CHAPTER 1
INTRODUCTION

1.0 Introduction

This chapter begins with a brief outline of human communication disorders and in particular the hearing impaired, issues pertaining to deafness and communication options available to them. This is followed by an explanation of the Short Messaging Service and its impact on the Deaf community. Chapter one also gives the rationale and objective of the study which is translated in the three major research questions in the study. This chapter ends with a review of the terms relevant to this study.

1.1 Communication Disorder and Hearing Impaired

Communication is a process that allows humans to interact with the environment and express their thoughts, needs and feelings. These are expressed through speech writing and gestures. When one or more of these channels are impaired, communication is affected. Evaluation of a communication disorder would take into consideration all aspects of the normal communication process mentioned. American Speech and Hearing Association (ASHA) defined communication disorder as:
An impairment in the ability to receive, send, process, and comprehend concepts or verbal, nonverbal and graphic symbol systems. A communication disorder may be evident in the processes of hearing, language and/or speech.

(ASHA 1993)

A language disorder refers to the impairment of the comprehension of spoken and/or written form. This may affect both the receptive and expressive ability and involves aspects of form, content and function of language (Lahey, M.1988:22) Speech disorder concerns the articulation of speech sounds, the inability to speak clearly, fluency and voice. A hearing disorder as the word implies includes deafness and hearing loss. Communication disorders may be due to congenital defects, illness or injuries. Many of the communication problems may be improved by therapy. Some problems may never be ‘cured’ and new strategies have to be learnt to overcome their problem. Deafness is one of them.

The ability to hear is an integral part of the normal communication process. Deafness is an invisible disability. As such, the hearing impaired are at a disadvantage and often unattended. They remain marginalized and lose out on many things because of their disorder. Vocalizing their thoughts is a difficulty and this limits their interactions with others and to make sense of the world. These are among the reasons why the hearing impaired was selected for the purpose of this study.
1.2 The Hearing Impaired in Malaysia

In 1995, WHO (World Health Organization) estimated that 121 million people worldwide had a disabling hearing impairment. According to Selanduray, S. (2006), 10 percent of the world’s population was found to be hearing impaired. Worldwide statistics show that one to five babies in every thousand babies born have permanent hearing loss which makes it one of the highest incidences of birth defects. This means that every one out of ten is born deaf. And when a child has a hearing loss during the developmental years, all areas of development can be affected (“Definitions of Communication disorders and variations,” 1993)

Statistics from the Ministry of National Unity and Social Development recorded that the Deaf population in Malaysia was 26,294 in 2005. This was an increase from 17,692 in the year 2002, 22,728 in 2003 and 24,712 in 2004. However these figures are merely those registered with the Ministry, thus the actual figures may be much higher. Table 1.1 shows the increasing deaf population in Malaysia.

**Table 1.1**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Deaf population registered</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>17,692</td>
</tr>
<tr>
<td>2003</td>
<td>22,728</td>
</tr>
<tr>
<td>2004</td>
<td>24,712</td>
</tr>
<tr>
<td>2005</td>
<td>26,294</td>
</tr>
</tbody>
</table>
According to the Malaysian Federation of the Deaf, a leading Deaf organization, not many among our local deaf community are university graduates. There are only 23 registered graduates thus far, of which 15 graduated from Gallaudet University in Washington DC, and one from Rochester Institute of Technology. Another 4 are graduates from Universiti Sains Malaysia and Universiti Teknologi Malaysia.

According to the Assistant Manager and Sign Language interpreter at Pusat Majudiri Y, Foundation for the Deaf, of the YMCA Kuala Lumpur, Lim, L., the typical Deaf adult is married to a Deaf spouse and has a stable place of employment. This concurs with the findings of Furth’s (1966), research which indicate that the life of the mature Deaf adult seems to differ only minimally from the adult life of a hearing person. According to Furth, both are motivated by similar values, show interest in similar questions and engage in similar recreational and professional activities. On the other hand the noticeable differences are the tendency for the Deaf to seek out the company of other Deaf people and the small range of occupations to which they are generally limited. By comparison with the hearing members of the society, the Deaf are frequently under-educated and similarly under-employed. As might be expected, they hold a greater proportion of the low-paying, low-status jobs than the general population and their opportunities for advancement are limited. This places them at considerable risk of being socially and economically disadvantaged (Rodda, M, 1987:84). While most Deaf persons of working age are employed, relatively few hold professional or technical
positions. They are usually involved in occupations in which the ability to communicate is not of major importance.

The Deaf are known only to a few ‘outsiders’ (Lim, L.); they are largely excluded from the hearing majority by their communication handicap. Until recently they were not able to communicate in non face-to-face situations. They could only communicate with those who knew Sign Language. As a result of their communication problem, Deaf people generally feel more comfortable with their own kind or with others with whom they can communicate through Sign Language. Therefore they naturally tend to group together and form their ‘own community’. ‘The attitude of the majority of the hearing impaired is that they are not disabled but belong to a cultural and linguistic minority’ (Understanding Deaf Culture: The Malaysian perspective, 2006: vi). Their deafness creates a different lifestyle and different requirements that are valued as an integral part of their identity. The Deaf community has a culture that is very activity or events based. They have a busy social life among themselves and may belong to clubs. ‘The Deaf love to socialize… it is in their blood to meet and mingle,’ said Lim, L. of the YMCA Kuala Lumpur. This could stem from the fact that the Deaf rely solely on a visual language with gestures and facial expression rather than an auditory/speech style of communication which all non-hearing impaired people are used to. Hence, for the Deaf, a more personal face-to-face experience is essential.

The Deaf community selected in this study were those who are profoundly and prelingually deaf with a hearing loss of over 90 decibel loss and thus have negligible exposure to auditory stimulation. The medical classification of deafness focuses on the severity and causes of hearing loss and this is denoted with a lower
case ‘d’, as in ‘deaf’. The cultural definition of the deaf is the upper case – ‘Deaf’ is a voluntary classification and refers to the community whose primary mode of communication is sign language (Bakken, F., 2002). All of them share the same deaf culture.

1.3 Classification and Degrees of Deafness

1.3.1 The hearing (auditory) system

Figure 1.1

Structure of the Ear (a) and Enlarged View of the Middle Ear (b)

(Marieb, E. N. & Hoehn, K)
The ear can be divided into three sections, the outer ear, the middle ear and the inner ear. The outer ear is the section from the ear flap (pinna or the auricle) and the ear canal until the ear drum. Its function is to divert sound into the middle and inner ear. More importantly, it provides protection for the more delicate parts of the hearing system. ‘The ear drum vibrates when sound waves traveling through the ear canal strike it. The vibrations are transmitted via a small chain of bones (ossicles and the ossicular chain) that act as a series of levers to move the stiff fluid contained in the cochlea situated in the inner ear ear’ (Rodda, M, 1987:10). This movement activates the tiny hair cells in the cochlea to send electrical signals through the auditory nerve (the nerve of hearing) to the auditory cortex in the brain. This is the part of the brain where the sensation of sound is analysed and interpreted.

For proper hearing each and every part of this system right from the outer ear to the auditory cortex has to be normal. A disorder in any one of them will cause deafness.

1.3.2. Types of hearing loss

Hearing loss can be classified as conductive hearing loss and sensorineural hearing loss. Conductive hearing loss occurs when there is a problem in the transmission of sounds when intercepted in the outer and middle ear (Shipley, K.G. 1992). Sound waves are unable to reach the inner ear due to illness or obstruction of the auditory conductive system (the external auditory canal, the ear
drum or the structures and spaces in the middle ear). Diseases like a perforation in the ear drum or a stiffness of the ossicular chain can be corrected surgically. Obstruction due to the collection of fluid in the middle ear is usually treatable by medicine but may sometimes require surgical management.

Sensorineural hearing loss refers to two different but related types of impairment affecting the inner ear. Sensory hearing loss involves damage, degeneration or developmental failure of the hair cells in the cochlea (Shipley, K.G. 1992). On the other hand, neural loss involves the auditory nerve or other parts of the cochlea. Sensorineural hearing loss can be a hereditary cause or a result of disease, birth defects, aging or continual exposure to loud sounds (Gale Encyclopedia of Psychology, 2005). Damage to the auditory areas of the brain through severe head injury, tumours or strokes can also prevent either the perception and or the interpretation of sounds. This kind of hearing loss cannot be medically corrected although it may be helped by using a hearing aid if the damage is not severe.

According to Western Australia’s Deaf Society Inc., the commonly used terms to define hearing loss are people who are deaf and people who are deafened. People who are deaf or the hearing impaired refers to those whose hearing is impaired to some degree at the time of birth. People who are deafened or hard of hearing are individuals who were once hearing, and due to illness, age or accident have a degree of hearing loss (WA Deaf Society Inc.)

In classifying deafness, another important variable must be taken into consideration. Specifically it is whether the deafness occurs congenitally and also whether it was before or after the development of language. Congenitally or pre-
lingually profoundly deaf people as the term implies are individuals whose handicap precedes the development of speech and language. Thus they usually do not have comprehensible speech due to lack of auditory input coupled with an inability to monitor their voices. This precipitates serious communicative impairment and interference with academic development (Gelfand, S. A., 2001:173). Post-lingually deafened people had been exposed to the spoken word prior to their onset of their disorder. Furthermore the age at which the hearing loss begins can make a big difference in terms of its effects on the individual (Shames, G. H., 2002:334) as this would determine how much language input they would have had. They would have learnt some speech and be able to comprehend lip patterns and able to lip read if trained. They may be fluent in the common language of the community and able to communicate by writing if they had been exposed to it prior to their disorder.

1.3.3. Degrees of hearing loss

The auditory system contains about 25,000 cochlea neurons that can process a wide range of sounds (Rodda, M. 1987). The sounds an individual hears are determined by two characteristics of sound waves, their amplitude and their frequency. The amplitude is the difference in air pressure between the peak and baseline of a wave. The frequency refers to the number of waves that pass by a given point every second. Loudness of sound is influenced by a complex relationship between the wavelength and the amplitude of the wave. The greater
the amplitude, the faster the neurons fire impulses to the brain and the louder the sound that is heard. Loudness of sound is usually expressed in decibels (dB). A whisper is about 30 dB, a normal conversation is about 60 dB and the Commuter train is about 90 dB. Sound waves above 120dB are generally painful to the human ear.

Hearing loss is technically measured in terms of decibel units. The table 1.1 in the next page outlines the varying degrees of hearing loss.

**Table 1.2**

Degrees of Hearing Loss

<table>
<thead>
<tr>
<th>Degree of hearing loss</th>
<th>Decibel range</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>10 – 25 dB loss</td>
<td>Hears and speaks well</td>
</tr>
<tr>
<td>Slight</td>
<td>23 – 40 dB loss</td>
<td>May have difficulty hearing faint or distant Speech. Generally speaks well.</td>
</tr>
<tr>
<td>Mild</td>
<td>40 -55 dB loss</td>
<td>Speech must be loud to be understood. Generally understands speech when the distance is limited. (1-2m). Speech is okay.</td>
</tr>
<tr>
<td>Moderate</td>
<td>55 – 70 dB loss</td>
<td>Sounds must be loud and distance small for Conversation to be heard. Will have difficulty in group discussions.</td>
</tr>
<tr>
<td>Severe</td>
<td>70 – 90 dB loss</td>
<td>May be able to hear loud voice about a foot from the ear; May be able to identify environmental sound;. May be able to Discriminate vowels but not consonants. Speech and language will be affected if Hearing loss is present before 12 months old.</td>
</tr>
<tr>
<td>Profound</td>
<td>Over 90 dB loss</td>
<td>May be able to hear sounds more through vibrations than of tonal patterns; may rely on vision rather hearing as the primary channel For communication.</td>
</tr>
</tbody>
</table>

(WA Deaf Society Inc.)
1.4 Deaf Communication

Communication options for the Deaf are limited. According to the brochure published by Pusat Majudiri Y, there are a number of options or combination options available to the deaf.

Some of the communication options for people who are deaf include:

(a) Oral Communication

Mild and moderately hearing impaired people tend make use of their residual hearing ability to facilitate oral communication (WA Deaf Society Inc.). In oral communication, the individual uses speech to express information, and lip reading for receiving information. This procedure is not adequate as they often receive only parts of the information and comprehension is affected. Their reception can also be improved with the use of hearing aids.

(b) Lip reading

It is the ability to read words from the lip pattern and shape when articulating words. There has to be no obstruction to the lip movement, as this will impede comprehension. However one needs prior knowledge and understanding of the language. Thus only those who are deafened would be able to lip read.

(b) Cued Speech

This is a visual representation of the spoken language by using cues to illustrate the sound that cannot be heard. It uses eight hand shapes that represent consonant sounds and four locations near the mouth that represent the vowels. A
handshape and a location together cue a syllable. These cues are made while talking to make the spoken language clear.

**Figure 1.2**

Handshape and Location in Cued Speech

![Handshape and Location in Cued Speech](RIT-NTID-Tipsheet:Cued Speech)

The first three options mentioned are used when the primary goal is to develop speech and communication skills necessary for integration into the hearing community.

(d) **Gesture**

The use of human gesture for communication is used in almost any spoken conversation. Gestures can be used to add meaning to what is being said. For example, the gesture of pointing to the wrist may indicate thing at one is enquiring about the time. Similarly an index finger circling the temple is to show a familiar gesture for 'crazy'. (WA Deaf Society Inc.). In neither instance is the Deaf person using sign equivalents, but these are easily understood gestures when communicating with hearing people. Gesturing can be an effective means of
communicating in informal settings but is not suitable for formal settings like at meetings and functions. The use of gesture cannot be not be relied on as an effective means of communication.

(e) Mime

Mime involves the enacting of real life activities similar to a pantomine. Deaf people may use elements of mime to communicate with their hearing counterpart who do not understand sign language. Although entertaining, miming takes a considerable amount of time and effort to 'roughly' convey information. Mime alone, like gesture, can only be effective in informal settings. For more in-depth communication the use of mime is insufficient.

(f) Sign Language

It is a visual-gestural language, which incorporates hand shapes, body movements, facial expression, mime and gesture. Sign Language uses the hands to ‘speak’ and the ‘eyes’ to listen. It is not impoverished in any way for the sign language has its own linguistic rules, grammar and syntax. It can be used in both informal and formal context. It is quite distinctive from English. In contrast to gestures, a signed language requires that specific gestures take on meaning for the whole community. The signs can be considered to be a composite of the handshape, held in a particular location executing some movement. It also incorporates body movements, gestures, facial expressions and other visual cues to communicate (Stokoe, W., 1972).
Sign language is not universal and each country has its own variation. In Malaysia the Malaysian Sign Language is the Bahasa Isyarat Malaysia or BIM. It is a language in its own right and is closely related to the American Sign Language (Pusat Majudiri Y for the Deaf). It is a visual language which possesses a structure, grammar and syntax of its own. Like any other language, it can express complicated, intricate concepts with the same degree of explicitness and eloquence as spoken language (Understanding Deaf Culture: The Malaysian perspective, 2006:9).

**Figure 1.3**
Examples of the Malaysian Sign Language

![Sign Language Examples](www.mfd.org.my)

(g) Signed English and Malay

In the book, Understanding Deaf Culture: The Malaysian perspective, (2006:9), it is stated that the signed Malay and English are used as the medium of instruction in government aided schools. The structure of the language appears to be like a literal translation of the spoken language. Kod Tangan Bahasa Malaysia is
a coded manual mode which adheres to the basic principles and grammar of the Malay Language, It is not a sign language (‘Communication with the Deaf’).

(h) Finger spelling

Finger spelling has 26 hand shapes or combinations of hand shapes which are used to represent each letter of the alphabet (Pusat Majudiri Y for the Deaf). Finger spelling is generally used for proper nouns or where there is no BIM ‘sign’ for a particular word.

**Figure 1.4**

Example of Finger Spelling of a Proper Noun

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>E</td>
<td>N</td>
<td>R</td>
</tr>
</tbody>
</table>

(www.mfd.org.my)

However it must be noted that finger spelling is not part of sign language. Communication is established by spelling out the letters in the word using finger spelling. For many hearing people who come in contact with a deaf person finger spelling may be one of the basic forms of communication among them.
Many people are surprised to learn that written communication is difficult for a deaf person to learn (WA Deaf Society Inc.). Writing is a visual and symbolic is difficult for a deaf person to learn (WA Deaf Society Inc.) if one cannot ‘hear’ spoken language and therefore mimic spoken language. According to the WA Deaf Society Inc., which was concurred by the Lim, L of Pusat MajudiriY, it is understandable that the Deaf would find it difficult to translate these symbols. This will trying be like to learn to read a foreign language without actually having the benefit of first hearing the language (WA Deaf Society Inc.).

In 1992, an Australian research study showed that deaf school leavers at the age of 17 have an average reading level of a Grade 3 student (WA Deaf Society Inc.). This is partially due to the previously poor education system as well as the information mentioned above. It is therefore important to make allowances for ‘less than perfect’ written English and communication skills of people who are deaf.

1.5 Telecommunication Options for the Deaf

Historically, the telephone has excluded the Deaf. Although Alexander Graham Bell was initially interested in creating technology that would help the Deaf people learn to speak, his invention of the telephone left the Deaf out of one of the most important communication changes in the past century (Keating, E., 2004). Ironically, the Deaf community did not have telephone technology until the 1960s, nearly one hundred years after the hearing community.
Telephonic communication became possible for the Deaf when in 1965, a deaf physicist in Southern California, Robert Weitbrecht, developed an acoustic coupler. A teletype machine was connected to a telephone handset and the new TTY (teletypewriter) became available to them (Keating, E., 2004). The TTY changed communicative habits and other social habits within the Deaf community. Innovations in technology have provided the Deaf people some access to modern convenience. Until now, the main technology to help the hearing impaired people communicate has been TTY, also called the Telecommunications Device for the Deaf, or TTD. Available since the 1960s, TTY works through phone lines and the experience is something like instant messaging (Keating, E., 2004). Alternatively, TTY users can employ an operator to translate text and have a phone conversation with a hearing person – process called ‘relay’.

Nevertheless, it is rather limiting as the receiver had to have a TTY machine too. Today the TTY is insufficient for many reasons. It is slow, cumbersome, and analog (which means that is no interconnectivity among the various service providers). Unlike the typewriter or computer, it did not have a backspace or delete key. In Malaysia, the scenario remained unchanged as the TTY was not available to the Deaf here.

Today in the 21st century, the deaf community is limited to a minority group of deaf people who use the sign language to communicate with their friends and family who have also learnt the sign language. They have been excluded from the general hearing community because they do not have a common language – until now – that is until the advent of text messaging via the mobile phone. This has revolutionized the way the Deaf communicate with everyone (the hearing
people and other Deaf people). The mobile phone is no longer associated with the elite and affluent. With cheaper mobile phones and prepaid options, cost did not become an issue to owning a phone. It is considered the minority who do not own one.

1.6 Short Messaging Service (SMS)

When SMS was launched in the United Kingdom in January 1999, 40 million messages were tapped out in the first month (mobilesms. 2002). The Mobile research Company, ‘Mobile Lifestream’, had predicted that SMS would increase rapidly by 2003 and peak in 2004. 20 billion messages were sent out in the year 2000 and it was also predicted that in 2004 it would average more than 84 billion messages being sent around the world. SMS – this century’s new communication medium and an afterthought to the mobile phone has so revolutionized the manner in which people are talking and communicating to each other. SMS is the new first-class post, but cheaper than a stamp – and faster (Varney, D. 2003 as cited in Power, M., 2002). It has been enthusiastically taken up because it is ‘quick, efficient, cheap and convenient’ (Stewart, F., 2003).

In 2002, Malaysians sent a total of 3.6 billion messages. The figure rose to 6.1 billion in 2003, representing an increase of 69 percent. Last year (2006) the SMS traffic from January to September was 6.6 billion messages (Malaysian Communications and Multimedia Commission, 2007). This increase could be accrued to the strong growth in mobile phone ownership which had grown six-fold in six years. Cost is another factor why ‘texting’ is continuously gaining
popularity. With the ‘price war’ among mobile network operators like Maxis, Digi and Celcom, to attract customers, the mobile phone users naturally stand to benefit. The Malaysian government had also urged the mobile phone operators to share networks for easy connectivity to boost the reach of mobile phone coverage for users. What this means is that a mobile user with a Maxis line can send an SMS to another with a Celcom line. This cross-networking has created a huge expansion in the use of mobile phones and SMS. The figure in the next page gives the total growth of the mobile phone penetration in Malaysia.

**Figure 1.5**

The growth of mobile phone in Malaysia

<table>
<thead>
<tr>
<th>Year</th>
<th>Qtr</th>
<th>Cellular phone</th>
<th>As % of all telephone s</th>
<th>Short message services (SMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Growth</td>
<td>Penetration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(000) digital</td>
<td>rate (%)</td>
<td>rate (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>2,150</td>
<td>-12.6</td>
<td>9.7</td>
<td>74.5</td>
</tr>
<tr>
<td>1999</td>
<td>2,717</td>
<td>26.4</td>
<td>12.0</td>
<td>83.7</td>
</tr>
<tr>
<td>2000</td>
<td>5,122</td>
<td>88.5</td>
<td>21.8</td>
<td>91.8</td>
</tr>
<tr>
<td>2001</td>
<td>7,385</td>
<td>44.2</td>
<td>30.8</td>
<td>95.6</td>
</tr>
<tr>
<td>2002</td>
<td>9,053</td>
<td>22.6</td>
<td>36.9</td>
<td>97.9</td>
</tr>
<tr>
<td>2003</td>
<td>11,124</td>
<td>22.9</td>
<td>43.9</td>
<td>98.9</td>
</tr>
<tr>
<td>2003</td>
<td>1</td>
<td>9,543</td>
<td>5.4</td>
<td>38.3</td>
</tr>
<tr>
<td>2003</td>
<td>2</td>
<td>9,931</td>
<td>4.1</td>
<td>39.6</td>
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<td>3</td>
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<td>2004</td>
<td>2</td>
<td>12,398</td>
<td>5.4</td>
<td>48.5</td>
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<tr>
<td>2004</td>
<td>3</td>
<td>13,042</td>
<td>5.2</td>
<td>50.7</td>
</tr>
</tbody>
</table>

(Malaysian Communications and Multimedia Commission 2005)
SMS as defined within the GSM digital mobile phone standard is a service which enables its users to send short interpersonal text messages to one mobile phone from another, although it is possible to send from web based SMS-services on the internet, and even over landline phones (Grinter, M., 2001:2). The text can be comprised of words or numbers or an alphanumeric combination. Each short message is up to 160 characters in length when Latin alphabets are used and 70 characters in length when non-Latin alphabets such as Arabic and Chinese are used. (mobilesms, 2004). Some mobile phones are able to send more than 160 characters (e.g., 260), but at the cost of two SMS calls (Harper & Clark, 2002: 6). SMS was introduced in the GSM system and subsequently supported by all other digital-based mobile communications systems.

Unlike paging, but similar to e-mail, short messages are stored and forwarded at SMS centers, which means messages can be retrieved later if one is not immediately available to receive them (Hord, J.) Whereas voice calls are sent over a dedicated radio channel for the duration of the call, short messages travel over and above the radio channel using the signaling path. As such, users of SMS rarely, if ever, get a busy or engaged signal as they may during peak network usage times.
Most commonly, text messages are created on the small keypad of the mobile phone and are read as texts on the small screen panel of the phone. The small keypad has twelve keys, ten for the numbers 0 – 9 and two for the characters ‘* +’ on the bottom left pad and ‘#’ on the bottom right pad. Each key for the numbers also harbours 3 to 4 letters in alphabetical order. For example the key for the number ‘2’ also holds the letters \(a, b\) and \(c\). It has to be pressed once for the letter ‘a’ and thrice for the letter ‘c’. To type the word ‘book’ the following keys have to be pressed: 2665. However the key pads have to be pressed 10 times to get the correct sequence of letters – 2266666655. This makes entry laborious and time consuming. Thus most mobile phones have some form of predictive software to overcome this problem. The mobile phone has a built-in dictionary which would predict or guess the words from the sequence of the keys pressed. In this way, the user needs to press only once for each letter. However Grinter and Eldridge (2001) in their study on text messaging practice by teenagers in England reported that they
did not use predictive text entry as they found it troublesome. Furthermore the predictive text input did not accept slang and creative contractions of words.

1.7. The Role of the SMS text messaging in the Hearing Impaired Community

It appears that SMS is not a formal telecommunications service, as there is no SMS regulation. There is no quality of service requirements for SMS, beyond those specified in the Standard Form of Agreement (SFOA) for a mobile phone service - voice, SMS or MMS. Despite the limitations of SMS, it has become a lifeline for people who are deaf. SMS is their only means of mobile communication, since their disability does not allow them to use the mobile phone for voice network.

To many, this new technology is the latest craze. According to Nokia’s world-wide survey of 3300 people (Nokia, 2001), over 80% of those sampled in the survey reported text-messaging as the most used function on their mobile phones. However to the hearing impaired, text messaging is the only function they can use on their mobile phones. This technology has become a lifeline to them and SMS has greatly enhanced communication, both among the deaf and the hearing community. A survey carried with the Birmingham Institute of the Deaf showed that 98 percent of the hearing impaired people in the United Kingdom use SMS text messaging (The Guardian, 2002). Following the survey, a British police department adopted SMS to let the hearing and speech impaired people report emergencies.
In the past, deaf people had to either use a telephone typewriter or the services of relay interpreter service (people who serve as interpreters over the phone) to make phone calls. Although the use of mobile phones among the hearing impaired is a relatively recent phenomenon it has ‘significantly transformed the lives of Deaf Malaysians and the way they now communicate with each other’ (Thanasayan, A. 2006). For Deaf people like everyone else, SMS brings a sense of equality in that it can be used to communicate with anyone without barriers. As Power (2004) observes ‘SMS allows the hearing impaired spontaneous and private access to businesses, services, and both hearing workmates, friends and family on an equal footing with every other owner of a mobile phone’.

This has brought a new dimension to their closest relationships. SMS is used to communicate with family, friends, and work and conduct day to day business. Some deaf people have even managed to sell a car or via SMS in the same way as normal hearing persons would do so.

It also gives them a sense of independence in the way they communicate. They do not have to depend on ‘hearing interpreters’ to assist in relaying information to family and friends. It also affords privacy as there is no third party privy to their conversations unlike when they communicate in Sign Language.

Before the advent of SMS, communication between the Deaf and the hearing was only face-to-face communication, through gestures, sign language (with those who know sign language) or the use of pen and paper. Today mobile phones put the hearing impaired people on the same playing field as non-hearing impaired (Power, 2004) when communicating via SMS as they can now ‘speak’
the same ‘lingo’. Deafness is not seen as a disability and does not impede communication when you are ‘texting’.

Constraints on communication between the Deaf and hearing person often resulted in strained interactions as well as loss of information. In an article in the Scandinavian Audiology (2003), Anthony Tusler, a technology policy researcher at the World Institute of Disability in Oakland California was quoted that despite good intentions, many Deaf are isolated at the workplace. “Previously it was really problematic for me to talk to Deaf colleagues, so I had a tendency not to”, he said. Now things are changing.

Fortune 500 in 2004 quotes Meher Sethna Dadabhoy, coordinator of the Indian Sign Language at the Ali Yawar Jung National Institute for the Hearing Handicapped saying,

*mobile phone has become essential for the hearing impaired working people. Once they start working their priority is not food or entertainment, it is getting a mobile phone.*

(Fortune 500, Aug. 2004)

Arun Rao, executive director of Deaf Way, an NGO working for the empowerment of the deaf in India reported that the Deaf ‘are not earning huge salaries. Yet they spend quite a bit on SMS-ing’ (Nagarajan, 2003). According to him the mobile phone has become a lifeline a most coveted birthday present.

A GSM company in Sri Lanka ‘Dialog’ offers unlimited SMS to any Deaf person for a low monthly rental of a couple of pounds. This is one of the first packages to be offering to such people (Dialog, Sri Lanka). In India, ‘Airtel’ is offering a special plan to Deaf people. This plan – ‘Airtel Confidence Plan- 99’
offers free SMS messaging within India. It charges Rs.99 as monthly rental. One cannot make or receive calls on this sim card according to Airtel. In Malaysia, Celcom is the only telecommunication network that has waived the access fee for the Deaf community.

As a result of the prompt and efficient exchange of communication afforded by SMS, employment positions that require using the telephone are no longer an issue, and therefore the vocational choices for the hearing impaired have broadened dramatically. They can now work independently as courier drivers or truck drivers. They can also hold down positions that require them to be ‘on-call’ (Power, 2004). As reported in the Guardian (2002), SMS also gives the hearing impaired people in the United Kingdom, who have twice the unemployment rates of hearing people, the ability not only to communicate with hearing colleagues easily, but to also share in news that they might otherwise be excluded from.

The popularity of the SMS is easily explained – the text is short and understood even by those not used to the English Language or who may possess limited English. It is also quick and most phones can be set on vibrator mode. The deaf user is easily alerted to a message.

The Deaf are known to become heavy users of the SMS text messaging service. Dr Theresa Pierce, principal of the Victorian College of the Deaf and who is Deaf herself, said she sent 50 text messages a day. According to her, “It is very helpful. People can contact me very quickly, teaching staff, parents, other professionals, and I can give them a prompt response. It’s nice to have that independence and that’s very important for me personally.” (Ker, 2002:8).
The most important thing to note about the high impact of the SMS in the hearing impaired community is the fact that it is a mainstream technology. A specialized assistive technology designed specifically for the hearing impaired people or people with disabilities would be expensive and difficult to find.

*The very idea of a deaf person using a telephone may seem oxymoronic, but mobile phones have been bought by just about every young deaf person and used, in most cases, purely for text messaging (SMS). The fact that SMS is a mainstream technology (i.e., cheap and accessible) has contributed to the huge impact it has had on the social independence of members of the deaf community.*

(Gradden, 2001:8)

In addition as a form of communication, it carries no ‘stigma’ as the rest of the hearing world uses it too. It makes life more accessible for the Deaf people as they are now able to communicate over space and time (Adams, 2000:1).

The Deaf used their hands to ‘speak’ in Sign Language: now they are using their fingers to ‘speak’ via the texting of SMS text messages.

1.7.1. Short Message Service and the Deaf in Malaysia

In Malaysia, like in Australia, Britain and Israel, mobile phone service providers like Maxis, DiGi, Celcom and Hotlinks have agreed to interconnect their network. Thus the Deaf can take their mobile phone anywhere and connect through SMS with anyone else who has a mobile phone.

With mobile phones becoming cheaper and inter connectivity of the service providers, owning a mobile phone has become more affordable. Furthermore,
prepaid phone packages have also made mobile phone use more affordable and within the purchasing capacity of the Deaf majority.

The Parliamentary Secretary to the Ministry of National Unity and Social Development, Datuk S. Veerasingam said more and more Deaf were using SMS to contact and communicate with each other in Malaysia. According to him when he was about to leave for a function for the Deaf, he received an SMS asking him to arrive at a particular time. When he arrived at the function, almost all of them were using their handphone to send and receive SMS.’ (nokia.com).

In Malaysia, the mobile phone manufacturer Nokia has provided a special SMS for Deaf people. Realizing the potential of the SMS function on mobile phones, the Malaysian Federation of the Deaf (MFD) has set up an SMS platform in the ‘e-pekak’ web site. It functions to offer SMS facilities to enable the Deaf community to send SMS messages to any mobile phone by logging on to a server network which will be maintained by MFD. According to its executive director, En Mohamad Sazali Shaari,

This is useful especially at times when a deaf person faces an emergency situation and needs the help of the local authorities. They can send messages to anyone with a mobile phone to convey the information to the police station or to the hospital. (Computimes, 2002)

Deaf organizations in Malaysia are keen for more government and businesses and services to allow communication through text messaging as it would greatly benefit them. It enhances their independence.
1.8. Language Used By the Hearing Community in Malaysia

The majority of the Deaf are born to non-hearing impaired parents who do not know sign language or have low proficiency of it. Unlike normal children whose parents speak in their mother tongue, English or Malay, these children often lack the serendipitous access to language at home which is necessary for developing linguistic skills during the ‘critical period’ of language development (Mayberry R; 2002:2). It must be noted that Deaf children do not acquire sign language as a ‘mother tongue’. However it is generally accepted that the Deaf must acquire at least written fluency in the spoken language of the majority of the society. They struggle to grasp the rules of a complex and sophisticated auditory based system without the benefit of auditory feedback. Difficulty in mastering a linear spoken language is inherent to the nature of deafness as they have trouble constructing the rules of the language without hearing it (Paul, V. P.,2001).

In Malaysia, special education for the Deaf is implemented in three main settings – namely residential schools, special day schools and special classes or units in regular schools. Their syllabus follows the KBSM and KBSR curriculum where they are taught via Kod Tangan Bahasa Melayu or manually coded Malay Language as the medium of communication. English is taught as a subject similar to mainstream schools. As the Deaf feel that the Malaysian Sign Language (Bahasa Isyarat Malaysia-BIM) is the official and true language of the Deaf Malaysians, English can be considered their third language after BIM and Malay language. Thus with limited input at school and exposure to the language it is inevitable that the Deaf are not very proficient in the English Language.
Despite the limitations mentioned above, the Deaf are using the English Language when they communicate with the hearing majority who do not know sign language. They use pen and paper to communicate by writing in English or in Malay. Presently, they are also exposed to the English Language when they surf the internet as much of the information is in English.

1.9. The Rationale and Objective of the Study

There is a concentration of the Deaf community in the Klang Valley and their presence is seen at the YMCA Kuala Lumpur. The YMCA Deaf Club enabled the Deaf to congregate for social and recreational activities as well as to attend workshops and seminars to help them be self-reliant and independent. These Deaf members have adopted the use of SMS text messaging in their everyday communication. The growing popularity and importance of the mobile phone among the Deaf community who use it solely for SMS text messaging has created an interesting area of study yet to be undertaken. The culture of communication that can be uncovered from the findings has implications for a better understanding of Deaf communication and acceptance of the Deaf into society at large. The general objective of this research is to find out the text messaging behaviour of the Deaf as well as the communicative themes and features of their SMS text messages which will be realized as the research questions.

The study hopes to answer the following questions:
1. What is the SMS text messaging behaviour of the Deaf community selected?

2. What are the communicative themes and orientation of the SMS texts used by the Deaf community selected?

3. What are the features of the SMS text messages of the Deaf community selected?

1.10. Definition of Relevant Terms

Some of the terms used in this study are known to have more than one interpretation; thus the researcher feels that it is pertinent to define those terms here.

**SMS** short messaging service that is sent from one mobile phone to another.

**text** typed record of a communicative event on a mobile phone.

**message** this refers to the information that is transmitted by the interlocutors from one mobile phone to another.
Deaf in this study the hearing impaired who are profoundly deaf from birth or those who are prelingually deaf.

Texter the person who communicates via SMS text messages by typing his/her messages on the keypad of the mobile phone to be sent to another mobile phone.

Sender the ‘speaker’ or writer who produces the SMS text message.

Receiver the ‘hearer’ or reader who is the recipient of the text message.

1.11. Conclusion

The organization of this paper is as follows. This chapter gives an introduction to the issues at hand and as well as the research questions based on the rational and objectives of the study. Chapter Two will provide a review of related literature and other research carried out in this field. Chapter Three will outline the methodology on the data collection and how the data will be analysed. Chapter Four will analyse the data obtained from the various sources. Chapter Five will summarise the findings and from the analysis to answer the research questions as
well as to identify the limitations of the study. The chapter concludes with recommendations for further research.