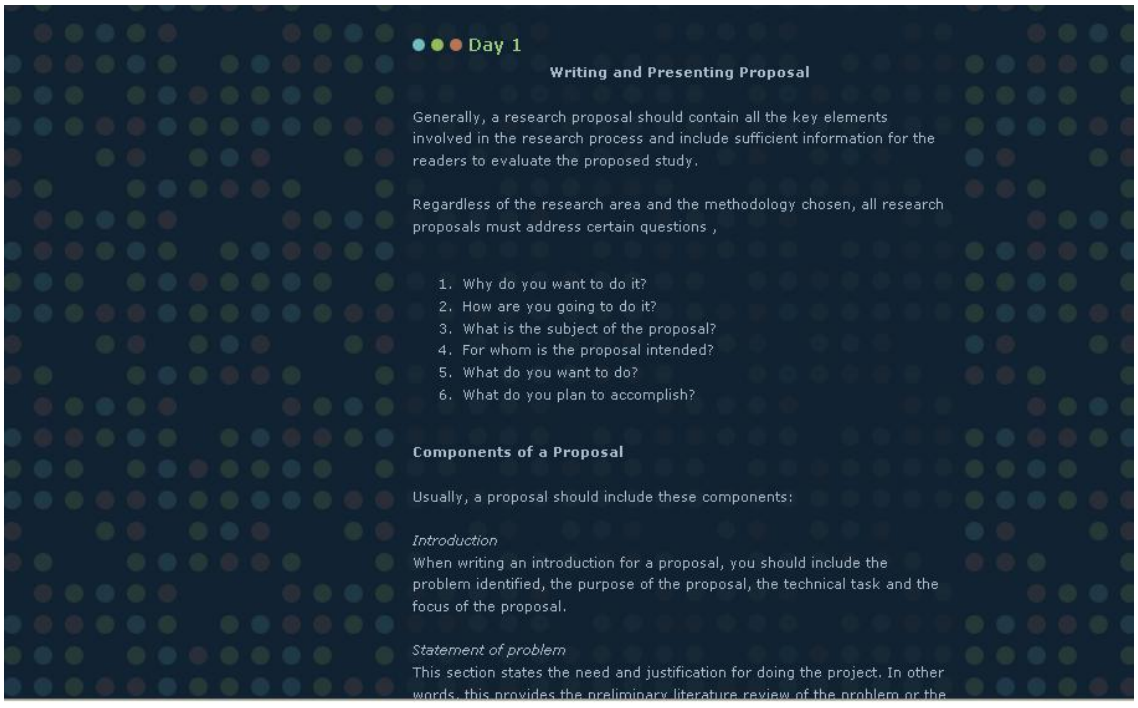
- Why do you want to do it?
- How are you going to do it?
- What is the subject of the proposal?
- For whom is the proposal intended?
- What do you want to do?
- What do you plan to accomplish?

Components of a Proposal

Usually, a proposal should include these components:

- **Introduction**
  When writing an introduction for a proposal, you should include the problem identified, the purpose of the proposal, the technical task and the focus of the proposal.
- **Statement of problem**
  This section states the need and justification for doing the project. In other words, this provides the preliminary literature review of the problem or the identified need. The section should be able to:

Figure 6.5 Wiki page for participant



Day 1

Writing and Presenting Proposal

Generally, a research proposal should contain all the key elements involved in the research process and include sufficient information for the readers to evaluate the proposed study.

Regardless of the research area and the methodology chosen, all research proposals must address certain questions ,

1. Why do you want to do it?
2. How are you going to do it?
3. What is the subject of the proposal?
4. For whom is the proposal intended?
5. What do you want to do?
6. What do you plan to accomplish?

Components of a Proposal

Usually, a proposal should include these components:

Introduction
When writing an introduction for a proposal, you should include the problem identified, the purpose of the proposal, the technical task and the focus of the proposal.

Statement of problem
This section states the need and justification for doing the project. In other words, this provides the preliminary literature review of the problem or the

Figure 6.6 Blog page for participants

6.2.3 Questionnaires

Pre and post questionnaires were developed to evaluate the student's learning experience before and after the experiment. Both sets of questionnaires mainly consisted of closed questions and one section for open ended questions. The questionnaire comprised several sections that use ranking order and a five point Likert scale. The five point Likert scale was to evaluate their perception and use of mobile and communication technologies both for learning and in general. The scale ranged from 1 for Strongly Agree, 2 for Agree, 3 for Neutral, 4 for Disagree and 5 for Strongly Disagree. The open ended section was for suggestions and opinions regarding the study.

6.2.4 Analysis of the results

At the end of the experiment the data from the pre- and post- questionnaires, SMS, blog and wiki log activities, were gathered and analysed. The results of the pilot study were used to inform the design and implementation of the main study in Malaysia. The results of the pilot study are discussed in Chapter 7.

6.3 The Main Study

The main study was conducted in a public higher education institution in Malaysia. The overall research aim remained the same as the pilot study. After conducting the pilot study and considering the modifications required, the research questions for the main study were revised to the following:

- What makes good and suitable learning activities that involve using mobile phone and communication technology for second language learning?
- Does the use of mobile phone and communication technology help to improve students' communication and collaboration skills by involving them in group activities?

- Has the experimental group's perception and use of mobile and communication technology changed after the study?
- Is there any significant difference between the control group and experimental group in terms of their perception and use of the mobile and communication technology after the experiment?
- What are the favourable learning activities using mobile devices for second language learning?

6.3.1 Design of the main study

The research method combines quantitative and qualitative approaches. It consists of pre- and post-writing tests, pre- and post-questionnaires, intervention, observation and interviews. Combining more than one research tool is known as triangulation (Rothbauer, 2008). Rothbauer further elaborated that triangulation is appropriate to reduce "biases or deficiencies caused by using only one method of inquiry". In this context, more than one research tool was used in order to provide better evaluation. Berg (1989) notes that this kind of research generally uses three methods to allow triangulation to be executed. For this study, five data gathering techniques were used.

The methods are undertaken to investigate and evaluate the experience in learning Technical Writing in English for students in a higher education institution in Malaysia. The sequence of the study is shown as below in Table 6.3.

The original institution that was going to collaborate on the main study decided to implement Mobile Learning via SMS themselves so the request to conduct the main study was declined. Another institution in Malaysia was found and the procedures to gain approval for conducting the main study was repeated and took some time. Therefore, the module used for the main study was different from the module adapted for the pilot study. The content was organised to suit the study. Example storyboards for the content and learning activities for the main study are shown in Figures 6.7, 6.8 and 6.9.

Table 6.3 Quasi experimental design for the main study

	Pre-Study		**Activities During Study**		**Post-Study**		
	Pre-Questionnaire	**Writing Test**	**Texting**	**Update learning Activities using wiki**	**Post Questionnaire**	**Writing Test**	**Interview**
Experimental Group	X	X	X	X	X	X	X
Control Group	X	X			X	X	

Based on the findings from the pilot study, pre- and post-writing tests and interviews were added to the main study.

6.3.2 Learning Activities

Both studies involved sending and receiving test messages throughout the study period. Participants also needed to update learning activities using communication technologies at their own convenience. Learning materials are taken directly from the module the participants used in their formal learning.

Figure 6.7 is a sample learning content taken from the module used in the institution. The learning content is available on wiki site which can be accessed at http://technicalcomm1.pbworks.com.

Title: Introduction

Technical communication is the process of conveying technical information through writing, speech, and other media to a specific audience. Technical communicators often work collaboratively to create products (deliverables) for various media, including paper, video, and the Internet. Deliverables include online help user manuals, technical manuals, specifications, process and procedure manuals, reference cards, training, business papers and reports.

Technical writing a form of technical communication, is a style of formal writing used in fields as diverse as computer hardware and software, chemistry, the aerospace industry, robotics, finance, consumer electronics, and biotechnology. Technical writers explain technology and related ideas to technical and nontechnical audiences. This could mean, for example, telling a programmer how to use a software library or telling a consumer how to operate a television remote control.

Figure 6.7 Sample learning content for the main study.

An objective of this module is to emphasize writing skills specifically for report writing. Figure 6.8 is a sample quiz taken from the module.

Hello BLHW 2402 student,

The structure of a proposal should be _____

a. Introduction, Statement of problem, Objectives, Plan of Action and Management Plan
b. Introduction, Statement of problem, Plan of Action, Objectives and Management Plan
c. Introduction, Objectives, Statement of problem, Plan of Action and Management Plan

.

Figure 6.8 Sample quiz for the main study

Students in an experimental group were asked to work collaboratively as a group. They needed to log on to the wiki site and answer the questions posted to the site on a weekly basis. In the group activities (see Figure 6.9) students were expected to discuss and answer the questions in the comment section at the bottom of the page.

Activity Week 1

Publish your answer in your wiki group by XX Month 2009.

1. Time is a river flowing from nowhere through which everything and everyone move forward to meet their fate
2. Time is a convention of measurement based on the microwave spectral line emitted by cesium atoms with an atomic weight of 133 and an integral frequency of 9, 192, 631, 770 hertz.

What are the differences that you can identify from both excerpts? Which can be considered as a part of technical writing?

Figure 6.9 Sample group activity for the main study.

6.3.3 Use of Technologies

For the learning activities in the main study, the participants would use mobile phones to receive and send messages, and wiki to update and collaborate with their group mates. The types of messages and quizzes are modified based on the findings from the pilot study. The messages are arranged in the order that matches their formal learning

schedule (see Figure 6.10). For the students in the experimental group their lesson related to this module takes place on Tuesday morning.

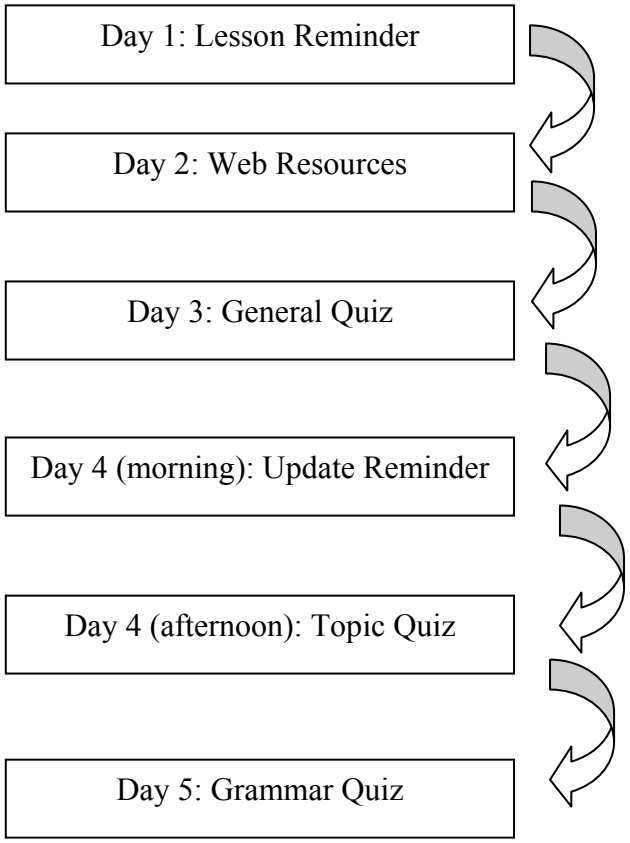


Figure 6.10 Structure of the messages

The types of messages are taken from the module and modified to match the activities with mobile phone and wiki. The messages were sent out every week. Examples are shown in Table 6.4.

Table 6.4 Types of messages for main study

Type of SMS	Examples
SMS as lesson reminder	Hello student, this is what you have learned in BLHW 2402 this week. Technical communication is the process of conveying technical information through writing, speech, and other media to a specific audience. Technical writing as a form of technical communication is a style of formal writing and explains technology and related ideas to technical and non-technical audiences. Components of a proposal include Introduction, Statement of problem, Objectives, Plan of Action and Management Plan
SMS to student web resources	Hello BLHW 2402 student, some links that you can use as reference. http://www.sussex.ac.uk/engineering/1-3-11-2.html http://www.io.com/~hcexres/textbook/models.html
SMS to student General Quiz	Hello BLHW 2402 student, Which one is the URL address for the university virtual library? http://utem.edu.my http://library.utem.edu.my http://library.edu.my
SMS to student Topic Quiz	Hello BLHW 2402 student, The structure of a proposal should be _____ Introduction, Statement of problem, Objectives, Plan of Action and Management Plan Introduction, Statement of problem, Plan of Action, Objectives and Management Plan Introduction, Objectives, Statement of problem, Plan of Action and Management Plan
SMS to student Grammar Quiz	Hello BLHW 2402 student, Choose the correct answer. Many of our customers have been _____ about your Central Locking Systems. a. complains b.complaining c. complained

The format for replying messages was as follows:

SMS hanum_905 [keyword]

send it to 32355

For the main study, the SMS gateway (www.websms2u.com) was used to send bulk messages to participants (see Figure 6.11). Messages were sent from Malaysia and could reach all networks used in Malaysia. The sample screenshots of the quiz sent to the mobile phone are as follows (see Figure 6.12):

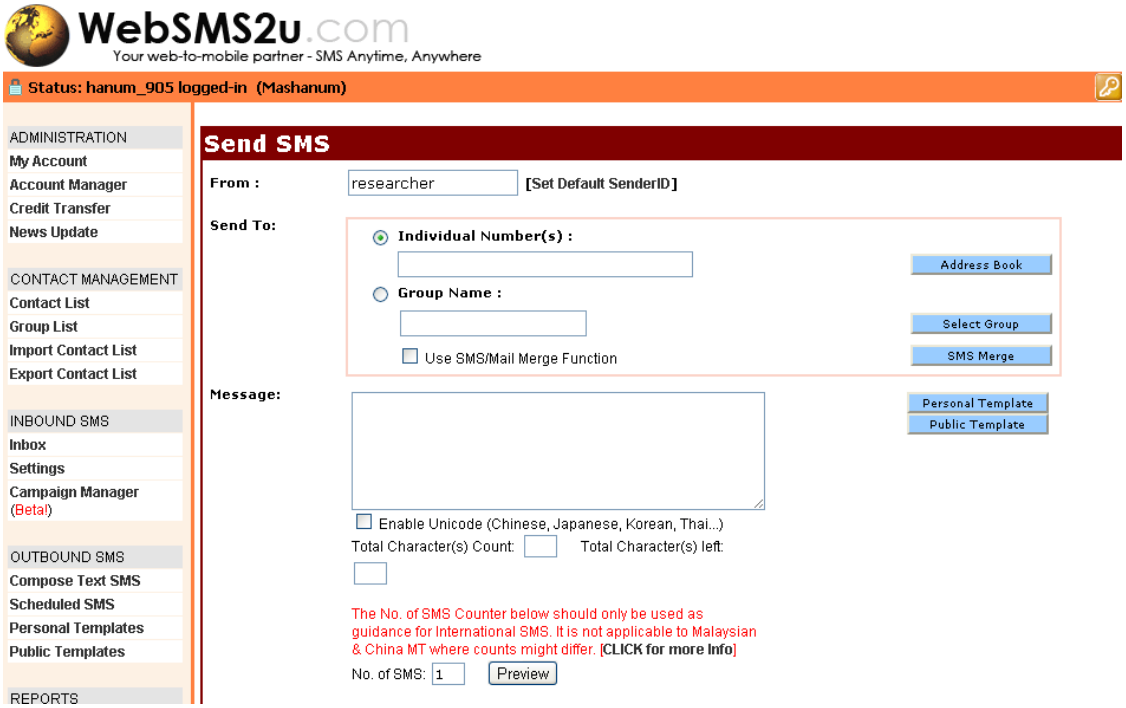


Figure 6.11 The SMS gateway service in Malaysia

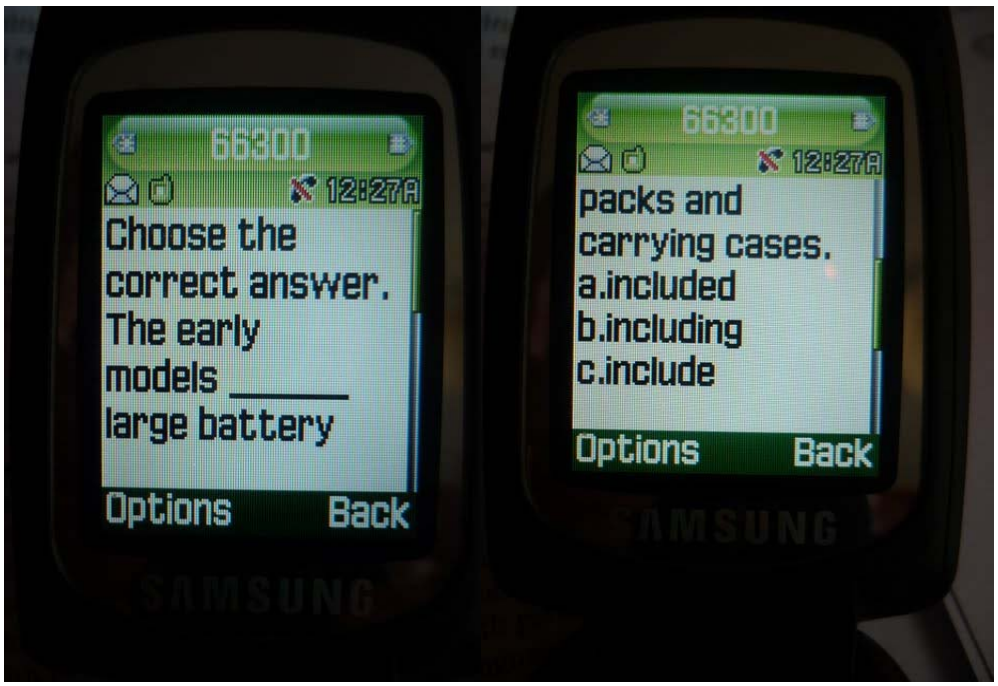


Figure 6.12 Participants's view page

For updating the learning activities, participants used wiki as their platform.

The researcher prepared a wiki site (http://technicalcomm1.pbworks.com). Each participant needed to log in with the username and password provided. Participants

were expected to update the page according to the instruction supplied by the researcher. Figure 6.13 is an example that could be found on wiki site.

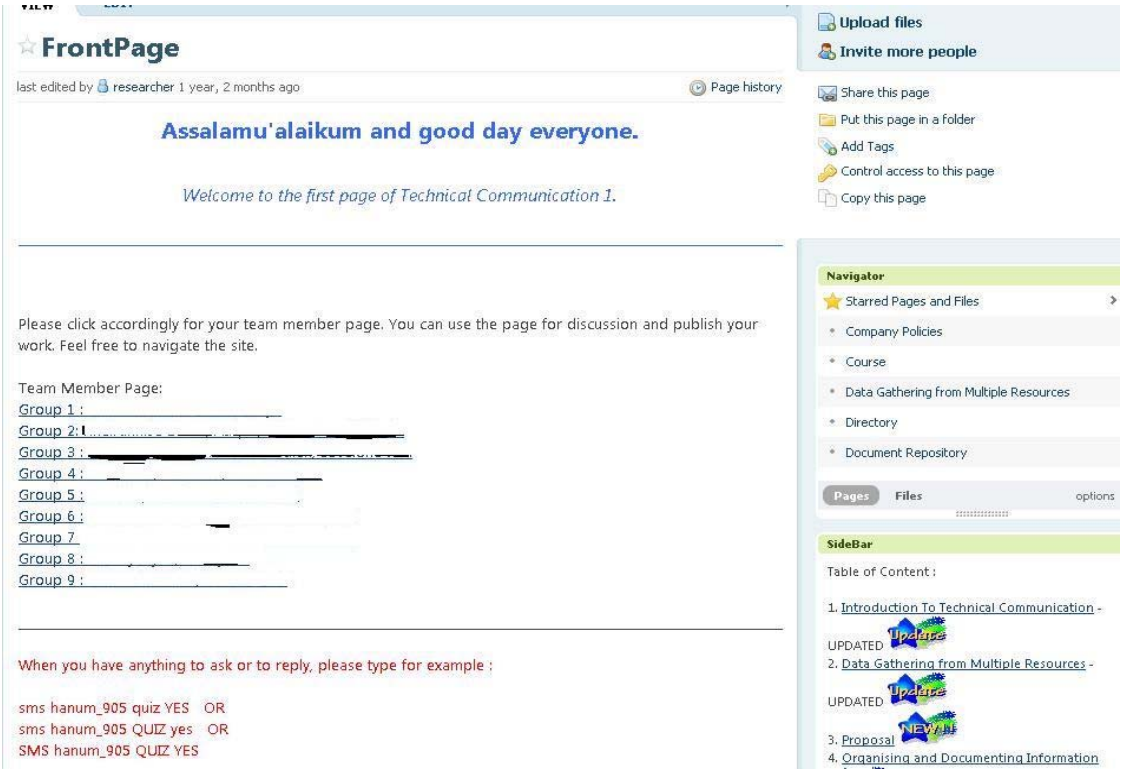


Figure 6.13 Wiki snapshot (team members' names have been removed)

6.3.4 Analysis of the results

Data gathered from the questionnaires and writing tests were entered into SPSS, a statistical package. Statistical tests were used to look for any significant differences between the experimental and control groups. In this study the t-test and Wilcoxon Signed Rank test were carried out to look for any significant differences as mentioned above.

The logs gathered from the SMS and wiki activities were analysed to evaluate and identify any learning preferences or patterns. The interviews with selected students from the experimental group and with the module lecturer provided further data for analysis. Thematic analysis was used to further analysed the interviewed data to gather general key themes related to the study.

6.4 Summary

The focus of this study was to design learning activities using mobile phone and communication technologies, in order to help improve students' communication and collaboration skills through involvement in group activities, and to evaluate the effects of using mobile phone and communication technology in learning activities. The study was aimed at Malaysian students in higher education. The students were selected from two different Information Technology undergraduate courses, in a Malaysian public university. The students of both these courses studied the same English module throughout the whole of the experimental period. The module was taught by the same lecturer; however the groups belonged to different classes.

7 Pilot Study

7.1 Introduction

This chapter discusses the pilot study that took place over 10 days. The purposes of the study were to:

- design language learning activities that involve using mobile and communication technologies to engage students in learning,
- help improve students' communication and collaboration skills by involvement in group activities,
- evaluate the effects of using mobile and communication technology in learning.

The research questions that guided this pilot study were:

- Is the use of mobile and communication technologies feasible for different language learning activities?
- Are there noticeable differences in learning using wikis and using blogs?
- Are the students benefiting from using the communication technologies and texting in order to communicate and collaborate with their group mates?
- Do students benefit from receiving lesson reminders and quizzes on their mobile phones to help in learning?

The results were used to inform the design of the main study. As mentioned in the previous chapter, there were six participants from Malaysian contacts residing in UK for whom English is their second language. They were divided

into two groups: the wiki group and the blog group. Each group had three members that worked together during the investigation. They answered two questionnaires, one at the beginning of day 1 and the other at the end of day 10. During the experiment, they received text messages, and were expected to reply to some text messages and update the wiki or blog according to their learning activities at their convenience. The findings from analysing the questionnaires and blog and wiki entries are presented below. The chapter ends by summarising the lessons learned and the necessary modification for the main study.

7.2 Pre-study questionnaires and results

The pre-study questionnaire mainly consisted of closed questions with an open-ended question at the end of the questionnaire. This questionnaire comprised of seven sections to obtain information about the participants:

- Background and their preferred study location.
- Preferred devices to get online and their favourite activities with a mobile phone.
- Experience of using wikis, blogs, mobile phones and other activities related to communication technology before the experiment.
- Experience of using wikis, blogs, mobile phone and other activities related to communication technology before the experiment, particularly for learning.
- Perception and use of mobile phones in general.
- Perception and use of mobile phones for learning.
- Opinions and suggestions regarding the questionnaires and the research, if any.

The sample was too small for statistical analysis, but mean and standard deviation were calculated for relevant questions.

7.2.1 Demographics

The answers to the questions related to demographics are summarised in tables 7.1, 7.2 and 7.3. Table 7.3 indicate library and home as the most preferred (1 as most favourite to 5 least favourite) location for studying.

Table 7.1 Participant demographic

Age	Total	Gender	Total
18	5	Male	1
21	1	Female	5

Table 7.2 English language

Is English your first language?	Total
Yes	0
No	6

Table 7.3 Preferred location for studying .

Location	Mean	Std. Deviation
Library	2.00	1.10
Home	2.17	1.47
University	2.83	1.47
Internet café	3.83	0.98
Others : park , open places	4.27	0.98

7.2.2 Learning Preference

The students were asked about their learning preferences in terms of devices to get online and mobile phones activities. The respondents preferred to get online using their own desktop or laptop either at home or university. Low standard deviation (SD) indicates the data tend to be very close to the mean. This shows

most of the students preferred to use a desktop computer at home or in a library. Using a mobile phone is also favoured at this stage (Table 7.4).

In terms of preferred activities when using mobile phones, the most preferred activities are chatting with friends and texting to friends. The least preferred activities are contacting and texting the tutor (Table 7.5). The result indicates that students like to interact with their friends using short messages.

Table 7.4 Preferred device to get online.

Device	Mean	Std. Deviation
Your own desktop computer at home	1.67	0.82
Your own laptop computer at home	1.67	0.82
Your own laptop at university	3.67	1.03
A mobile phone	3.83	1.47
A computer in a pooled computer room in university	4.33	0.82
Others (please specify) : other's laptop	5.83	0.41

Table 7.5 Preferred activities using mobile phone.

	Mean	Std. Deviation
Texting friends	1.67	0.82
Chatting with friends	2.00	0.89
Texting university friends	3.50	1.05
Chatting with university friends	3.83	1.33
Texting resources such as web link with friends	5.67	1.21
Texting tutor	6.00	1.26
Contacting tutor	6.50	0.55
Others (please specify) : listening to music	6.83	2.86

7.2.3 Use of communication technology in general

The students were asked about their use of mobile and communication technology in general. The three most common activities were watching online videos, uploading videos, audio or graphics onto the web, and edited video, audio or graphics: see Table 7.6.

Table 7.6 Preferred activities ONLINE in the past 3 months.

Activities	Mean	Std Deviation
Watched online videos (e.g. YouTube, Google Video etc)	2.00	1.26
Uploaded video, audio or graphics onto the Web	2.33	1.03
Edited video, audio or graphics online	2.33	1.03
Contributed to your own blog	2.50	0.84
Posted comments to a blog	2.67	1.03
Created your own blog	2.83	1.33
Shared files online with your friends	2.83	0.41
Contributed to others' wiki space	3.67	1.51
Downloaded a pod cast	4.50	1.76
Created your own wiki space	4.83	0.41
Contributed to your own wiki space	4.83	0.41

7.2.4 Use of mobile and communication technology for learning

Regarding the use of mobile and communication technologies for learning purposes, the top 2 most common activities are searching for learning resources, and doing quizzes or self-assessment exercises related to their study. Using learning resources to improve English skills is in fifth place.

Table 7.7 Frequency of doing activities ONLINE in the past 3 months.

Activities	Mean	Std deviation
Searched for learning resources	2.00	0.89
Done quizzes or self-assessment exercises related to your study	2.17	0.98
Read online learning materials	2.50	0.84
Searched for learning resources other than for your university course	2.50	1.52
Used learning resources to improve English skills	3.33	0.82
Shared learning resources (e.g. bookmarks, web links) with friends	3.67	1.22
Worked with other students using blog	4.00	1.09
Worked with other students using wiki	4.00	1.09

7.2.5 Perceptions and use of mobile phones in general

The students were asked about their use of mobile phones in general. The one received the highest rating is *"I concentrate longer when listening to audio with my mobile phone"* followed by *"I enjoy texting friends using my mobile*

phone". This shows that beside texting, students also used their mobile phones to listen to audio, claiming it helped them in their concentration.

Table 7.8 Perceptions and use of mobile phone in general.

Activities	Mean	Std deviation
I concentrate longer when listening to audio with my mobile phone	2.17	1.17
I enjoy texting friends using my mobile phone	2.33	1.03
I enjoy communicating with my friends using my mobile phone	2.50	0.84
I feel comfortable working with a mobile phone	3.17	1.60

7.2.6 Perceptions and use of mobile phones for learning

Finally, the students were asked about their use of mobile phones for learning. *"I like to receive and answer multiple choice questions on my mobile phone for learning"* was the most preferred activity. At this stage they perceived that this was a good thing even though they had not experienced it in practice.

Table 7.9 Perceptions and use of mobile phone in learning

Statements	Mean	Std deviation
I like to receive and answer multiple choice questions on my mobile phone for learning	1.67	1.03
I would work more efficiently if I could use my mobile phone more often in learning	1.83	0.75
I like to receive links on my mobile phone for learning	1.83	0.98
I like to receive reminders on my mobile phone for learning	2.00	1.26
I appreciate receiving lesson reminders from my lecturer on my mobile phone	2.17	0.98
I like to text information such as web links to my friends	2.17	1.33
I think that it takes a long time to learn a language when using a mobile phone	2.33	1.03
I like to receive texts on my mobile phone for learning purposes	2.50	1.38
I consider that mobile phones give me opportunities to learn English language better	2.67	0.82
I would immediately delete reminders sent to my mobile phone from my lecturer	3.33	1.03

7.2.7 Summary

The results show that the use of mobile and communication technologies is favoured in general. The students enjoy chatting and receiving text messages on their mobile phones. The perception of using mobile phones for learning is positive. However the students have no experience in using a blog or wiki.

7.3 Activities during the study

During the intervention period, the students received text messages and were expected to complete the learning activities using the communication technologies assigned to them, and to reply to some of the text messages. Wiki and blog were used for updating learning activities. The students were divided into a texting and wiki group, and a texting and blog group. The researcher gave each of the six students a sim card and top-up vouchers for the experiment so that the cost of texting does not become an issue.

7.3.1 SMS Activities

The messaging activities extended from Day 1 to Day 10. The content of the messages was adapted from a module used in one of the higher educational institutions in Malaysia. Some of the messages needed a reply.

Table 7.10 Summary of SMS activities

Day	Messaging Activities	Percentage replied
1	Update reminder	No reply required
2	Lesson reminder	No reply required
	Short quiz	**33%**
3	None	
4	None	
5	Update reminder	No reply required
	Required feedback from student on learning material	**50%**
6	Giving resources such as weblinks	No reply required
7	**Short quiz**	**50%**
	Giving resources such as weblinks	No reply required
8	None	
9	Lesson reminder	No reply required
	Required feedback from student on learning material	**67%**
10	**Short quiz**	**50%**

A total of 9 messages were sent out by the researcher. Table 7.10 shows that two students answered the quiz sent on day 2 followed by three students on day 7 and day 10. A third student did reply to the quiz sent on day 2, but unfortunately the researcher limited the format of answering the quiz. Students had to begin their text reply with "Quiz1". If the students did not type "Quiz1" then the text did not reach the researcher's inbox. This limitation affected the process and the study. Giving feedback on the learning material had the highest response, and it was designed to ask students to rate the content and presentation of the learning material posted on wiki and blog pages. This is in line with the findings from the questionnaires where they rated giving feedback as the most preferred activities. On day 9 and day 10 of the intervention, the replies were still encouraging, with an increased percentage for feedback from students. Out of the six students participating in the study, one had no interest to reply to the messages and did respond. Another student switched on the phone and followed what was happening but did not feel it was important to reply to the messages. In summary, the response rate indicates that sending messages on mobile phone did engage some of the students to read and learn.

7.4 Wiki and Blog activities

Besides receiving and replying to SMS, participants were expected to update learning activities using either wiki and blog depending on which group they belong to. The purpose of this was to encourage them to work as teams and collaborate with each other while updating their learning activities.

Figure 7.1 and Figure 7.2 are samples of blog and wiki screenshots respectively of the Day 1 material done by the researcher for the students.

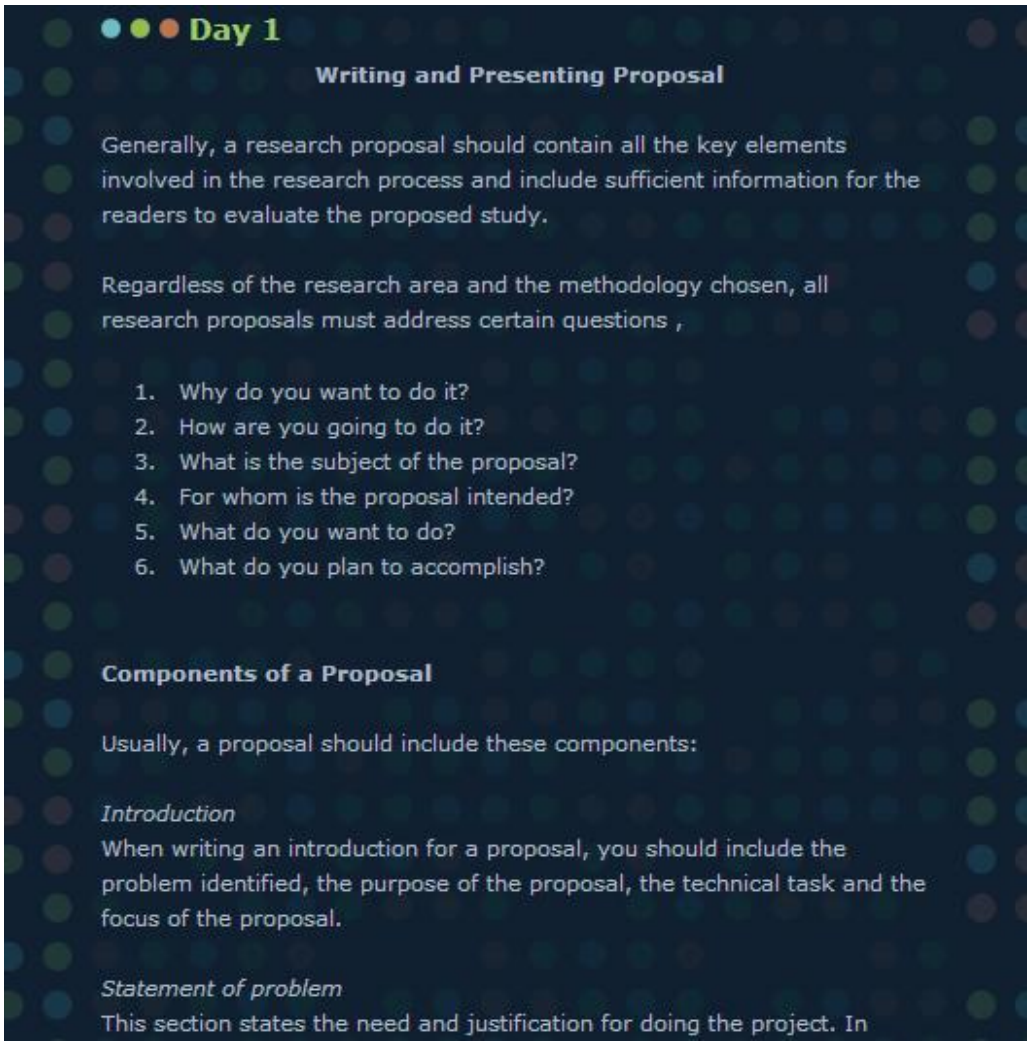


Figure 7.1 Screenshot of blog entry on Day 1

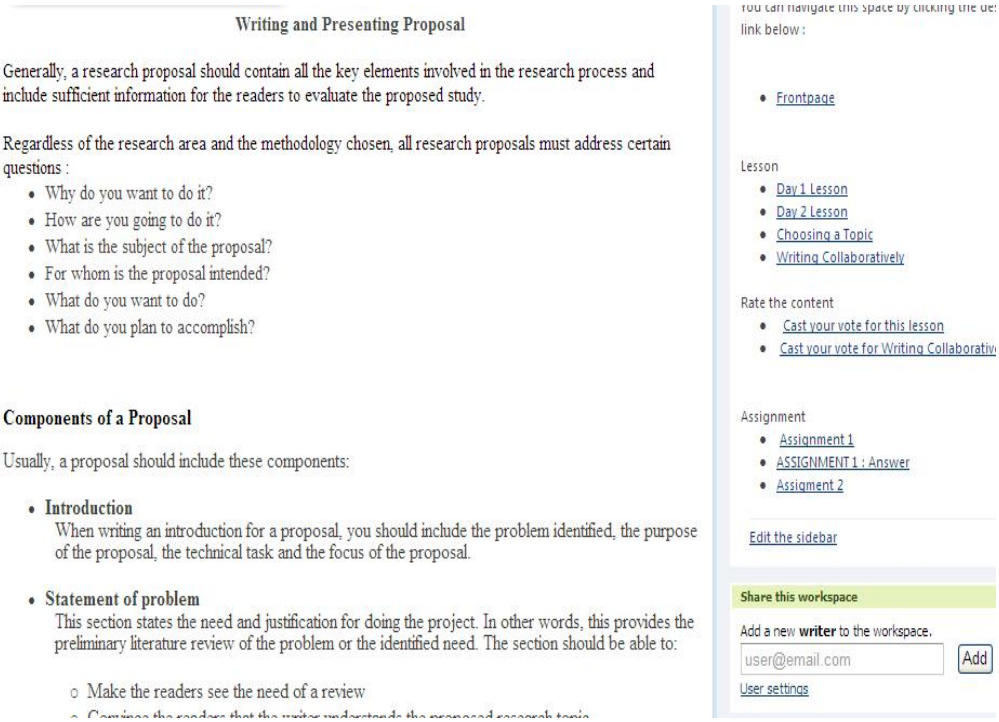


Figure 7.2 Screenshot of wiki entry on Day 1

Student B from the wiki group left a comment as follows:
"woot2..i'll keep that in mind..I may even use it for my blog..;)
thanks..:D "

After the 'ice breaker' entry, the researcher asked the students to introduce them to other group members and also texted them lesson and update reminders. Then the students from both groups started to leave comments on the blog and wiki. The entry logs show that by texting reminders to students the responses tended to increase.

There were two assignments for this study. Figures 7.3 and 7.4 are screenshots of the blog and wiki pages respectively for assignment 1.

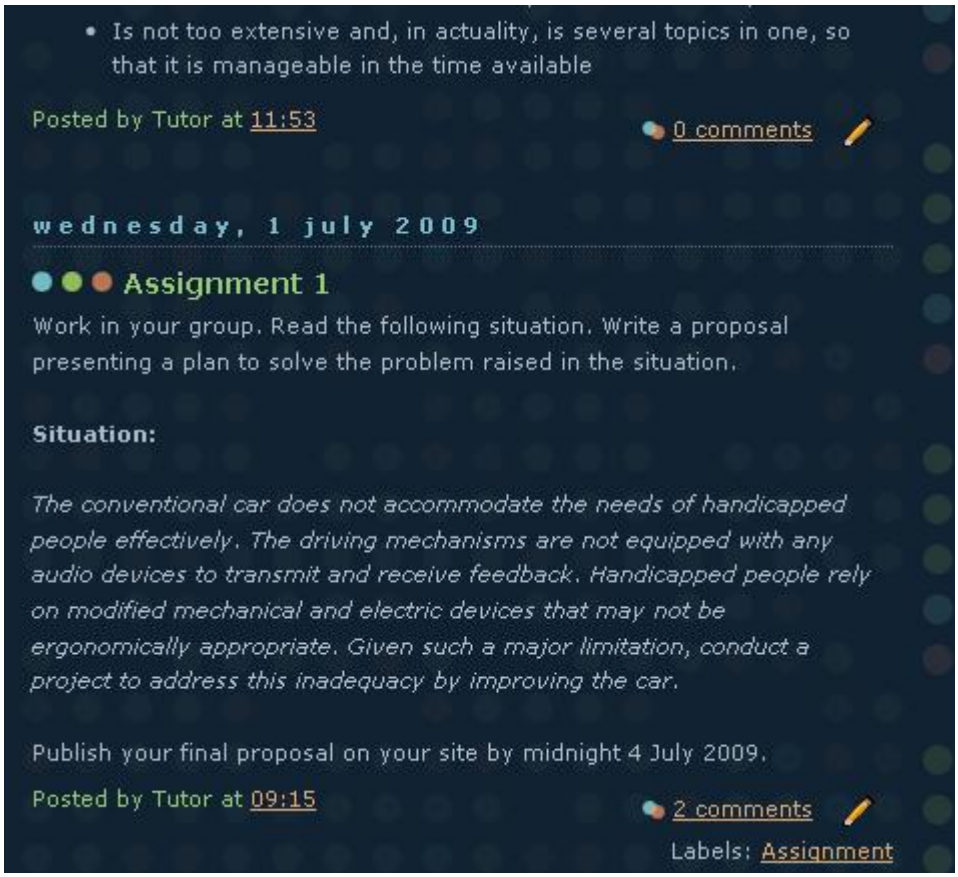


Figure 7.3 Assignment 1 entry by tutor in blog.

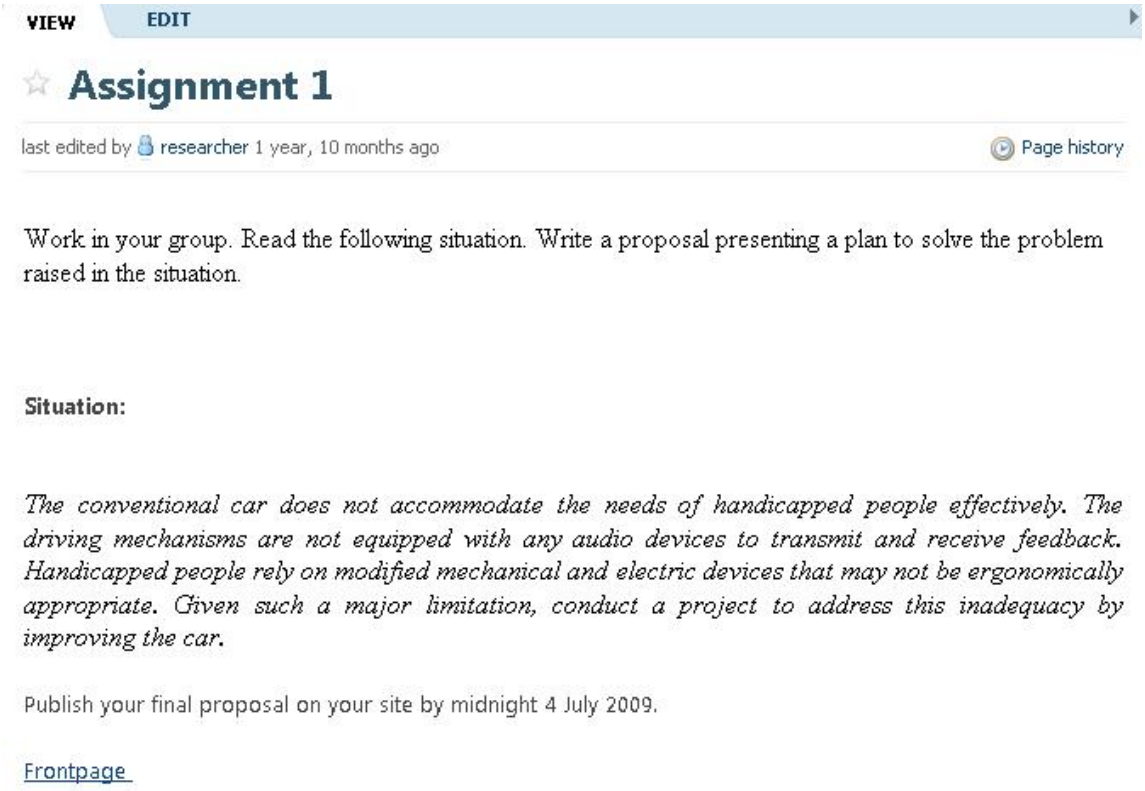


Figure 7.4 Assignment 1 entry by tutor in wiki.

Figure 7.5 is the screenshot from a blog entry, where student C commented on the last day of the study that she could not understand the problem Neither group published their answer. However, there was more discussion in the wiki group (see Table 7.10).

Figure 7.5 Student C's feedback on the entry, the only reply and feedback made by the student in the blog group.

Table 7.11 Summary of the students' activities using blog and wiki

	Page view count		**Give Comments and Feedbacks on Learning Material**	
	Blog Group	**Wiki Group**	**Blog Group**	**Wiki Group**
Student A	9	27	2	5
Student B	9	81	1	10
Student C	13	4	2	0
Total	31	108	5	19

Perhaps because of time constraints, the students did not finish the task and publish their solution. Figure 7.6 is a snapshot from the wiki students. They discussed among themselves by asking questions about the assignment. In Figure 7.7, Student B wrote

"Just some points..not laid in essay format or anything..soz (:

Introduction

Problem with situation:
The driving mechanisms are not equipped with any audio devices to transmit and receive feedback. Handicapped people rely on modified mechanical and electric devices that may not be ergonomically appropriate.

hurmm..can I ask for the deadline 2 b extended please?? (: T.T “

Student A responded to student B and wrote,
“ I don't really know how to present the proposal but i just write down some sources that I found on the Internet.

This is the website that I found :
http://www.motabilitycarscheme.co.uk/main.cfm?Type=CQGP

More adaptations and improvement can be found for handicapped people to make their life easier....
adaptations such as push/pull hand control, radial accelerator, steering wheel ball and etc can be installed inside the car or better handicapped people can buy a car that already installed those adaptations.”

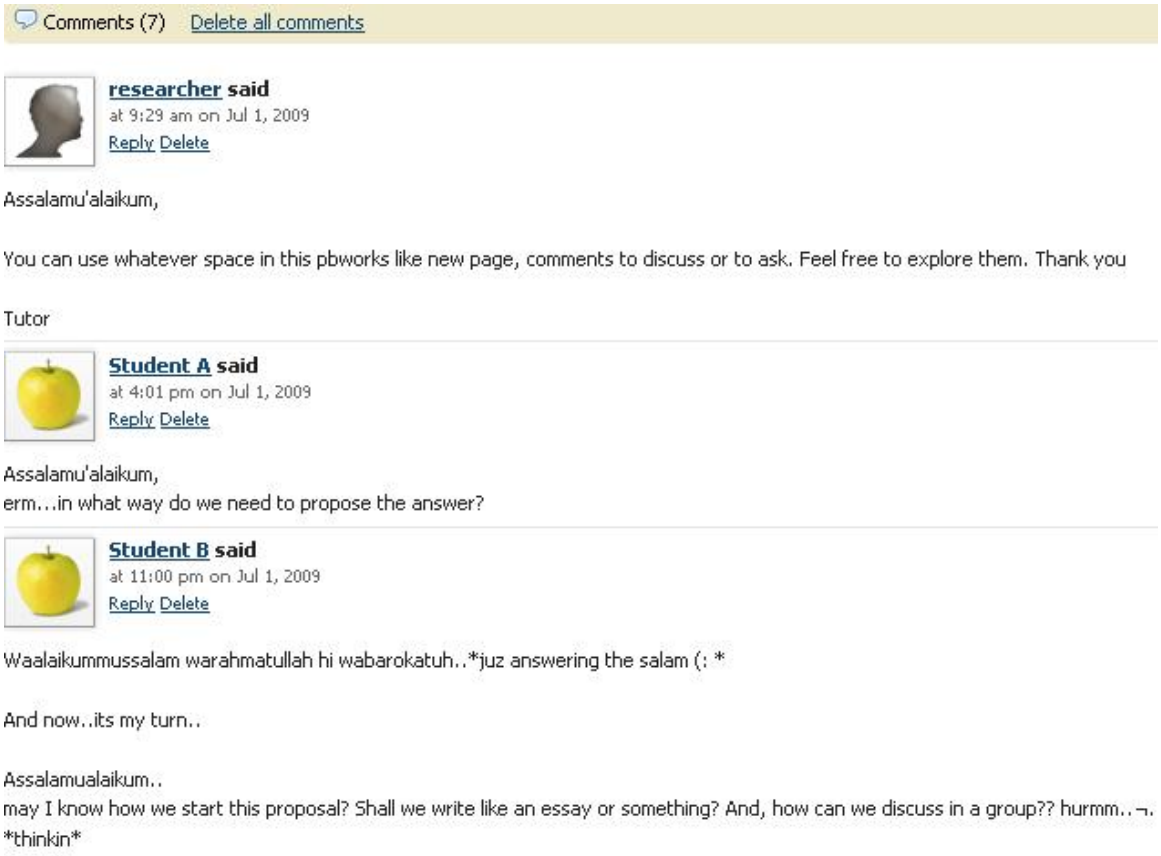


Figure 7.6 Students in wiki group asking each other for clarification.

7.4.1 Summary

From the students' feedback it appears there is collaboration on the wiki platform. They seem to be comfortable to use wiki for discussion purposes even though there is no final answer written on the wiki page. In contrast, students' view and feedback from the blog group were not so active which at this point we can see that they are more engaged with the wiki than with blogging.

7.5 Post-study questionnaires and results

The post-study questionnaire was completed by the students on the last day of the study. It was organised using similar themes as the pre-study questionnaire. However, additional sections were added to gather students' favorite learning activities during the experiment, their perception and use of wiki and blog for learning, and in the open ended section the students were asked whether the use of technologies enhanced or hindered their learning experience.

7.5.1 Study location

For this section, we wanted to know if their preferred studying location had changed. From Table 7.12, respondents still preferred to study at home followed by the library.

Table 7.12 Preferred location for studying.

Location	Mean	Std. Deviation
Home	1.50	0.84
Library	2.17	1.17
University	2.83	1.17
Internet café	4.00	0.63
Others : restaurants(1) , in a park(1)	4.50	0.84

7.5.2 Learning Preferences

This section asked which activities they did most when online. Out of nine activities in table 7.13, 83% preferred reading learning material on the blog or wiki, followed by receiving text messages as an update reminder, receiving text messages as a lesson reminder, updating a blog or wiki entry, and receiving quizzes on the mobile phone. Giving feedback to the tutor was least preferred by the students.

Table 7.13 Preferred activities during the experiment.

	Mean	Std. Deviation
Reading learning material on the blog or wiki	1.17	0.41
Receiving text messages as update reminder from tutor	3.17	1.17
Updating blog or wiki entry	3.67	1.86
Receiving text messages as lesson reminder	3.83	1.47
Receiving quizzes on the mobile phone	4.50	2.07
Discussing with group mates using the blog or wiki	6.00	1.90
Sharing resources using the mobile phone	6.50	1.22
Giving feedback to tutor	7.17	0.98
Others (Please specify)	9.00	0.00

Table 7.14 is looking into student's activities during the study. The mean result showed that reading learning material on the blog or wiki is the most frequent activity done by the students, followed by using a mobile phone to give feedback on learning material, read lesson reminders, and answer short quizzes.

Table 7.14 Frequency of activities done during the study.

Activity	Mean	Std deviation
Reading learning material on your blog or wiki	2.17	0.98
Giving feedback on learning material using mobile phone	2.67	1.51
Reading the lesson reminder	2.83	0.41
Answering the short quizzes sent to you using the mobile phone	3.00	1.79
Contributing to your blog or wiki spaces	3.17	1.33
Posting comments to your blog or wiki spaces	3.17	1.60
Using texting to communicate with your friends	3.17	1.33
Reading the update reminder and update the activities as soon as you can	3.50	0.55
Collaborating with group mates in discussion using the blog or wiki	3.50	1.38
Collaborating with group mates in writing and finishing the task given	4.00	1.09
Sharing files online with your friends	4.17	0.98
Downloading a podcast and other web links	4.17	1.60
Deleting all the reminders sent to you immediately	4.33	0.82

7.5.3 Perceptions and use of mobile phone in general

One question in this section looked at perceptions and the use of mobile phones in general (see table 7.15). The answers started from the most preferred which is *I like to receive a reminder in a certain period of time to the least preferred, which is the tutor should send me more reminders.*

Table 7.15 Perceptions and use of mobile phone in general.

Statement	Mean	Std deviation
I like to receive reminder in certain period of time	2.33	0.82
I enjoy texting to friends using mobile phone	2.67	0.82
I enjoy communicating with my friends using my mobile phone	3.00	0.00
The Tutor should send me more reminders	3.17	0.98

7.5.4 Perceptions and use of mobile phone for learning

The questions for this section considered the use of mobile phone from a learning perspective. Students liked to learn and get reminders from tutor using the mobile phone. The top five answers (see Table 7.16) ranged from "*I appreciated receiving lesson reminders from my tutor on the mobile phone"," I would work more efficiently when I used a mobile phone in learning", "I consider that a mobile phone give me opportunities to learn language better"* to "*I liked receiving texts on my mobile phone for learning purposes*."

Table 7.16 Perceptions and use of mobile phone for learning.

Statement	Mean	Std.deviation
I appreciated receiving lesson reminders from my tutor on the mobile phone	2.17	0.75
I worked more efficiently when I used my mobile phone in learning	2.33	1.21
I considered that a mobile phone give me opportunities to learn language better	2.50	1.22
I liked receiving and answering multiple choice questions on my mobile phone for learning	2.50	1.37
I liked receiving texts on my mobile phone for learning purpose	2.67	0.52
I liked receiving reminders on my mobile phone for learning	2.67	0.52
I liked receiving link on my mobile phone for learning	2.67	0.52
I liked texting information such as web links to my friends	2.67	1.03
I deleted reminders from my tutor immediately	4.33	1.03

7.5.5 Perceptions and use of communication technologies for learning

Most of the respondents agreed that the use of wiki and blog is an effective means for collaboration and group work. This is followed by providing better access to the tutor, and creating more interaction between student and tutor (see Table 7.17).

Table 7.17 Perceptions and use of communication technologies for learning.

Statement	Mean	Std.deviation
Social networking (e.g. Wiki and blog) is an effective means for collaboration and group work	1.83	0.75
Social networking provides better access to the tutor	2.17	0.98
The use of social networking creates more interaction between student and tutor	2.33	1.03
The use of social networking helps the student to learn more	2.33	1.21
The use of social networking makes the students feel more involved	2.50	1.04
The use of social networking makes learning a subject more interesting	2.66	1.03
The use of social networking helps provide a better learning experience	2.83	0.98

Finally, two open ended questions were asked towards the end of the questionnaire. The first question was *Did the use of any of the technologies enhance or hinder your study experience? Please explai*n. Question two was

2a.Feel free to include your comments and suggestions either regarding the study or the questionnaire in the space below.

2b.Did the use of any of technologies enhanced or hindered your study experience? Please explain.

Here is a selection of comments from the students.

Positive comments:

"technologies enhanced study experience"
"Lots of information that can be used"
"Easy to find information that leaner want in shorter time"
"Phone made it fun to answer questions and quizzes but costs money – discourage some people"

Negative comments:
"Have to delete previous texts in order to receive new tests, thus loss previous notes"
"Time consuming"
"Hindered learning experience because the note and setup is difficult to understand"

Recommendations:
"Long text messages – recommend to split into 2 sms"
"Give training and examples"
"Website should be colorful and appealing"
"Include images or videos for visual learners"

The students gave positive and negative feedback. They agreed that the use of technologies enhanced their learning experience, and that it was fun to receive quizzes on the mobile phone. However it could be discouraging for some where it incurs costs to them, besides it was hard for them to use the technology and the content was difficult to understand. Thus, they recommended having training and examples, split the text message into two instead sending one long message. And for the wiki and blog, students recommended that the website should be colourful and appealing.

From the results gathered from the post-study questionnaire, respondents still preferred to study at home and the use of mobile phone and communication

technologies did not affect their study location. During the experiment, respondents liked to read learning material on the wiki and blog. This signals that the introduction of wiki and blog for language learning is acceptable. They also liked and wanted to receive text messages for language learning. At this point, the results indicate the use of mobile phone and communication technologies for language learning has potential.

7.5.6 Analysis and observation

Some interesting observations can be made from the questionnaires. Before the study, it appeared that the participants had little or no idea about what is a wiki or a blog. Most of them had never created and contributed to a blog or wiki. One of them owns a mobile phone but did not use it for the study. Two of them own a mobile phone but needed to reactivate the line. The remaining three are active users of mobile phones, which they use for chatting and texting their friends.

Before the study, we asked about their perceptions and use of mobile phones both for learning and in general. In general, the majority agreed that they concentrate longer when listening to audio but are not sure whether they are comfortable using a mobile phone for work. For learning purposes with a mobile phone, they agreed with 9 out of the 10 statements given, which led to the conclusion that they like learning activities using the mobile phone. They were not sure whether they would delete reminders sent by tutor to their mobile phone immediately.

During the study, the students had the chance to use a blog and wiki together with texting. The majority of them preferred to read materials on the wiki and blog, followed by updating wiki and blog and receiving texts on their mobile phone. This shows that the students had gained an interest in using a new type

of communication technology. The majority of the participants agreed to receive texts for reminders and quizzes, but they didn't like sharing resources, for example sharing URLs and downloading web links using their mobile phones. They were also not in favour of receiving many reminders.

Participants ranked highest the statement that the use of communication technologies is an effective way for collaboration. However, in the study they did not manage to publish their work on a blog or wiki. This could be that they did not have enough time to work on the assignments and they did not understand the instructions provided on the wiki and the blog.

The majority of the students agreed the use of mobile and communication technologies can help them in learning and they have a positive attitude towards the technologies. Mobile and communication technologies complement each other, since some of the activities cannot be catered for by mobile phone usage alone, and vice versa. Therefore it is feasible to implement the use of mobile phone and communication technologies for language learning.

7.6 Conclusions and Lessons Learned

The pilot study highlighted problems that need to be addressed and necessary modifications to be made. The sample was gender biased (see Section 7.2.1); there were 5 females and 1 male. The sample size was too small to perform any useful statistical analysis. The sample size needed to be bigger for the main study.

The length of the main study would need to be longer than 10 days. The main study was expected to be conducted over at least 5 weeks. Another point that needed to be addressed was to give the students hands-on training and

explanation before conducting the study. This would give them a clear view of what they would face during the study. The problem with text message format of reply needs to be fixed. Students should be given more flexibility and ease them in answering questions using the mobile phone.

From the questionnaires, we could not assess whether the use of mobile and communication technologies enhanced the students performance in language learning. Therefore pre- and post- tests on students' writing skills is necessary to discover the effect of using the mobile and communication technologies (see Section 7.4.5).

In summary, we learned that some benefits had been gained from the pilot study. The students in the study participated on a voluntarily basis and the learning activities were not related to their course. That was the reason why some of the students did not engage. For the main study, the experiment would involve real students with learning activities as part of a module that they would be studying.

One of the research questions was to find out whether there is any noticeable difference in learning using wikis and using blogs. From the findings in Section 7.3.2, students in the wiki group were more active than the blog group. However, there is no clear explanation for this. A Wiki is chosen for the main study as it worked well and did not hinder the students in any way.

8 Evaluation Study – Statistical Analysis

8.1 Introduction

This chapter discusses the main study. Its design was based on the pilot study, and addressed the lessons learned from it. The main study included a bigger sample of 61 participants, and was conducted over a period of five weeks. The experimental group was given a tutorial on how to use wiki before starting the experiment. Pre- and post-writing tests were given to the students in both the experimental and control groups to evaluate their performance before and after the study. Mobile phone messages were kept short so that they were more readable. The messages were sent only to experimental group. Finally, the format of answering quizzes was kept simple and allowed different valid variations.

8.2 Experimental Design

The participants were selected from two different Information Technology undergraduate courses, which shall be referred to as Course A and Course B, in a Malaysian public university. The students of both these courses studied the same English module throughout the whole of the experimental period. The module was taught by the same lecturer; however the groups belonged to different classes.

Participation in the study was voluntary. Before the experiment, the number of participants was 43 students from Course A and 25 students from Course B. By the end of the experiment, the number of participants from Course A was 35, with 26 from Course B. This was because some students had dropped out from the courses, some enrolled in the middle of the semester, and others were absent due to illness or for personal reasons. The control group was from Course A; the experimental group was from Course B.

Both groups were given pre- and post-questionnaires to be answered before and after the experiment. In addition, the students also had to answer three questions in each writing test, before and after the experiment. The questions set were the same for both groups, both before and after the experiment. The experimental group received text messages and was expected to reply to them. They were also expected to update their learning activities using the wiki to communicate within their sub-group. They used laptops or PCs for updating the activities. Table 8.1 describes the data collection timeline for both the experimental and control groups during this study.

Table 8.1 Data-collection timeline

Day 1	**Day 2**	**From Day 3, Week 1 to Week 5 (Experimental Group only)**	**Day 36**	**Day 38**
Distribute Pre-Questionnaire to Control Group Writing test for Control Group	Distribute Pre-Questionnaire to Experimental Group Writing test for Experimental Group Training for the experimental group take place Setup wiki account Key in mobile phone numbers	Intervention • SMS • Update learning activities on wiki	Distribute Post-Questionnaire to Control Group Writing test for Control Group	Distribute Post-Questionnaire to Experimental Group Writing test for Experimental Group Interviews

The aim of the questionnaires was to gauge the student's perceptions and experience in using mobile and communication technologies in general, and for learning before and after intervention, especially for language learning. The writing tests were to evaluate any differences in the results. The SMS activities and wiki log were analysed. The module lecturer and four students from the

experimental group were interviewed. The questionnaires, writing tests, and interview questions are included as appendices 1 to 11.

8.3 The Questionnaires

Pre- and post-questionnaires were given to both the control and experimental groups before and after the experiment, respectively to compare and evaluate participants before and after the experiment. The questionnaires consisted mainly of closed questions. A few open-ended questions were included to gather respondents' comments about the experiment.

The pre-questionnaire comprised of seven sections:

- Demographic information to obtain information about respondents and their backgrounds (e.g. age, gender, language proficiency, mobile phone number to be used in the study).
- Learning preferences to obtain respondents' preferred devices to get online and their favourite activities with a mobile phone.
- Use of mobile devices in general, to obtain and understand their experiences of using a wiki, mobile phones and other activities related to communication technology.
- Use of mobile devices for learning, in order to understand their experience of using a wiki, mobile phone and other activities related to communication technology, particularly for learning.
- Perception of mobile devices in general.
- Perception of mobile devices for learning.
- Opinion and suggestions regarding the questionnaires and the experiment, if any.

The post-questionnaire was organized using the same themes but with an additional section to gather information about the type of learning activities liked or disliked by the students.

The collected data were entered and analysed using SPSS software. Descriptive statistics, independent and paired-sample t-tests, were performed to assess the mean difference between the two groups and between the pre- and post-questionnaires and tests.

8.3.1 Demographics

The first section provides an overview of the ages and genders of the group. The students ranged between 19-24 years of age (see Tables 8.2 and 8.3). The data showed the participants were dominated by females. Female participants outnumbered male participants but this is due to the makeup of the classes and could not be changed.

Table 8.2 Age distribution

	Control		Experimental	
Age	**Pre**	**Post**	**Pre**	**Post**
19	8	3	4	4
20	25	20	19	13
21	4	4	2	2
22	4	3		
23	1			
24	1	1		
Not stated		4		7
Total	43	35	25	26

Table 8.3 Genders

Gender	**Control**		**Experimental**	
	Pre	**Post**	**Pre**	**Post**
Male	11	10	3	3
Female	32	25	22	23
Total	43	35	25	26

8.3.2 Favourite online activities before the experiment.

The students were asked questions about what they had used mobile devices for during the three months prior to the experiment (see Table 8.4). Students were asked to rate their activities, from 1 as very often to 5 as virtually never. An independent sample t-test was conducted to compare activities performed between the experimental and control groups. Both groups rated watching video online the highest, followed by sharing files online with friends. Students from both groups also liked to manipulate multimedia elements online. Activities related to wiki are very low. There was no significant difference between the experimental and control groups. This suggests that both groups have similar experience related to activities performed using mobile devices in general.

Table 8.4 Activities performed during the three months prior to the experiment

Activity	Group	N	Mean	SD	t	df	Sig. (2-tailed)
Watched online videos	Experiment	25	2.04	1.02	1.99	66	0.05
	Control	43	1.58	0.85			
Shared files online with friends	Experiment	25	2.48	1.16	0.30	66	0.77
	Control	43	2.40	1.12			
Edited video, audio or graphics online	Experiment	25	2.88	1.51	1.26	66	0.21
	Control	43	2.49	1.06			
Uploaded video, graphics onto the Web	Experiment	25	3.04	1.43	1.94	66	0.06
	Control	43	2.47	1.01			
Downloaded a podcast	Experiment	23	3.30	1.36	0.87	64	0.39
	Control	43	3.02	1.19			
Contributed to other wiki	Experiment	25	4.00	1.12	1.20	66	0.24
	Control	43	3.67	1.06			
Created wiki	Experiment	25	4.20	1.16	0.51	66	0.61
	Control	43	4.05	1.23			
Contributed to own wiki	Experiment	25	4.44	0.87	1.52	66	0.13
	Control	43	4.05	1.11			

8.3.3 Use of mobile device for learning

This part of the questionnaire was to ascertain the students' usage of mobile devices for learning during the three months prior to the experiment. The scale is from 1 as very often to 5 as virtually never. An independent sample t-test was conducted to compare activities performed between the experimental and control groups. Both groups rated using communication technologies to search for university resources as highest (see Table 8.5). The control group rated*"used learning resources to improve English skills"* as second and reading online materials as third. The experimental group rated reading online materials as second and quizzes or self-assessment related to their study as third. The remaining results which rated forth until the last one, were related to wikis and suggest that the control group was unsure whether they had worked with other students using a wiki. The experimental group had never worked with other students using a wiki. The top-rated activities show that they use communication technologies to assist them in their learning.

An independent-sample t-test was conducted. There was a significant difference in doing quizzes related to study, with the experimental group at (M = 2.28, SD = 0.94) and the control group at (M = 3.12, SD = 0.93); $p = 0.01$. Another significant difference was for reading online learning materials: experimental group (M = 2.08, SD = 1.08), control group (M = 2.77, SD = 0.97), $p = 0.01$. This shows that participants in the experimental group had more experience of using communication technology for learning compared to the control group.

Table 8.5 Use of communication technology for learning during the three months before the experiment

Activity	Group	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Searched for university learning resources	Experimental	25	1.92	1.04	-1.98	66	0.05
	Control	43	2.44	1.05			
Read online learning materials	Experimental	25	2.08	1.08	-2.70	66	0.01
	Control	43	2.77	0.97			
Did quizzes related to study	Experimental	25	2.28	0.94	-3.56	66	0.01
	Control	43	3.12	0.93			
Searched for learning resources other than from your university	Experimental	25	2.44	1.16	-1.10	66	0.27
	Control	43	2.77	1.19			
Used learning resources to improve English	Experimental	25	2.80	1.00	0.58	66	0.57
	Control	43	2.65	1.04			
Shared learning resources with friends	Experimental	25	2.84	1.31	-0.70	66	0.49
	Control	43	3.05	1.09			
Worked with other students using wiki	Experimental	23	4.00	1.09	1.34	64	0.19
	Control	43	3.63	1.07			

8.3.4 Learning Preferences

The following section addresses the participants' learning preferred location of study, preferred device to get online and preferred activities using communication technology. For location, five different venues for studying were listed (see Table 8.6). Students were asked to rank the venues from 1 to 5, where 1 is the most preferred. Both groups' results show the same ranked order where they chose home as the most preferred, followed by university and library. The preference to study at home as first choice is consistent with the

results gathered from the pilot study. A paired-samples t-test was conducted to compare the location preference scores before and after the experiment. There was no significant difference for either group. This shows that the experimental group has not changed their mind on preferred location for studying after the experiment.

Table 8.6 Location preference for studying

Location	Group	Timeline	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Home	Experimental	Before	25	1.32	0.80	1.14	24	0.27
		After	25	1.08	0.49			
	Control	Before	34	1.35	0.77	-0.48	33	0.64
		After	34	1.44	0.86			
University	Experimental	Before	25	2.24	0.78	0.57	24	0.57
		After	25	2.12	0.93			
	Control	Before	26	2.54	1.53	1.22	25	0.23
		After	26	2.15	0.83			
Library	Experimental	Before	25	2.68	0.69	0.00	24	1.00
		After	25	2.68	1.25			
	Control	Before	23	3.00	0.74	0.41	22	0.70
		After	23	2.87	1.14			
Café	Experimental	Before	25	4.12	0.78	1.76	24	0.09
		After	25	3.44	1.56			
	Control	Before	22	3.95	1.00	0.85	21	0.41
		After	22	3.64	1.14			
Other	Experimental	Before	25	4.64	0.57	1.77	24	0.09
		After	25	4.08	1.58			
	Control	Before	22	4.45	1.10	0.13	21	0.90
		After	22	4.41	0.96			

Next, the groups were asked about the devices they preferred to use most often to get online. The results are shown in Table 8.7(a) for control group and Table 8.7(b) for experimental group. **A Wilcoxon Signed Rank test was conducted to compare their preferred devices for getting online before and after the experiment.** There was no significant difference for either group. In terms of device preferences, both groups, before and after the experiment, had the same preference to use their own laptop or desktop at home. Mobile phones are listed

as the least preferred. The experimental group preferred to use a laptop or PC to get online.

Table 8.7(a) Favourite devices for getting online for control group

Type of device	Timeline	N	Median	Z	Sig. (2 tailed)
Own laptop at home	Before	39	2.00	-.327(b)	0.743
	After	33	2.00		
Own desktop computer at home	Before	39	3.00	-.700(a)	0.484
	After	33	3.50		
Own laptop at university	Before	38	4.00	-3.018(b)	0.003
	After	31	4.00		
Mobile phone	Before	38	5.00	-1.124(a)	0.261
	After	30	5.00		
Computer in university computer lab	Before	40	5.00	-.589(a)	0.556
	After	33	4.5		
Others	Before	38	6.00	-1.633(a)	0.102
	After	31	6.00		

Table 8.8(b) Favourite devices for getting online for experimental group

Type of device	Timeline	N	Median	Z	Sig. (2 tailed)
Own laptop at home	Before	25	1.00	-.881(b)	0.417
	After	24	2.00		
Own desktop computer at home	Before	24	3.00	-.582(a)	0.561
	After	24	3.00		
Mobile phone	Before	24	5.00	-1.495	0.135
	After	23	5.00		
Computer in university computer lab	Before	24	5.00	-.291(a)	0.771
	After	24	4.75		
Own laptop at university	Before	25	6.00	-1.225(a)	0.221
	After	24	3.00		
Others	Before	24	6.00	-.828(a)	0.408
	After	23	6.00		

Next, the students were asked to rank their preferred activities using mobile and communication technologies related to the experiment (see Table 8.8). There were ten activities; the students were asked to rate those from 1 to 10, with 1 being the most preferred activity. After the experiment, the experimental group rated activities involving receiving SMS on their mobile phones as the top activity. An independent-samples t-test was carried out. There was a

significant difference between the two groups for receiving SMS as lesson reminders before the experiment. The experimental group score was (M = 2.12, SD = 1.68) and the control group score was (M = 3.65, SD =2.88); p = 0.02. After the experiment, the mean for the experimental group increased to (M = 3.33, SD = 2.43). The mean for the control group also increased to (M= 4.39, SD = 2.49); p = 0.12. However there was no longer a significant difference between the two groups. Thus shows that the experimental group's experience of receiving SMS message as lesson reminders was negative.

Receiving SMS as short quizzes revealed a significant difference between the groups before and after the experiment. The experimental group score before the experiment was (M = 2.81, SD = 2.02) and the control group score was (M = 5.49, SD = 2.43); p = 0.01. After the experiment, the experimental group score was (M = 3.54, SD = 2.72) and the control group score was (M = 5.84, SD = 2.31); p = 0.01. The mean values for the experimental group increased, which translates as a lower rank; this means the experimental group's preference for receiving SMS as short quizzes decreased. The reason obtained from the interviews was the unsuitable times the researcher sent out the SMS messages. The significant difference shows that the experimental group still think receiving SMS as short quizzes can benefit them. However, this also suggests that SMS short quizzes are not really wanted this stage.

Another interesting finding relates to reading learning material on a wiki. After the experiment, there was a significant difference between the groups, and the control group ranked reading material on a wiki as the most preferred. The mean for the experimental group was (M = 5.25, SD = 2.28), and the control group was (M = 3.48, SD = 2.79); p = 0.01. Participants in the experimental group did not find the wiki, a social technology, helpful in learning. On the other hand, the control group still think wiki is interesting for learning as they have not had the experience.

Table 8.9 Favourite activities before and after the experiment

Activity	Timeline	Group	N	Mean	SD	t	df	Sig. (2 tailed)
Receiving SMS as update reminder	Before	Experimental	26	2.46	2.12	-0.09	67	0.33
		Control	43	2.93	1.77			
	After	Experimental	25	3.08	2.36	-1.60	54	0.12
		Control	31	4.16	2.63			
Receiving SMS as lesson reminder	Before	Experimental	26	2.12	1.68	-2.47	67	0.02
		Control	43	3.65	2.88			
	After	Experimental	24	3.33	2.43	-1.58	53	0.12
		Control	31	4.39	2.49			
Receiving SMS as short quizzes	Before	Experimental	26	2.81	2.02	-4.72	67	0.01
		Control	43	5.49	2.43			
	After	Experimental	24	3.54	2.72	-3.39	53	0.01
		Control	31	5.84	2.31			
Giving feedback to lecturer	Before	Experimental	26	5.54	1.88	-0.31	67	0.76
		Control	43	5.72	2.67			
	After	Experimental	23	5.04	2.69	-0.77	54	0.44
		Control	33	5.61	2.68			
Reading learning material on wiki	Before	Experimental	26	5.27	2.57	0.60	67	0.55
		Control	43	4.88	2.61			
	After	Experimental	24	5.25	2.28	2.54	55	0.01
		Control	33	3.48	2.79			
Discussing with group mates using wiki	Before	Experimental	25	4.80	2.65	-0.20	66	0.84
		Control	43	4.93	2.48			
	After	Experimental	24	5.83	2.20	1.81	54	0.08
		Control	32	4.72	2.33			
Sharing resources using handphone	Before	Experimental	26	5.73	1.80	1.35	67	0.18
		Control	43	4.93	2.67			
	After	Experimental	24	5.42	2.62	1.43	54	0.16
		Control	32	4.41	2.63			
Receiving SMS on weblink resources	Before	Experimental	26	3.04	1.80	-1.67	67	0.10
		Control	43	3.88	2.17			
	After	Experimental	24	5.75	2.49	0.64	53	0.53
		Control	31	5.32	2.47			
Updating wiki entry	Before	Experimental	26	5.42	2.35	-1.16	67	0.25
		Control	43	6.19	2.80			
	After	Experimental	23	6.39	2.17	0.87	52	.039
		Control	31	5.77	2.85			

The significant difference between the two groups is in line with the findings of Cole (2009), where the author indicates that, in educational contexts, wiki is perceived differently from ordinary personal use.

8.3.5 Perceptions of the use of mobile devices for general use and learning

In this section students were asked to rate their perceptions and use of mobile and communication technology both in general and for learning. Students needed to rank from 1 as strongly agree to 5 as strongly disagree. A paired-samples t-test was conducted to compare the perception scores before and after the experiment. The results are shown in Table 8.9. There were significant differences in the two categories before and after the experiment for, *"I would delete reminders sent to my mobile phone from the lecturer immediately*" and "*I like to receive messages on my mobile phone for learning purposes"*. For the experimental group, the mean for the first statement decreased from (M = 3.80, SD = 1.32) before the experiment to (M = 2.88, SD = 1.01) after the experiment, the *p* value is 0.02. The students would prefer to delete message reminders immediately because they feel distracted when the message inbox is full of reminders. For the latter statement, the mean for the experimental group increased after the experiment to (M = 2.52, SD = 1.01), before the experiment the score was (M= 1.68, SD = 0.75); $p = 0.01$. The students were less keen to receive short messages because of the inadequate time available to reply to messages. They preferred to receive messages at night after they had finished their lectures and classes. The results indicate that the experiment has changed students' perception that they do not like to receive sms reminders for learning, and they prefer not to keep messages from their lecturer on their mobile phone.

Table 8.10 Perception scores for use of mobile phone for general and learning purposes.

Perception	Group	Timeline	N	Mean	SD	T	df	Sig. (2-tailed)
I enjoy communicating with my friends using my mobile phone	Experimental	Before	25	1.40	0.76	-1.75	24	0.09
		After	25	1.84	1.21			
	Control	Before	35	1.60	0.81	0.14	34	0.89
		After	35	1.57	0.95			
I consider the use of mobile phones gives me opportunities to learn a language better	Experimental	Before	25	2.20	1.00	1.28	24	0.21
		After	25	1.88	0.73			
	Control	Before	35	2.23	0.81	-0.26	34	0.80
		After	35	2.29	1.07			
I work more efficiently if I use a mobile phone more often in learning	Experimental	Before	25	2.36	1.03	-1.05	24	0.30
		After	25	2.68	1.15			
	Control	Before	35	2.40	0.70	-0.42	34	0.68
		After	35	2.49	1.17			
I like to receive reminders on my mobile phone for learning	Experimental	Before	25	2.04	1.10	-1.63	24	0.12
		After	25	2.44	0.87			
	Control	Before	35	2.46	0.82	1.07	34	0.29
		After	35	2.26	1.07			
I like to receive weblinks on my mobile phone for learning	Experimental	Before	25	2.28	1.17	-0.94	24	0.36
		After	25	2.56	0.92			
	Control	Before	35	2.89	1.16	1.49	34	0.15
		After	35	2.51	1.07			
I like to receive and answer multiple-choice questions on my mobile phone for learning	Experimental	Before	25	2.24	1.13	-0.74	24	0.47
		After	25	2.48	1.12			
	Control	Before	35	3.00	0.91	-0.58	34	0.57
		After	35	3.14	1.38			
I like to send message information such as web links to my friends	Experimental	Before	25	2.40	1.08	-0.67	24	0.51
		After	25	2.60	0.76			
	Control	Before	35	2.69	1.02	0.23	34	0.82
		After	35	2.63	1.11			
I delete reminders sent to my mobile phone from lecturers immediately	Experimental	Before	25	3.80	1.32	2.59	24	0.02
		After	25	2.88	1.01			
	Control	Before	35	3.97	0.95	1.96	34	0.06
		After	35	3.51	1.20			
I like to receive messages on my mobile phone for learning purposes	Experimental	Before	25	1.68	0.75	-3.10	24	0.01
		After	25	2.52	1.01			
	Control	Before	35	2.17	0.95	-1.22	34	0.23
		After	35	2.46	1.25			

8.3.6 Perceptions and use of communication technologies for general use and learning

In this section, (see Table 8.10), the students were asked about their perceptions and use of the communication technology after the experiment. Students needed to select on a scale from 1 as totally agree to 5 as totally disagree. The questions were asked only after the experiment to gauge specifically their perception and use of awiki. An independent-sample t-test was carried out. There is a significant difference for the statement: "*Communication technologies (i.e. wikis) are easy to use*". The experimental group has a higher mean (M = 2.54, SD = 1.07) than the control group (M = 2.03, SD = 0.86); $p = 0.04$. This suggests that the experimental group experienced difficulties in using the wiki technology during the experiment. There is no significant difference for the rest of the statements, which implies that both groups shared similar perceptions and usage of a wiki.

8.3.7 Analysis and observation

The results of this study agree with the findings by Cole (2009) which indicate that in educational contexts a wiki is perceived differently from ordinary personal use. Participants in the experimental group did not find the wiki, a social technology, helpful for learning. There are a few factors that inhibited students from using a wiki and collaborating with their friends. According to Zorko (2009), there are four factors that inhibit students from collaborating using a wiki. The factors are frequent face-to-face meetings, a preference for other social-networking communications, technical glitches and a preference for publishing only the finished product. In the Malaysian context, the study shows that not all students are well acquainted with wikis and that this hindered their learning experience, over and above the additional factors that other researchers have pointed out.

Table 8.11 Perceptions and use of communication technologies for general use and learning after the experiment.

Perception	Group	N	Mean	SD	t	df	Sig. (2-tailed)
Communication technology (i.e. wiki) is easy to use	Experimental	26	2.54	1.07	2.07	59	0.04
	Control	35	2.03	0.86			
Communication technology (i.e. wiki) is suitable for discussion on anything between friends	Experimental	26	2.50	1.03	1.65	59	0.10
	Control	35	2.11	0.80			
It is easy to access wiki pages (i.e. http://technicalcomm1.pbworks.com)	Experimental	26	2.65	1.02	1.81	59	0.08
	Control	35	2.17	1.04			
The use of communication technologies creates more interaction between friends	Experimental	26	2.50	1.18	1.63	58	0.11
	Control	34	2.06	0.92			
I have no problem accessing wiki pages anywhere any time	Experimental	26	2.88	1.11	1.96	59	0.05
	Control	35	2.31	1.13			
In general I like to use wiki to interact with others	Experimental	26	3.08	1.09	1.57	59	0.12
	Control	35	2.63	1.11			
Communication technology (i.e. wiki) is an effective means for collaboration and groupwork	Experimental	26	2.42	0.95	0.45	59	0.66
	Control	35	2.31	0.93			
Communication technologies provide better access to the lecturer	Experimental	26	2.35	1.06	0.81	59	0.42
	Control	35	2.14	0.91			
The use of communication technologies makes learning a subject more interesting	Experimental	26	2.19	0.94	1.20	58	0.24
	Control	34	1.91	0.87			
The use of communication technologies creates more interaction between student and lecturer	Experimental	26	2.15	0.93	0.28	59	0.78
	Control	35	2.09	0.98			
The use of communication technologies makes students feel more involved	Experimental	26	2.15	0.93	0.59	59	0.56
	Control	35	2.03	0.75			
The use of communication technologies helps students to learn more	Experimental	26	2.19	0.80	1.14	59	0.26
	Control	35	1.97	0.71			
The use of communication technologies provides a better learning experience	Experimental	26	2.19	1.02	1.12	59	0.27
	Control	35	1.94	0.73			
The use of communication technologies hinders the learning process	Experimental	26	2.35	1.02	-0.41	59	0.68
	Control	35	2.46	1.07			

Among the research objectives was identifying potential learning activities that might be well suited to mobile devices. The reply seems to suggest that they did not like reminders. After the experiment the scores decreased slightly which indicates after the experiment the students were less keen receiving SMS for quizzes.

The overall findings from the study suggest that students still have a positive view of using mobile phones and wikis for language learning. In reality, not all the students were willing to engage with the technology. A study by Stockwell (2010), however, pointed out that apart from small-screen problems and small inconvenient keypads; there maybe other factors that have not yet been discovered. Stockwell further argues that learners can be classified as non-users, try-and-quit users, sporadic users or heavy users of the mobile phone for learning. In this study, the participants can be classified as try-and-quit users. Participants were excited at the beginning but the excitement wore off towards the end. However the classification by Stockwell can be further investigated in the future.

Koole (2009), in her FRAME (**F**ramework for the **R**ational **A**nalysis of **M**obile **E**ducation) model, suggests that mobile learning happens at the nexus of device, learner and social aspects. According to the framework, apart from evaluating devices and input and output capabilities, it is important to assess learner skills, their experience of mobile learning and feelings towards the learning activities.

From the learning activities and learning preferences results, better learning activities that involve using mobile and communication technologies can be designed to engage students in their learning.

8.4 SMS Logs

During the intervention period, students received text messages and were expected to complete the learning activities using the communication technologies available on the internet at their convenience. There were 25 participants during the intervention. The messages were designed to be relevant to their learning activities. The sequence of the type of messages is arranged in such order so that it is relevant to the teaching plan as shown in Chapter 6. The plan was to send out messages every day from Monday to Friday. The schedule and type of messages are shown in Table 8.15.

Table 8.12 Daily SMS Schedule from Week 1 to Week 5

Day/Time	Types of SMS
Monday 6.00 pm	Lesson reminder
Tuesday 9.00 am	Web resources
Wednesday 6.00 pm	**General quiz**
Thursday 9.00 am	Update reminder
Thursday 6.00 pm	**Topic quiz**
Friday 6.00 pm	**Grammar quiz**

Participants needed to reply to general, topic and grammar quizzes (in bold in table 8.15). The messages were sent out at 6.00 p.m. because the students would usually have finished their classes and have time to respond to the messages. The students were not charged when they replied to these messages.

8.4.1 Findings

The summary of the activities is as follows (see Figure 8.1):

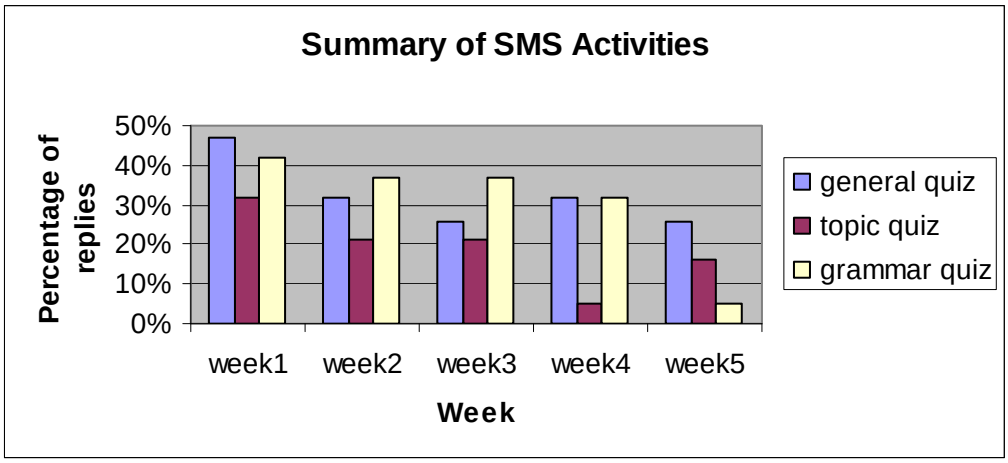


Figure 8.1 Summary of SMS activities

Originally there were 25 students in the experimental group. The participants needed to answer both the pre and post-writing tests in order to be included in the final analysis. Six participants dropped out from the course in the middle of the semester. Therefore 19 students were included in the analysis.

Three participants have more than 50% reply frequencies, identified as student L, student R and student SF. Four students (constituting 21% from the sample) never replied at all and are identified as student NN, student Aq, student SL and student Ks (see Table 8.16).

The response at the beginning of the experiment was good. During the first week nearly 47% replied to the general quiz, 32% replied to the topic and 32% also replied to the grammar quiz.. From week 2 until week 5 the number of responses decreased. For the second week of the intervention, the replies dropped for every type of quiz. The following week, replies for topic quiz and grammar quiz were still at the same percentage, and replies for the general quiz drooped by 6%. The log recorded by the researcher shows that similar people replied to the quizzes. For week 4, there were more replies for the general quiz, an obvious decrease for the topic quiz and a small decrease for the grammar quiz. Student L and student SF categorised as responding for more than 50%,

Table 8.13 Details of students replying to each type of Quiz G for general quiz, T for Topic and Gr for Grammar.

Percentage of reply	Student	Week1			Week2			Week3			Week4			Week5		
		G	T	Gr	G	T	Gr	G	T	Gr	G	T	Gr	G	T	Gr
>= 50%	L	√	√	√	√	√	√	√	√	√	√	X	√	√	√	X
	R	√	X	X	√	√	√	√	√	√	√	√	√	√	√	√
	SF	√	X	X	X	X	√	√	√	√	√	X	√	√	√	X
>= 30% and < 50%	A	X	√	X	√	√	√	√	X	X	X	X	X	X	√	X
	Ra	√	√	√	X	X	√	√	X	X	√	X	X	X	X	X
	M	X	√	√	X	X	√	X	X	√	√	√	X	X	X	X
	NI	√	√	√	X	X	X	X	X	X	X	√	X	√	√	X
	NB	√	√	√	X	X	√	X	X	X	√	X	X	√	X	X
>= 10% and < 30%	AH	√	X	√	√	X	X	X	X	X	X	X	X	X	X	X
	SA	X	X	X	X	√	X	X	X	√	√	X	√	X	X	X
	K	X	X	√	√	X	X	X	X	X	X	X	X	X	X	X
> 0% and < 10%	NA	X	X	X	√	X	X	X	X	X	X	X	X	X	X	X
	N	√	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	S	X	X	X	√	X	X	X	X	X	X	X	X	X	X	X
	ZA	√	X	X	X	X	X	X	X	X	X	X	X	X	X	X
0%	NN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Aq	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	SL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Ks	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

dropped out from answering the topic quiz for week 4. The topic quiz for week 4 was asking students to summarise a piece of text into one sentence. This result shows that they prefer not to type very much using a mobile phone because they found it difficult. This is supported by the increase number of replies for the following week for the topic quiz which asked the students to choose the correct answer. Replies for the grammar quiz in the last week were very poor. This might be because the SMS was sent on a Friday, and that week was the last day before the semester break.

There were not many male participants in the pilot study. In this study, there were three male students which is small proportion, and they fall within the three earlier categories as described in the table above (Student L, student Ra and student AH). Student L was among the active participants in the study. He replied more than 50%. Student Ra falls into the second category, where he replied more than 30% and student AH replied three times for week 1 and week 2. However, the sample is too small to draw any general conclusions.

Among these three types of quiz messages, it seems that participants prefer to answer the general quizzes. General questions are designed in the form of three multiple choice questions and two questions with a yes or no answer. Topic questions are designed in the form of four multiple choice questions and one short answer question. Grammar questions are designed in the form of five multiple choice questions. The pattern in replying to the messages shows that participants appear to like to answer simple quizzes i.e. with Yes or No answer and multiple choice questions.

The results from this study are in line with Ismail *et al* (2010), which shows that the students want short and simple messages. This experiment indicates that participants were reluctant to answer questions for the topic quiz in week 4. This particular question asked the participants to summarise a piece of text into one sentence. The low response for the grammar quiz in week 5 confirms the findings by Kneebone & Brenton (2005) and Stockwell (2010). The participants were excited to use the technology at first, but the excitement wore off towards the end. This might be due to the workloads of the participants. As the week progress, participants usually will have more assignments which reduce the available time for them to respond to the quiz messages.

8.4.2 Conclusions

At the beginning of the experiment, students were relatively active in replying to the messages sent to them. Some of the messages were sent out by the researcher at the beginning of the day (i.e. 9.00 am) and some at the end of the day (i.e. 6.00 pm). It is interesting to find from the interviews that students have times they regard as unsuitable for receiving messages. This is against the general view that mobile learning is convenient for anytime and anywhere. In the interviews the students stated that were busy with classes and are less likely to respond to the quiz messages.

The reasons, based on the interviews, were as follows: unsuitable time to receive and respond to the message; busy with other classes; a lack of memory space on their phone; and not motivated to answer the messages. One objective of the research was to design learning activities that involve using mobile and communication technology to engage students in learning. The finding is not very encouraging and suggests that the use of mobile phone and a wiki did not engage all the students in learning. As argued by Stockwell (2010), the learners in this experiment can be classified as non-users, try-and-quit users, sporadic users or heavy users of the mobile phone.

However, the participants agreed that receiving different types of messages helped them in improving their skills in English, for instance grammar and vocabulary.

8.5 Wiki Logs

Besides receiving and replying to SMS, participants were expected to update learning activities using a wiki. They were divided into nine groups, with two or three students in each group. The members of the group were selected randomly from the student's list obtained from the lecturer. The group were

given their own username and password to access their group's wiki site. The purpose of this was to encourage them to work as a team and collaborate with each other while updating the learning activities.

8.5.1 Findings

The logs show that of the nine groups, six groups attempted to log in and three groups collaborated with each other, particularly in week 2, even though the overall response was not encouraging. A summary of their activities related to the wiki is shown in Figure 8.2. A sample screenshot of some of the discussion is shown in Figure 8.3.

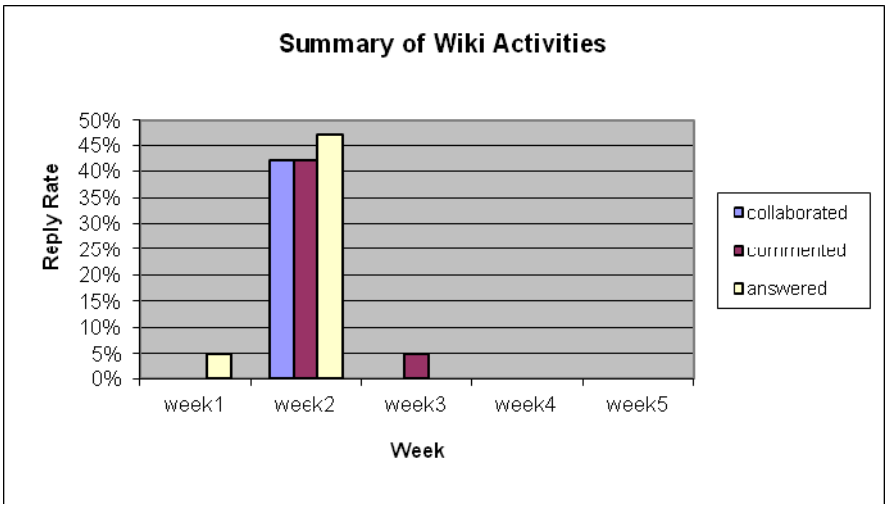


Figure 8.2 Summary of wiki activities

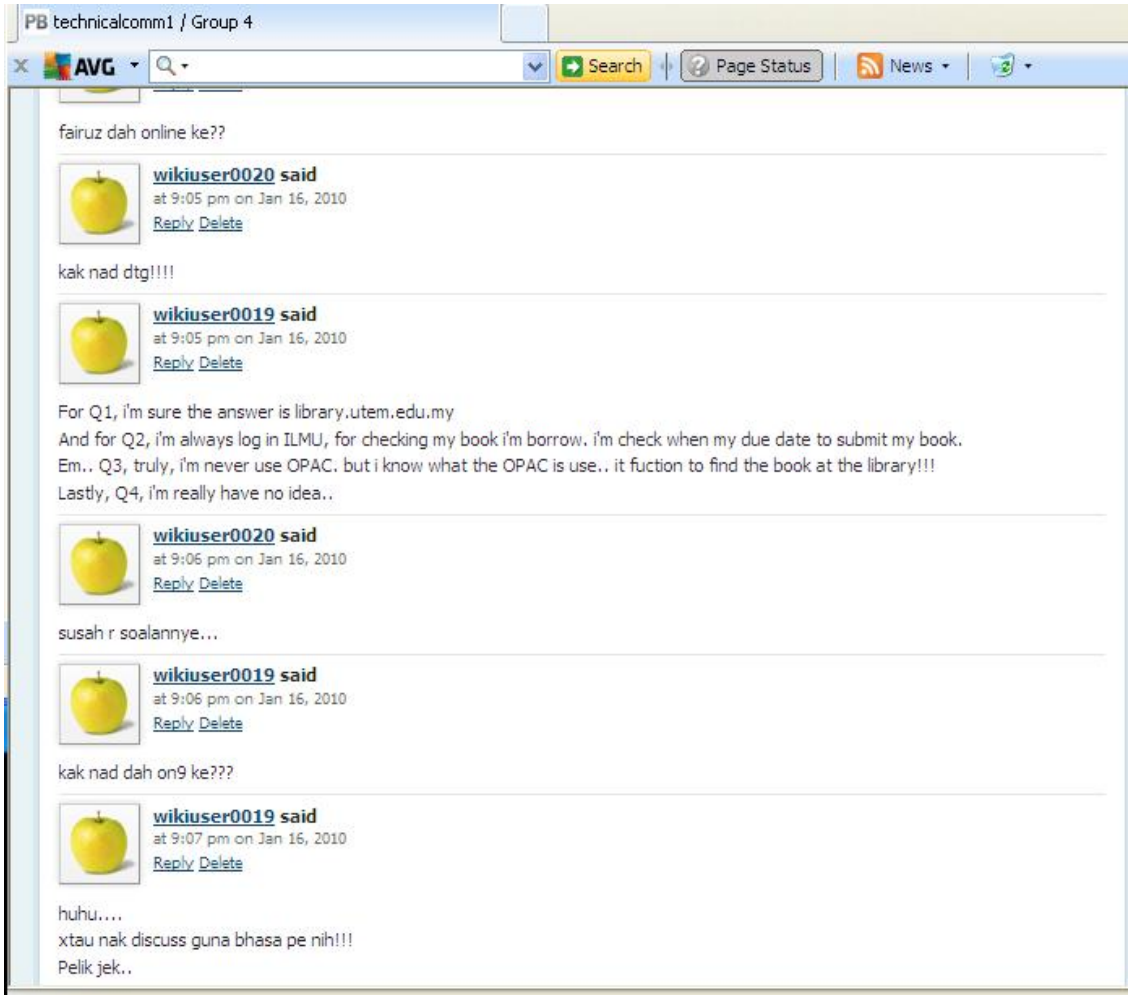


Figure 8.3 Wiki screenshot where team members tried to communicate and collaborate to find the answer

The English translation for the above wiki screenshot as below:

wikiuser0020 said

at 9.05 pm on Jan 16, 2010

sister nad is coming!!!!

wikiuser0020 said

at 9.06 p.m on Jan 16, 2010

the questions are difficult….

Wikiuser0019 said
at 9.06 p.m on Jan 16, 2010
is sister nad already online?

Wikiuser0019 said
at 9.07 p.m on Jan 16, 2010
sighing.
don't how what language should we use for discussion!!!
Feeling strange

From the wiki log, three groups communicated, answered and collaborated with each other for the question posed by the researcher on the wiki site in week 2. The keyword 'collaborated' in **Figure 8.3** means there exists collaboration between students, for example asking each other questions. The keyword 'commented' means the students were giving comments about the contents. Other than that, it is hard to find any kind of communication occurring during the intervention. Not all the comments were written in English. This means they were not practicing their English.

However, the statistics for page views was 390. This suggests that they all wanted to know what the others were doing but were unwilling to make their own views or ideas known to others.

8.5.2 Conclusions

The findings concur with the results by Cole (2009) and Zorko (2009) that in education a wiki is perceived and used differently from ordinary use. In the Malaysian context, the study shows that not all students were well acquainted with wikis, and this hindered their learning experience. In addition, in the sociocultural perspective, a report by University Malaya (1993) in Harun

(2009) revealed that responding in the Malaysian classroom is the biggest challenge for ESL learners.

On the practical side, the students had difficulties accessing the site. Most of them are usually online after 9.00 pm, which is the peak time for students to get online in the hostel. In addition, they needed to pay for prepaid wifi access which cost them RM5.00 for five hours and was valid for 15 days. This could be the main reasons for the students not using the wiki. Aside from slow access, their knowledge of wikis was limited and most of them did not have any experience in using a wiki.

8.6 Writing Tests

Participants had to carry out three tasks: to identify paragraphs in a given piece of text (Q1);to summarise a piece of text into one sentence (Q2); to correct the tenses in a piece of text (Q3). The weighting for the questions was 6, 5 and 5, respectively. The questions are taken from the module that the students were studying. To evaluate and compare the participants' performances, they needed to have completed both the pre- and post-tests. Therefore, those who did not complete either test for whatever reason were removed from the analysis. Therefore, the number was reduced from 43 to 25 for the control group, and from 26 to 19 for the experimental group.

The paired t-test was carried out to compare the mean scores of the same participants, before and after the experiment.

8.6.1 Findings

Statistical analysis was used to evaluate the results of the writing tests. The purpose was to measure the performance of the participants before and after the experiment. Comparison was done for the mean scores for the same participants on two different occasions, and for mean scores of the two

different groups of participants. To compare the two groups, a paired-sample t-test was used for the same participants on two different occasions.

Table 8.14 Paired-samples t-test for experimental and control groups, before and after experiment.

Activity	Group	Timeline	Mean	N	Std. Deviation	T	df	Sig. (2-tailed)
Writing test	Experimental	Before	5.05	19	2.79	-3.83	18	.001
		After	7.66	19	2.70			
	Control	Before	7.50	25	2.47	-1.35	24	.190
		After	8.08	25	2.27			

The results in Table 8.18 show that there is significant improvement in the experimental group after the experiment. The scores after the experiment was (M = 7.66, SD = 2.70) and before was (M = 5.05, SD = 2.79); p = 0.001. However, for the control group, there was no significant difference in the mean scores before and after the experiment. Their score before was (M = 7.50, SD = 2.47) and after (M = 8.08, SD = 2.27); p = 0.190.

The mean scores between the control and experimental groups before the experiment were statistically different which the control group having a higher score. However, after the experiment, the scores between the two groups were not statistically different, i.e. the mean scores between both groups have become closer. The experimental group probably would have improved in the learning. This suggests that the experimental group had benefitted from the intervention in improving their English skills and closed the gap.

8.6.2 Conclusions

The statistical evidence shows that there was a positive change for the experimental group. At the beginning, the score of the experimental group was significantly lower than the control group. After the intervention their performance improved and closed the gap between themselves and the control group. The use of mobiles and wiki in this experiment shows that it helped the

experimental participants to improve their English skills even though their participation in the activities was limited.

8.7 Discussion and Conclusion

In Malaysia, m-learning is not a new term for academicians, but implementation is still at its initial stage. There are very few universities with m-learning embedded in their learning environment. This may be due to the high cost and that they are still assessing the benefits of implementing m-learning in Malaysia. This study has looked at Malaysian students' perspectives of using mobile and communication technologies for language learning. The assessment is based on pre- and post-questionnaires, pre- and post-writing tests, SMS observation logs, wiki observation logs and interviews.

The results from the questionnaires examine participants' perceptions and use of mobile and communication technologies before and after the experiment. Before the experiment, perception and use of these technologies were good and positive. However, after the experiment, the perception and use of the technologies changed, especially for the wiki. They did not feel that the adoption of a wiki was appropriate for language learning. The use of mobile phones is encouraging and the results show that there is limited support for the idea of messaging-learning activities in different forms.

The students' awareness of wikis was over estimated. It was assumed that participants from computing backgrounds would not have much of a problem in using a wiki. Therefore, the explanation and hands-on training were only given once, in a short period, before the experiment began. From the feedback from the questionnaires and interviews, participants had problems with using a wiki. It is likely that the participants did not know how to collaborate and did not know what to do and how much to say. This suggests that they need to be

taught how to collaborate. These problems might have contributed to the lack of activities. Even though many researchers have suggested and found that a wiki is good for collaboration and cooperative writing in second language learning, this was not the case in this project.

As regards gender the male students actively responded to the text messages. However, since there was little involvement of either gender in the wiki activities and the number of male student is small there is no clear conclusion to be drawn.

The results from the writing tests show that the experimental group had improved suggesting that there were positive effects on learning from the use of mobile and communication technologies.

9 Evaluation Study – Qualitative Analysis

Chapter 8 presented and discussed a quantitative analysis of the answers to the closed questions in the questionnaires. This chapter is a qualitative analysis of the information gathered from the open-ended questions and interviews conducted at the end of the experiment. Four students selected from the experimental group and the module lecturer were interviewed.

9.1 The Questionnaires

Pre- and post-questionnaires were given to both the control and experimental groups. A few open-ended questions were included to gather respondents' comments respectively.

9.1.1 Pre-Questionnaire Results

At the end of the pre-questionnaire, participants were asked to suggest and recommend improvement to either the study or the questionnaire. The question was *"Feel free to include your comments and suggestions either regarding the study or the questionnaire in the space below"*. Some of the students gave their comments which showed their device preference and expectation of the mobile phone as below:

"handphone needs more application"

"I hope I can online by using mobile phone faster as well as on my laptop or PC"

"I like to use mobile phone for chatting and online (facebook, youtube, myspace) but not for study because the screen is small and it has less application compared to the real desktop or laptop."

"… but not for study because the screen is small and it has less application compared to a real desktop or laptop."

The comments show that the students would prefer to use laptops and PCs for studying. It explains why the preferred device for learning was not changed before and after the experiment, where the top ranked learning preferred device was their own laptop. This finding contradicts Thornton (2004) whose research found that students in his study were motivated to use mobile phones more than PCs.

Other comments illustrated their positive view of the idea of using the mobile phone for language learning:

"…by using mobile phone as a source to learn, I really hope that my vocabulary and grammar will become more excellent soon, improve my English language so that I did not feel shy to communicate with others. Besides, I can easily chat with my friends and share our interests too."

"I think using mobile communication technologies for language learning is a great idea and should be applied to all students in Malaysia."

"I think it is a good opportunity for us to have a better study environment by using handphone as the suggestions because it is easy to access."

"Very important telephone usage to interact with anyone, is hoped so that more far-reaching telephone usage."

A negative comment was also received, the participant did not think the use of a mobile phone can help them in learning:

"……mobile phone while studying is not a good idea for me."

One participant had never heard of wiki:

"Actually I don't know…the meaning of wiki…"

The comments before the experiment were on their perception of using mobile phone for learning. This was new to them. They were interested in receiving text messages related to the subject they were taking for that semester. They also thought that the use of mobile phone could help them to get more information. On the other hand, the mobile phone screen size is a concern. Some of the participants did not think that using a mobile phone for learning was good for them. Other comments were on wikis, which were considered as a new technology for some participants.

9.1.2 Post-Questionnaire Results

After the intervention, both experimental and control groups were given a slightly modified version of the pre-questionnaire to answer. Even though the control group was not involved in the intervention, the results were used to make comparisons with the experimental group.

Two open-ended questions were asked in the last section of the questionnaire. The first question was *"Did the use of any of the technologies enhance or hinder your study experience? Please explain"*. From the experimental group of 26 students, 14 out of 16 comments were positive. Some of the positive comments:

"Yes, we became more alert".

"…yes, I can communicate and interact with my friend more efficiently and also I can obtain more learning material and get more knowledge."

"…yes, because it makes the learning process fun."

The two negative comments are:

"Technologies more hindered my study experience as we tend to do unbeneficial things such as surfing the internet… chatting and waste time."

"For me technologies will hinder my study experience as I believe technology is not that good to be used as an academic material"

For the control group, 21 out of 35 students answered. There was only one negative comment.

"….In university I will, online, be using my Smartphone but don't really like to search video here because it is kind of weird and small."

Other comments were positive, for example:

"It enhances my study experience in drawing my interest to learn and study."
"…technologies give me more benefit especially for my study."

The control and experimental groups came to the common conclusion that deploying mobile phones and wiki could help them in learning a second language. As discussed and reviewed by Naismith (2005) and Starr (2003), mobile devices possess unique properties that could help aid students' learning. However, several comments from the experimental group indicated that technologies could hinder their learning experience as they tend to do other things which are considered distracting, such as chatting, surfing other websites, rather than updating learning activities using wiki. For them wiki is not interesting and did not give any benefits to them.

The second open statement was *"Feel free to include your comments and suggestions either regarding the study or the questionnaire in the space below."*

There were three answers from the experimental group and five answers from the control group. The three answers from the experimental group are:

"Communication technologies really help in my study and I can increase my communication skill, I also really thankful because we've been teach how to make a proposal about research. I hope I can adopt my knowledge during my PSM."

"Improve english skill."

"I agree with this study as it will improve our english and ability to communicate"

The comments came from participants who also answered the first question positively. Overall the comments received for both questions in the post questionnaires indicate that participants like to receive text messages for learning purposes.

Two comments from the control group were about the questionnaires,:

"The questions are good"

"Question's words are small"

The other three comments from the control group were:

"I hope one day people can appreciate the development of technologies by using it in proper way."

"I'm not emphasis using wiki, because sometimes I will not get information that should I got from that."

"By do the study, we will get intensive knowledge to help workings of work process."

The control group however perceived the use of mobile phone and wiki as interesting and good for learning.

9.1.3 Summary and Conclusions

The key points sought from the comments are arranged under three themes: access to learning, communication, and the usability of the device. The themes related to the study came from thematic analysis derived from the interviews with the students and

a lecturer. Table 9.1 is the summary for mobile phones. Table 9.2 is the summary for wiki.

Table 9.1 General themes related to mobile phone

Theme	Advantages	Issues
Access to learning	Ability to alert students to learning material through reminders.	Students did not find the use of mobile phone could engage them in learning.
Communication	Researcher text resources, learning material, activities and reminders on an ongoing basis. Easy to communicate with friends using texting.	Unsuitable time to receive text messages using the mobile phone.
Usability of device	Mobile phone is easy to use and manipulate.	Issues on small screen for mobile phone. Storage space limited.

Table 9.2 General themes related to wiki

Theme	Advantages	Issues
Access to learning	Fast and easy access to learning material	A Wiki is perceived as not interesting. Students tend to do non-beneficial things rather than updating learning activities on the wiki.
Communication	Researcher and students can use the platform to communicate at any time.	Slow and intermittent connectivity. Difficult to collaborate with team members using a wiki.
Usability of device/application	Easy to use WYSIWG (What You See Is What You Get)	Wiki is new for most of the students. Need for training in using a wiki.

Access to learning focuses on the ease of use to access learning materials. Students agreed that mobile phone and wiki allowed them to access learning material easily. However, the use of a wiki did not engage the students. In terms of communication, the lecturer and students can use mobile phone and wiki platforms for communication. However, students were not keen to communicate with the lecturer. As for usability, the students have no problems using a mobile phone but the problem is the small screen size, and it is difficult to type long replies. The students did not want to invest time in learning how to use a wiki as they see it as being irrelevant because they did not want to publish and share their ideas with others. This may be because they are shy of making mistakes and do not want to be shamed by their peers when publishing their work on the wiki.

This study in the Malaysian context indicates that the learning activities designed for use with mobile phone for language learning is not engaging. At this stage the students in Malaysian higher education are not ready to use mobile and communication technologies for language learning. The majority of students were not engaged in the learning activities. Even though they agree that mobile phones are easy to use and manipulate, they did not actively reply to quizzes sent to them. It is somewhat surprising that for most of the students the term "wiki" is new. The students found that the use of a wiki is not interesting and they tend to do other things when online. Another cause for concern is that the use of mobile and communication technologies is applied to learning English which is not a critical subject from the students' perspectives.

9.2 Interviews

The interviews were audio recorded for analysis. The analysis was based on the three general themes established from the open-ended questions from pre and post-questionnaires.

9.2.1 General Findings

Four students from the experimental group and the module lecturer were interviewed after the experiment. The students were selected, based on their percentage of replies

(see Table 8.16). The student with the highest number of replies to the messages was selected, with two students who replied to more than 10% of the messages and another student who never replied at all.

The students were asked a number of general questions. The answers to the questions that are most relevant to the research are summarised below according to each theme.

Question 1:

What do you think about the use of communication technology, i.e. wiki, in learning the Technical Communication 1 subject? Does it help in the learning process?

Table 9.3 Sample replies for Question 1

General themes	**Sample of student's replies**
Access to learning	*"…used wiki and did help me a lot especially on how to make a proposal…"* (Student K) *"Never tried, no internet access"* (Student H) *"from my experience, not all students use wiki. Even though we receive reminders to update wiki pages, when online we are excited to do something else like facebook, ym and forget about wiki"*(Student R)
Communication	*"…the feedback column in wiki did help, for example to make a proposal is easier when get ideas from other members."* (Student K)
Usability of Device	*"…(long silence…)never log in…don't know, don't know need to login wiki and do the work, if it was done in the class it might help, otherwise no..limited time.."* (Student S)

The results on wiki usage (see Table 9.3) were similar to the findings with other researchers who reported the problems students have had when collaborating online (Zorko, 2009 and Cole, 2009).

Next, the students were asked what their favourite learning activities using mobile devices, i.e. mobile phone for second language learning after the intervention. The responses relating to this question are summarised in Table 9.4.

Question 2:
What activities do you enjoy most and why? (SMS lesson reminder, update learning activities online using wiki, SMS questions, SMS web resources, SMS update reminder)

Table 9.4 Sample interview for Question 2

General themes	**Sample of students' responses**
Access to learning	*"…grammar, quiz, less likely for reminder, easy to understand learning …..…"* (Student R) *"SMS grammar, resources. Like simple grammar questions…"* (Student K) *"..like grammar questions, reminders..."* (Student H) *"..like lesson reminder, can know what to learn.."* (Student S)
Communication	*"…., the problem was difficult to cooperate with group …"* (Student R) *"…no idea to proceed, mess up…"* (Student K)
Usability of Device	*N/A*

The students were also asked what they did not like doing. The results are summarised in Table 9.5.

Question 3:

What activities did you not enjoy and why? (SMS lesson reminder, update learning activities online using wiki, SMS questions, SMS web resources, SMS update reminder)

Table 9.5 Sample interview for Question 3.

General themes	**Sample of student's interview**
Access to learning	*"SMS questions, don't like certain questions which is long…for example don't like summarised…"* (Student S) *"I like all the sms, sometimes I delete reminder because it didn't give any effect to me"* (Student K) *"Don't like reminder sms, we should know it already"* (Student R)
Communication	*"..I don't know how many I can receive in a day, when I have time then I read the message and delete which I don't like"*(Student R)
Usability of Device	*"…, small screen, difficult to type, like MCQ, because lazy…if done in the class might be OK, instruction is not clear for wiki"* (Student S)

The findings from this constitute the pros and cons of using mobile phones and wiki for language learning. The negative findings show that students:

- Were not willing and happy to collaborate with their group mates though they would like to know what others are doing;

- Were not willing to spend time in learning how to use a wiki and they found it irrelevant;
- Were not willing to type long messages using mobile phone;
- Were not happy to receive reminders on their mobile phone because they don't think they are important.

The positive findings were as follows:

- On the wiki, the students attempted to write and give comments and feedback even though the conversations were not totally in English.

The lecturer was also asked about their opinion regarding the experiment. From the interview, another theme emerged which is learner aspect.
The interview questions were:
1. What do you think about the use of mobile phone wiki in learning the Technical Communication 1 subject? Does it help in the learning process?

2. What do you think about the use of a mobile phone in learning the Technical Communication 1 subject? Does it help in the learning process?

3. Do you agree that second language learning (i.e. English) can be enhanced with the use of technology?

The lecturer agreed that the use of mobile phones and a wiki can ease the access to learning materials. However, longer intervention is needed to evaluate the effectiveness of the use of the technologies. Issues of finance and mobile phone ownership were highlighted if m-learning is implemented in a formal context.

9.2.2 Conclusions

In the Malaysian context, mobile and communication technology ease access to learning. Students appreciate messages and reminders sent to them using mobile phone. The lecturer shares the same view with the students.

Issues of small screen and limited storage were also highlighted by the students. The usability of the mobile phone for learning can be increased if the learning activities used are short, brief and simple.

Table 9.6 Sample responses from the lecturer.

General themes	Sample of lecturer's interview
Access to learning	*"..need for longer intervention, frequent alerting and texting students on grammar questions.."* *"..concern from financial aspect…"*
Communication	*"...if we keep alerting it might be effective…"*
Usability of Device	*"it does help if everybody owns a handphone but if there is student without handphone it could be a constraint.."*
Learner Aspect	*"…needs to be formal learning, it is difficult to get voluntary hand. It might be a cultural trait, spoon-feeding, we need to provide everything. If there is an effect on their grades, then they will get involve without having to alert them…"*

9.3 Discussion and Conclusions

The findings and analysis from the questionnaires and interviews outline several general themes as guidelines to implement mobile and communication technologies in informal educational settings in a Malaysian context. Hiltz (1998), Arnold & Ducate (2006), Zorko (2009) and Coole (2009) pointed out that a wiki can assist collaboration in learning. However, Coole further elaborated that a wiki is perceived differently in the educational and social contexts. In the study, the students were willing to facilitate each other using wiki, but the participation soon wore off. Similar problems were faced by Hiltz, Arnold & Ducate, Zorko and Coole. In the Malaysian context, it is a

cultural trait where it is not the norm for student to share their ideas and thoughts with others. Even though access to the wiki was restricted only to the groups and the lecturer, it did not work.

Besides the issues with sharing, students also experienced problems with slow connections at their hostel. As a result of early frustration, they felt discouraged and perceived updating learning activities as not helping, and wasting their time. However, some still find that reading and doing activities using a wiki helps them to improve their English skills. This is in line with Arnold & Ducate (2006), where the lack of immediate feedback helps students to think more and to write better.

Issues of small screen and limited storage are highlighted by many researchers (Koole, 2009; Stockwell, 2010). Similar issues were found in this research. The usability of the mobile phone for learning can be improved if the learning activities used are short, brief and simple. This is demonstrated by a study in Malaysia by Ismail *et al* (2010) where "simplistic is the ingredient for mobile learning".

The lecturer interviewed agreed that the use of mobile phones is helpful in language learning. They believe that if a study was carried out longer and implemented in a formal learning setting, then there would be greater participation and increased effort from the students. The findings show that the use of a mobile phone and wiki for language learning is feasible but further investigation is needed regarding student engagement. Below are the summarised recommendation for using mobile phones and wikis for learning.

- In Malaysian context, learning activities for mobile phone need to be simple and short as not all learners own a smart phone.
- Sending messages to a mobile phone should be limited to 1 or 2 messages per day.
- The learning activities should be related to the module they take at the university.

- To get maximum participation, it might be necessary to assess the learning activities and contribute to the coursework grade.
- Learners should be trained and supervised for a longer period.

10 Conclusions, Contributions and Future Work

10.1 Introduction

This chapter completes the thesis by providing conclusions, a summary of the contributions and suggestions for future work.

10.2 Conclusions

The conclusions of this thesis are as follows:

- There are some potential benefits in implementing and using mobile phone and wiki to support language learning in higher education.
- To evaluate the study, pre and post questionnaires, pre and post writing test and wiki logs, SMS logs and interviews were found to be appropriate for this research.
- Not all learning activities designed in this study for mobile phones are preferred by the students. Learning activities should be simple and easy for the students to read and answer.
- To get maximum participation, it might be necessary for a lecturer and instructor to assess the learning activities so that it contributes to the coursework grade.
- Although mobile learning can take place at any time, anywhere and through any wireless device, students were not unhappy to receive messages related to academic studies on their mobile phone at any time.

10.3 Contributions of the Research

The objectives of this research has been realised through the following contributions.

- **To design learning activities that involve using mobile and communication technology to engage students in learning, thus making it fun and to increase their concentration span.**

Contribution 1:

This study has shown that adapting learning activities from existing modules to supplement classroom teaching was not favoured by students and would be less likely to give a positive outcome in the writing test results. Receiving SMS as quizzes and reminders for language learning at this stage indicates that these activities need to improve. Moreover, this is the first study implemented in the Malaysian context; previous studies concentrated more on evaluating the Malaysian readiness to embark on mobile learning. However, after experimenting with the use of mobile phones and communication technologies for language learning in Malaysian higher education, the students were less engaged in learning. The students in the experimental group do not know how to collaborate and have difficulties to share their thoughts online.

- **To help improve students' communication and collaboration skills by involving them in group activities.**

Contribution 2:

The study found that participants were more interested in replying to the messages at the beginning of the experiment. A similar pattern is shown for the activities using wiki. The results suggest that there was too little engagement in order for the students to have improved on their communication and collaboration skills. The findings conclude that at this stage the implementation of mobile phones and wikis is still at the experimental stage. More in-depth study on using mobile devices and wikis among Malaysian undergraduate students needs to be done.

- **To evaluate the effects of using mobile and communication technology in the learning activities.**

Contribution 3:

The evaluation involved both quantitative and qualitative analysis. At this stage, receiving SMS related to learning is acceptable. On the other hand, the use of a wiki to promote collaboration and communication skills for language learning is less favoured.

10.4 Limitations of the study

This study has limitations in its implementation as indicated below:

- It was a challenge to get collaboration with Malaysian higher institutions in Malaysia. The semester start date is different for each institution. The intention was to embark on the experiment at the beginning of the semester when students were not busy. Because of the problem of having to change the institution for collaboration the experiment started later than planned into the semester which reduced the time available for the researcher to conduct the experiment.

- The findings indicate that participants were not willing to invest time to learn how to use a wiki. Although presentations and sample activities were given to the students before the experiment, the researcher could not provide much help due to the limited available time in the students' class schedule and limited available places to gather students with equipped computers and internet access. The researcher only managed to get a 30 minute slot for using the computer lab with all the participants. In depth training should have been provided, for example how to start using the feedback column, how to edit the wiki pages. As a result, the participants were not clear and were unaware of the overall plan. As the participants were not well acquainted with wiki technology, they were quite unsure when to actually start using it and what they were supposed to do on the wiki platform provided.

- The study was carried out for a single institution. Therefore the results cannot be used to represent the whole population.

- The size of the experimental group is small and the results cannot be generalised.

- During the study, both the experimental and control group have different learning experiences. The experimental group was given opportunity to participate in the intervention whereas, the control group was not.

10.5 Future Work

The study identified several areas where further work would be useful, especially for practitioners and stakeholders in higher education in Malaysia.

- A longitudinal study - Conduct a study involving a greater number of participants. The study conducted in this research involved quite small number of participants and the time frame was limited. The comparisons however were useful but inconclusive. Thus, further study from a larger number of participants from Malaysia in longer period could provide more accurate findings.

- More training in a formal learning setting - Give plenty of hands on exercises to use the mobile phone and wiki before the experiment. The experiment should have the direct involvement of the subject's lecturer. This is to maximise participation.

- Financial and mobile phone support – In the current study, the replies to the SMS messages were free, but participants were required to reply in a specific format to avoid charges. Consideration should be given to providing top up vouchers for mobile phones so that students can participate in the experiment without having to worry about the cost. A further consideration is to provide mobile phones with similar capabilities to all the participants.

- Enhance the wiki and mobile phone interface - Enhance the interfaces so that they are more colourful and interactive. Replicate the questions sent to themobile phones to wiki, to encourage learning reinforcement. Wiki pages should include FAQ menus so students can get help when needed.

- In-depth studies that focus only on one technology usage (i.e. separate mobile phones and wiki study). The findings could provide more accurate perspectives on which technology is suitable for learning.

- A study to investigate new mobile learning activities to focus on collaboration skills by involving group activities.

- Further expand the mobile learning experience by leverage on newer capabilities on mobile phones that are gaining widespread adoption among Malaysian university students.

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APPENDICES

Appendix 1 :Pilot Study: Participant Consent Form

Mobile and Communication Technologies for Language Learning

INFORMED CONSENT FORM

(to be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.
I understand that all the information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others.

I agree to participate in this study.

Your name _____

Your signature _____

Signature of investigator _____

Date _____

Appendix 2: Pilot Study: Information Sheet

Loughborough University

Mobile and Communication Technologies for Language Learning
Participant Information Sheet

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I am conducting a research project on Mobile and Communication Technologies for Language Learning. I request permission for your kindness to participate. Participants are expected to use their mobile phone for messaging and computer to collaborate with other participants while doing the learning activities. Participants will receive text messages at interval times from day 1 to day 10. And they are expected to update the learning activities using the communication technologies available on the internet which are the blog and wiki at their convenience during these 10 days. The goals of the study are to evaluate the effects of using mobile and communication technology in the learning activities, to help student's' communication and collaboration skills by involving in group activities and to get input on how to design the learning activities involving mobile and communication technology in learning thus making it fun and increase their concentration span.

Each participant will be invited to join collaboration activities using the communication technologies and each of them will use the mobile phone for communicating for 10 days. The project will be explained in terms that participant can understand. These target participants are young people and they usually enjoy chatting and texting, so I expect that participants will be interested and enthusiastic about participating; however, any participant can withdraw from participating freely. The entry log and the mobile phone activities will be recorded by me. At the conclusion of the study I will erase the database. Participant will also be asked to answer two questionnaires – one at the beginning of the study on day 1 and the other at the end on day 10.

Participation in this study is voluntary. At the conclusion of the study, a summary of group results will be made available to all interested participant. Should you have any questions or desire further information, please call me at 012345678 or email me at M.Osman@lboro.ac.uk.

The University has a policy relating to Research Misconduct and Whistle Blowing which is available online at http://www.lboro.ac.uk/admin/committees/ethical/Whistleblowing(2).htm.

Appendix 3: Pilot Study: Pre Questionnaire

Loughborough University

Mobile and Communication Technologies for Language Learning Survey

After completing all the questions, kindly return this questionnaire to the investigator preferably by XX Month 2009. All responses will be treated in the **strictest confidence.**

Section A: About yourself

A.1	**Age**	**:**			
A.2	**Gender**	**: Male**	☐	**Female**	☐
A.3	**Mobile phone number (for use in the study)**	**:**			
A.4	**Is English your first language?**	**: Yes**	☐	**No**	☐
A.5	**What is your current level of study?**	**:**			

A.6 **Where do you spend your time studying? Please indicate in rank order, your preferred location, putting 1 next to your favourite through to 5 for your least favourite:**

Home	☐	Internet café	☐
School	☐	Library	☐
Others (please specify)	☐		

Section B: Learning Preferences

B.1 **Which of these devices do you most often use to get online? Please indicate in rank order, your preferred answer, putting 1 next to your favourite through to 6 for your least favourite.**

Your own desktop computer at home	☐	Your own computer laptop at home	☐
A mobile phone	☐	Your own laptop at university	☐
A computer in a pooled computer room in university	☐	Others (please specify)	☐

B.2 **If you own a mobile phone, which of these activities would you do most? Please indicate in rank order, your preferred answer, putting 1 next to your favourite through to 8 for your least favourite.**

Chatting with friends	☐	Texting your friends	☐
Chatting with university friends	☐	Texting your university friends	☐
Contacting your tutor	☐	Texting your tutor	☐
Texting resources with friends	☐	Others (please specify)	☐

Section C: Use of mobile and communication technology in general

C.1 **How often have you done these activities ONLINE in the past 3(THREE) months?**

Please circle** <u>one number</u> **for each statement	Very **Often**						Virtually **Never**
Create your own blog	1	2	3	4	5	6	7
Contributed to your own blog	1	2	3	4	5	6	7
Posted comments to a blog	1	2	3	4	5	6	7
Create your own wiki space	1	2	3	4	5	6	7
Contributed to your own wiki space	1	2	3	4	5	6	7
Contributed to other wiki space	1	2	3	4	5	6	7
Uploaded video, audio or graphics onto the Web	1	2	3	4	5	6	7
Edited video, audio or graphics online	1	2	3	4	5	6	7
Watched online videos (e.g. Youtube, Google Video etc)	1	2	3	4	5	6	7
Shared files online with your friends	1	2	3	4	5	6	7
Downloaded a pod cast	1	2	3	4	5	6	7

Section D: Use of mobile and communication technology for learning

D.1 **How often have you done these activities ONLINE in the past 3(THREE) months?**

Please circle** <u>one number</u> **for each statement	Very **Often**						Virtually **Never**
Worked with other students using blog	1	2	3	4	5	6	7
Worked with other students using wiki	1	2	3	4	5	6	7
Read online learning materials	1	2	3	4	5	6	7
Did quizzes or self-assessment exercises related to your study	1	2	3	4	5	6	7
Searched for learning resources	1	2	3	4	5	6	7
Searched for learning resources other than your university	1	2	3	4	5	6	7
Share learning resources (e.g. bookmarks, web links) with your friends	1	2	3	4	5	6	7
Used learning resources to improve English skills	1	2	3	4	5	6	7

Section E: Perceptions and use of mobile phone in general

E.1 **Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below?**

*Please circle **<u>one number</u>** for each statement*	Strongly **Agree**						Strongly **Disagree**
I enjoy communicating with my friends using my mobile phone	1	2	3	4	5	6	7
I concentrate longer when listening to audio with mobile phone	1	2	3	4	5	6	7
I enjoy texting to friends using mobile phone	1	2	3	4	5	6	7
I feel comfortable working with a mobile phone	1	2	3	4	5	6	7

Section F: Perceptions and use of mobile phone for learning

Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below?

F.1

Please circle** <u>one number</u> **for each statement	Strongly **Agree**						Strongly **Disagree**
I consider that mobile phones give me opportunities to learn language better	1	2	3	4	5	6	7
I appreciate receiving lesson reminders from my tutor on my mobile phone	1	2	3	4	5	6	7
I would work more efficiently if I could use mobile phone more often in learning	1	2	3	4	5	6	7
I think that it takes a long time to learn a language when using a mobile phone	1	2	3	4	5	6	7
I like to receive reminder on my mobile phone for learning	1	2	3	4	5	6	7
I like to receive link on my mobile phone for learning	1	2	3	4	5	6	7
I like to receive and answer multiple choice questions on my mobile phone for learning	1	2	3	4	5	6	7
I like to text information such as web links to my friends	1	2	3	4	5	6	7
I would delete reminder sent to my mobile phone from tutor immediately	1	2	3	4	5	6	7
I like to receive text on my mobile phone for learning purposes	1	2	3	4	5	6	7

Section G: Suggestions and Recommendations

Feel free to include your comments and suggestions either regarding the study or the questionnaire in the space below.

Appendix 4: Pilot Study: Post Questionnaire

Loughborough University

Mobile and Communication Technologies for Language Learning Survey

After completing all the questions, kindly return this questionnaire to the investigator preferably by XX Month 2009. All responses will be treated in the **strictest confidence.**

Section A: About yourself

A.1 Age :

A.2 Gender : Male ☐ **Female** ☐

A.3 **Where do you spend your time studying? Please indicate in rank order, your preferred location, putting 1 next to your favourite through to 5 for your least favourite:**

Home	☐	Internet café	☐
School	☐	Library	☐
Others (please specify)	☐		

Section B: Learning Preferences

B.1 **Which of these devices do you most often use to get online? Please indicate in rank order, your preferred answer, putting 1 next to your favourite through to 9 for your least favourite.**

Updating blog or wiki entry	☐	Receiving text messages as update reminder from tutor	☐
Reading learning material on the blog or wiki	☐	Receiving text messages as lesson reminder	☐
Discussing with group mates using the blog or wiki	☐	Receiving quizzes on the mobile phone	☐
Sharing resources using the mobile phone	☐	Giving feedback to tutor	☐
Others (Please specify)	☐		

Section C: Learning activities

C.1 **How often have you done these activities during the past 10(TEN) days of study?**

Please circle** <u>one number</u> **for each statement	Very **Often**						Virtually **Never**
Contributed to your blog or wiki spaces	1	2	3	4	5	6	7
Posted comments to your blog or wiki spaces	1	2	3	4	5	6	7
Reading learning material on your blog or wiki	1	2	3	4	5	6	7
Giving feedback on learning material using mobile phone	1	2	3	4	5	6	7
Read the update reminder and update the activities as soon as you can	1	2	3	4	5	6	7
Read the lesson reminder	1	2	3	4	5	6	7
Answer the short quizzes sent to you using the mobile phone	1	2	3	4	5	6	7

Shared files online with your friends	1	2	3	4	5	6	7
Downloaded a podcast and other web links	1	2	3	4	5	6	7
Used texting to communicate with your friends	1	2	3	4	5	6	7
Delete all the reminders sent to you immediately	1	2	3	4	5	6	7
Collaborate with group mates in writing and finishing the task given	1	2	3	4	5	6	7
Collaborate with group mates in discussion using the blog or wiki	1	2	3	4	5	6	7

Section D: Perceptions and use of mobile phone in general

D.1 **Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below?**

*Please circle **one number** for each statement*	Strongly **Agree**						Strongly **Disagree**
I enjoy communicating with my friends using my mobile phone	1	2	3	4	5	6	7
Tutor should send me more reminder	1	2	3	4	5	6	7
I enjoy texting to friends using mobile phone	1	2	3	4	5	6	7
I like to receive reminder in certain period of time	1	2	3	4	5	6	7

Section E: Perceptions and use of mobile phone for learning

E.1 **Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below?**

*Please circle **one number** for each statement*	Strongly **Agree**						Strongly **Disagree**
I consider that mobile phone give me opportunities to learn language better	1	2	3	4	5	6	7
I appreciated receiving lesson reminder from my tutor on the mobile phone	1	2	3	4	5	6	7
I would work more efficiently when I used mobile phone in learning	1	2	3	4	5	6	7
I liked receiving text on my mobile phone for learning purpose	1	2	3	4	5	6	7
I liked receiving reminder on my mobile phone for learning	1	2	3	4	5	6	7
I liked receiving link on my mobile phone for learning	1	2	3	4	5	6	7
I like receiving and answering multiple choice questions on my mobile phone for learning	1	2	3	4	5	6	7
I liked texting information such as web links to my friends	1	2	3	4	5	6	7
I deleted reminders from my tutor immediately	1	2	3	4	5	6	7

Section F: Perceptions and use of mobile and communication technologies for learning

F.1 **Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below?**

Please circle one number for each statement	Strongly **Agree**	Strongly **Disagree**

Social networking (e.g. Wiki and blog) is an effective means for collaboration and group works	1	2	3	4	5	6	7
Social networking provide better access to the tutor	1	2	3	4	5	6	7
The use of social networking makes a learning a subject more interesting	1	2	3	4	5	6	7
The use of social networking creates more interaction between student and tutor	1	2	3	4	5	6	7
The use of social networking makes the students feel more involved	1	2	3	4	5	6	7
The use of social networking helps the student to learn more	1	2	3	4	5	6	7
The use of social networking helps provide a better learning experience	1	2	3	4	5	6	7

Section G: Suggestions and Recommendations

Did the use of any of technologies enhanced or hindered your study experience? Please explain.

Feel free to include your comments and suggestions either regarding the study or the questionnaire in the space below.

Appendix 5: Main Study: Consent form

Mobile and Communication Technologies for Language Learning
INFORMED CONSENT FORM
(to be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that all the information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.

I agree to participate in this study.

Your name _____

Your signature _____

Signature of investigator _____

Date _____

Appendix 6: Main Study: Information Sheet

Loughborough University

Mobile and Communication Technologies for Language Learning
Participant Information Sheet

Professor Paul W H Chung
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We are conducting a research project on Mobile and Communication Technologies for Language Learning. We request permission for your kindness to participate. Participants are expected to use their mobile phone for messaging and computer to collaborate with other participants while doing the learning activities. Participants will receive text messages in these 6 weeks of the study. They are expected to complete the learning activities using the communication technologies available on the internet at their convenience during this study. The goals of the study are to evaluate the effects of using mobile and communication technology in the learning activities, to help students' communication and collaboration skills by involving them in group activities and to get input on how to design learning activities involving mobile and communication technology.

Each participant will be invited to join collaboration activities using the communication technologies during the study period. The project will be explained in terms that participants can understand. The entry log and the mobile phone messages related to the study will be recorded. At the conclusion of the study the database will be erased. Participant will also be asked to answer two questionnaires and two written test – one at the beginning of the study on day 1 and the other at the day at end of the study on day 47.

Participation in this study is voluntary and participants may withdraw from the study at any time. At the conclusion of the study, a summary of group results will be made available to all interested participants. Should you have any questions or desire further information, please call Mrs Osman at 0123456789 or +44(0)123456789000 or email her at M.Osman@lboro.ac.uk or mashanum@utem.edu.my

The University has a policy relating to Research Misconduct and Whistle Blowing which is available online at http://www.lboro.ac.uk/admin/committees/ethical/Whistleblowing(2).htm.

Appendix 7: Main Study: Pre Questionnaire

Mobile and Communication Technologies for Language Learning Questionnaire

After completing all the questions, kindly return this questionnaire to the investigator preferably by XX Month 2009. All responses will be treated in the **strictest confidence.**

Section A: About yourself

A.1	**Age**	**:**	
A.2	**Gender**	**:** ☐ **Male**	☐ **Female**
A.3	**Mobile phone number (for use in the study)**	**:**	
A.4	**Is English your first language?**	**:** ☐ **Yes**	☐ **No**
A.5	**What is your current level of study?**	**:**	

A.6 **Where do you spend your time studying? Please indicate in rank order, your preferred location, putting 1 next to your favourite through to 5 for your least favourite:**

☐ Home
☐ University
☐ Others (please specify)
☐ Internet café
☐ Library

Section B: Learning Preferences

B.1 **Which of these devices do you most often use to get online? Please indicate in rank order, putting 1 next to your favourite through to 6 for your least favourite.**

☐ Your own desktop computer at home
☐ A mobile phone
☐ A computer in a pooled computer room in university
☐ Your own computer laptop at home
☐ Your own laptop at university
☐ Others (please specify)

B.2 **If you own a mobile phone, which of these activities would you do most? Please indicate in rank order putting 1 next to your favourite through to 8 for your least favourite.**

☐ Updating wiki entry
☐ Reading learning material on wiki
☐ Discussing with group mates using wiki
☐ Sharing resources using handphone
☐ Receiving SMS on weblinks resources
☐ Receiving SMS as update reminder
☐ Receiving SMS as lesson reminder
☐ Receiving SMS as short quizzes
☐ Giving feedback to lecturer
☐ Other (Please specify)

Section C: Use of mobile and communication technology in general

C.1 How often have you done these activities in the past 3 months?

Please circle** <u>one number</u> **for each statement	Very Often 1	2	3	4	Virtually Never 5
Create your own wiki space	1	2	3	4	5
Contributed to your own wiki space	1	2	3	4	5
Contributed to other wiki space	1	2	3	4	5
Uploaded video, audio or graphics onto the Web	1	2	3	4	5
Edited video, audio or graphics online	1	2	3	4	5
Watched online videos (e.g. YouTube, Google Video etc)	1	2	3	4	5
Shared files online with your friends	1	2	3	4	5
Downloaded a pod cast	1	2	3	4	5

Section D: Use of mobile and communication technology for learning

D.1 How often have you done these activities in the past 3 months?

Please circle one number for each statement	Very Often 1	2	3	4	Virtually Never 5
Worked with other students using wiki	1	2	3	4	5
Read online learning materials	1	2	3	4	5
Did quizzes or self-assessment exercises related to your study	1	2	3	4	5
Searched for university learning resources	1	2	3	4	5
Searched for learning resources other than your university	1	2	3	4	5
Share learning resources (e.g. bookmarks, web links) with your friends	1	2	3	4	5
Used learning resources to improve English skills	1	2	3	4	5

Section E: Perceptions and use of mobile phone in general

E.1 Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below?

Please circle one number for each statement

	Strongly Agree				Strongly Disagree
I enjoy communicating with my friends using my mobile phone	1	2	3	4	5
I concentrate longer when listening to audio with mobile phone while working	1	2	3	4	5
I enjoy messaging to friends using mobile phone	1	2	3	4	5
I feel comfortable working with a mobile phone	1	2	3	4	5

Section F: Perceptions and use of mobile phone for learning

F.1 **Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below?**

Please circle one number for each statement

	Strongly Agree				Strongly Disagree
I consider the use of mobile phones give me opportunities to learn a language better	1	2	3	4	5
I work more efficiently if I use mobile phone more often in learning	1	2	3	4	5
I think that it takes a long time to learn a language when using a mobile phone	1	2	3	4	5
I like to receive reminder on my mobile phone for learning	1	2	3	4	5
I like to receive weblinks on my mobile phone for learning	1	2	3	4	5
I like to receive and answer multiple choice questions on my mobile phone for learning	1	2	3	4	5
I like to send message information such as web links to any of my friends	1	2	3	4	5
I would delete reminder sent to my mobile phone from lecturer immediately	1	2	3	4	5
I like to receive message on my mobile phone for learning purposes	1	2	3	4	5

Section G: Suggestions and Recommendations

Feel free to include your comments and suggestions either regarding the study or the questionnaire in the space below.

Thank you for your kind help

Appendix 8:Main Study: Pre and Post Writing Test

Name:
Course:

Divide the following text into paragraphs. Mark where appropriate for example with bracket for each indentified paragraph. Remember that each paragraph should develop a particular theme.

How to stop yourself snoring.

Snoring is caused when the airway at the back of the nose and throat becomes partially obstructed. This is usually due to the loosening of the surrounding oropharyngeal muscles, but the reasons why this should occur are varied. The most common are smoking, obesity and the consumption of relaxants such as alcohol and sleeping pills. As with any common ailment, there are a host of "miracle" cures advertised - but you should first try a few simple steps to see if you can halt the snoring before adopting more drastic measures. Lifestyle changes can be the most effective. If you are overweight, a loss of weight will help to reduce the pressure on your neck. You should also stop smoking and try not to drink alcohol at least four hours before you go to bed. Beyond this, try to change your regular sleeping position. Raise the head of your bed with a brick, or tie something uncomfortable into the back of your pyjamas to encourage you to sleep on your side. Both of these will help to alter the angle of your throat as you sleep, and may thus make breathing easier for you. It is also important to keep your nasal passage clear and unblocked. Allergies, colds and hay fever can temporarily cause you to snore; nasal decongestants may help, but you are not advised to use such remedies for long periods. Nasal strips, as worn by sportspeople, have been proven to reduce nasal airway resistance by up to 30 per cent, so consider these as a long-term alternative. If this fails, then you may wish to look at the varied snoring aids that are on the market. They range from neck collars that stop your neck tilting, through to mandibular-advancement devices (such as gumshields) which reduce upper airway resistance, and tongue-retaining devices. You can also buy essential-oil products that are added to warm water and infused or consumed before bedtime. They claim to tone up your palate and unblock your nasal passage. Finally, if your symptoms persist, visit your GP or contact the British Snoring and Sleep Apnoea Association (01737 557 997) for advice. If you do not, your partner might.

(Mark Irving, *Esquire*, March 1999)

Summarise the following text in one sentence.

It was 6.00 a.m. At the distant horizon, the sun radiated its beautiful rays, casting them on the furry clouds above and changing them into the splendid work of an artist. The whole eastern sky was brightened up.

Summary (one sentence)

_____

_____

Correct the tenses in the text. Circle the wrong tense and provide with the correct answer in the spaces below. (5 errors)

Every summer our class goes on a short trip. Last year we go to a zoo. Our teacher is very nervous. Teachers are often nervous on a school trip. But why? We don't understand that. I took (take) lots of photos of a baby elephant. "Why didn't you took photos of other animals, too?" my friend asked me. But I did not want to take photos of other animals. I wanted to take photos of all my friends. They had some bananas and showed them to the gorillas. "What are you doing there? Come here", our teacher shouted. We found a nice place for a picnic. But nobody ate a banana but the gorillas had a nice lunch that day. It is a great day at the zoo and we have a lot of fun.

_____

_____

_____

_____

_____

Appendix 9: Main Study: Post Questionnaire

Mobile and Communication Technologies for Language Learning Questionnaire

After completing all the questions, kindly return this questionnaire to the investigator. All responses will be treated in the **strictest confidence.**

Section A: About yourself

A.1 **Age** **:**

A.2 **Gender** **:** ☐ **Male** ☐ **Female**

A.3 **Where do you spend your time studying? Please indicate in rank order, your preferred location, putting 1 next to your favourite through to 5 for your least favourite:**

☐ Home
☐ University
☐ Others (please specify)
☐ Internet café
☐ Library

Section B: Learning Preferences

B.1 **Which of these devices do you most often use to get online? Please indicate in rank order, your preferred answer, putting 1(most preferred) next to your favourite through to 6 (not preferred).**

☐ Your own desktop computer at home
☐ A handphone
☐ A computer in a pooled computer room in university
☐ Your own computer laptop at home
☐ Your own laptop at university
☐ Others (please specify)

B.2 **Which of activities do you most often do or like during the study for the past 7 weeks? Please indicate in rank order, your preferred answer, putting 1(most preferred) next to your favourite through to 10 (not preferred).**

☐ Updating wiki entry
☐ Reading learning material on wiki
☐ Discussing with group mates using wiki
☐ Sharing resources using handphone
☐ Receiving SMS on weblinks resources
☐ Receiving SMS as update reminder
☐ Receiving SMS as lesson reminder
☐ Receiving SMS as short quizzes
☐ Giving feedback to lecturer
☐ Other (Please specify)

Section C: Learning activities

C.1 How often have you done these activities during the study? (1). Every day or more (2). 2-6 times a week (3). About once a week (4). About once a month (5). Never

Please circle one number for each statement

Contributed to your wiki spaces	1	2	3	4	5
Posted comments to your wiki spaces	1	2	3	4	5
Reading learning material on wiki	1	2	3	4	5
Giving feedback on learning material using handphone	1	2	3	4	5
Read the update reminder and update the activities as soon as you can	1	2	3	4	5
Read the lesson reminder	1	2	3	4	5
Answer the short quizzes sent to you using the SMS	1	2	3	4	5
Shared files online with your friends	1	2	3	4	5
Downloaded a podcast and other web links	1	2	3	4	5
Used SMS to communicate with your friends	1	2	3	4	5
Used SMS to share resources such as weblinks	1	2	3	4	5
Delete all the reminders sent to you immediately	1	2	3	4	5
Collaborate with group mates in writing and finishing the task given using SMS	1	2	3	4	5
Collaborate with group mates in writing and finishing the task given using wiki	1	2	3	4	5
Collaborate with group mates in discussion using SMS	1	2	3	4	5
Collaborate with group mates in discussion using wiki	1	2	3	4	5

Section D: Perceptions and use of handphone in general

D.1 Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below? (1). Totally Agree (2). Partially agree (3). Neither Agree or Disagree (4). Partially Disagree (5). Totally Disagree

Please circle one number for each statement

I enjoy communicating with my friends using my handphone	1	2	3	4	5
Lecturer should send me more reminder	1	2	3	4	5
I enjoy SMS to friends using handphone	1	2	3	4	5
I like to receive reminder at least once in the morning	1	2	3	4	5

Section E: Perceptions and use of handphone for learning

E.1 Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below? (1). Totally Agree (2). Partially Agree (3). Neither Agree or Disagree (4). Partially Disagree (5). Totally Disagree

Please circle one number for each statement

I consider that handphone give me opportunities to learn language better	1	2	3	4	5

I appreciated receiving lesson reminder from my lecturer on the handphone	1	2	3	4	5
I would work more efficiently when I used handphone in learning	1	2	3	4	5
I liked receiving message(SMS) on my handphone for learning purpose	1	2	3	4	5
I liked receiving update reminder on my handphone to alert me for learning	1	2	3	4	5
I liked receiving link on my handphone for learning	1	2	3	4	5
I like receiving and answering multiple choice questions on my handphone for learning	1	2	3	4	5
I liked messaging information such as web links to my friends	1	2	3	4	5
I deleted reminders from my lecturer immediately	1	2	3	4	5
I liked receiving resources such as weblinks from lecturers and friends	1	2	3	4	5
I liked to give and receive feedback from lecturer on my handphone	1	2	3	4	5
I don't mind receiving long messages for learning in one SMS	1	2	3	4	5
I don't mind replying and typing long messages for learning using SMS	1	2	3	4	5

Section F: Perceptions and use of communication technologies in general

F.1 Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below? (1). Totally Agree (2). Partially Agree (3). Neither Agree or Disagree (4). Partially Disagree (5). Totally Disagree

Please circle one number for each statement

Communication technologies (i.e. wiki) is easy to use	1	2	3	4	5
Communication technologies (i.e. wiki) is suitable for discussion on anything among friends	1	2	3	4	5
It is easy to access wiki pages (i.e. http://technicalcomm1.pbworks.com)	1	2	3	4	5
The use of communication technologies creates more interaction between friends	1	2	3	4	5
I have no problem to access wiki pages anywhere and any time	1	2	3	4	5
In general I like to use wiki to interact with others	1	2	3	4	5

Section G: Perceptions and use of communication technologies for learning

G.1 Please indicate TO WHAT EXTENT you agree or disagree with the statements listed below? (1). Totally Agree (2). Partially Agree (3). Neither Agree or Disagree (4). Partially Disagree (5). Totally Disagree

Please circle one number for each statement

Communication technologies (i.e. wiki) is an effective means for collaboration and group works	1	2	3	4	5
Communication technologies provide better access to the lecturer	1	2	3	4	5
The use of communication technologies makes learning a subject more interesting	1	2	3	4	5
The use of communication technologies creates more interaction between student and lecturer	1	2	3	4	5

The use of communication technologies makes the students feel more involved	1	2	3	4	5
The use of communication technologies helps the student to learn more	1	2	3	4	5
The use of communication technologies provides a better learning experience	1	2	3	4	5
The use of communication technologies hindered the learning process	1	2	3	4	5

Section H: Suggestions and Recommendations

Did the use of any of technologies enhanced or hindered your study experience? Please explain.

Feel free to include your comments and suggestions either regarding the study or the questionnaire in the space below.

Thank you for your kind help

Appendix 10: Main Study: Interview Questions for Lecturer

1. What do you think about the use of handphone in learning the Technical Communication 1 subject? Does it help in learning process?

2. What do you think about the use of communication technology i.e. wiki in learning the Technical Communication 1 subject?(refer to http://technicalcomm1.pbworks.com/) Does it help in learning process?

3. What do you think about the combination usage of mobile phone and communication technology i.e. wiki in learning the Technical Communication 1 subject? Does it help in learning process?

4. In the past 6 weeks, participants received SMS on their hand phone. They were also expected to complete the learning activities using wiki at their convenience during this study. The sms were of 4 different types; SMS as lesson reminder, SMS as update reminder, SMS web resources and SMS short quizzes.
    - In your opinion do the SMS and wiki help your student's English skill? For example in writing and speaking?
    - Do the usage of the both technologies burden the students?

5. Is there any attitude change(s) towards the subject or the technology that can be observed in the experimental group (BITI students) during the period of study?

6. Is there any difference(s) that you can observe between the experimental and control group during the period of study?

7. Do you agree that second language learning (i.e. English) can be enhance with the use of technology?

8. Any comments or suggestions?

Thank you for your participation.

Appendix 11: Main Study: Interview Questions for Participants

1. What do you think about the use of handphone in learning the Technical Communication 1 subject? Does it help in learning process?

2. What do you think about the use of communication technology i.e. wiki in learning the Technical Communication 1 subject? Does it help in learning process?

3. What do you think about the combination usage of mobile phone and communication technology i.e. wiki in learning the Technical Communication 1 subject? Does it help in learning process?

4. Does the use of handhone and wiki can improve any of your English skill? Example : vocabulary, grammar, writing and speaking

5. What activities do you enjoy most and why? (SMS lesson reminder, update learning activities online using wiki, SMS questions, SMS web resources, SMS update reminder)

6. What activities do you not enjoy and why? (SMS lesson reminder, update learning activities online using wiki, SMS questions, SMS web resources, SMS update reminder)

7. When is the suitable time for receiving and replying SMS for learning purpose?

8. What are the factors that prevent or hindered you from using the SMS and wiki in learning?

9. What are the factors that attract you to use SMS and wiki in learning?

10. Do you think that we need to customise learning with technological advances? Why?

11. Any comments or suggestions?

Thank you for your participation.