



People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
Larbi Tebessi University -Tebessa
Faculty of Letters and Languages
Department of Letters and English Language

**Traditional Versus Technology-Assisted Approaches in
the Process of Teaching and Learning English for
Learners with Hearing Disabilities**

*The Case of First year Middle School Students with Hearing Disabilities in
Bekkaria, Tebessa*

A Dissertation Submitted to the Department of Letters and English Language
In Partial Fulfillment of the Requirements for the Degree of Master in Language Sciences

Candidates:

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Mrs. Amina GHOUL

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Abstract

Hearing disability is a broad term that refers to hearing deficiency of varying degrees. Almost everyone knows or has met someone who is deaf or hard of hearing but very few people understand the obstacles that deaf or hard of hearing persons face. Deaf and hard of hearing learners have the right to learn English. The present study aims to compare and test the effectiveness of both traditional and technology-assisted approaches in the process of learning/teaching English for deaf and hard of hearing students in the special school of learners with hearing impairment in Bekkaria-Tebessa. This study hypothesizes that the technology assisted approach is more effective in the teaching of English than the traditional one for deaf and hard of hearing learners. The research design conducted in this study is one group pre/posttest and the research approach applied is pre-experimental. Data were collected qualitatively and quantitatively using a classroom observation, an experiment with the first middle school students in the special school of Bekkaria and an interview with their teacher of English. The findings showed that the technology-assisted approach is more effective than the traditional approach. For the teacher, technology and its applications helped her to transfer the speech to sign language easily.

Keywords: Deaf, Hearing disabilities, Hard of hearing, Traditional and Technology-assisted approaches, Teaching and learning English.

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Dedication

I dedicate this dissertation to my lovely father, **Abd-Essalem**, and Mum **Souraya** greatly shaped my life and always dreamt to see me a Master holder.

To my dear parents whom I owe my success. They always encouraged a love of learning in and expected the best of me.

To my brothers **Taki-Eddine** who have truly waited anxiously and patiently for the moments of my success and **Mondher**.

To my lovely sister **Djouaher** and my dear sister-in law **Feriel**.

To my uncle **El-wardi** and his wife my aunt **Zhour**

To my lovely cousins: **Nidhal**, **Fadi** and **Wail** for their continual encouragement, moral support and kindness.

To my best friends who have helped me even with a smile.

To my partner and my dear friend **Nesrine HAMMI** and her family

To the ones who stood by me in the hard and good times.

A special thanks for everything, but particularly for believing in, encouraging me, helping me all the time till I could complete this work.

Boulaares Djoumana

Dedication

Every challenging work needs self efforts and support of elders especially those who are very close to our hearts

I would love to dedicate my humble efforts:

To my beloved parents whose affection, love, encouragement and prays of day and night make me able to get such success and honor;

“This graduation is yours
Mom ... Dad, I grew up now
And am fulfilling your own goals”

To my dearest brothers and sisters

To all my respectful family members **Hammi & Gaid**

To my precious friends

To my partner in this work and my friend **Boulaares Djoumana** and her family

To the soul of **Asma Souan**

To my hard working and respected teachers.

To the **deaf and hard of hearing learners**, their teacher of English, their families, and whoever works with them to make their life better whether in Tebessa, Algeria or at any place all around the globe.

Hammi Nesrine

List of abbreviations

ADHD: Attention Deficit and Hyper activity Disorder

AR: Annual Review

ASL: American Sign Language

ASLHA: American Speech Language Hearing Association

BSL: British Sign Language

CAL: Computer Assisted Learning

CALL: Computer Assisted Language Learning

DAS: Department of Social Activity

dB: Decibels

D/HH: Deaf and Hard of Hearing

IEP: Individualized Education Program

LCD: Liquid Crystal Display

PDA: Personal Digital Assistant

PLATO: Programmed Logic for Automatic Teaching Operation

PWDs: Persons With Disabilities

Sim Com: Simultaneous Communication

SPSS: Statistical Package for the Social Sciences

TAA: Technology Assisted Approach

TEL: Technology Enhanced Learning

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General Introduction

1. Background of the Study

People with hearing disabilities consider education as a key to all their closed doors and a solution to all their problems because it enables them to understand what is going on outside their silent world and opens up prospects for them to join society and even more, reach high positions in their country. People with special needs are part of the fabric of society, and their learning is an urgent educational requirement that entails community involvement. They live their lives and practice their activities with respect and appreciation, especially if they have deficiencies in a certain area; they have strength and energy in other aspects, perhaps more than ordinary people and then these aspects must be invested and properly employed (Abed El-Atti, 2010, p. 184).

In some countries like Algeria students with hearing disabilities learn through what is called the traditional approach whereas in other countries they start applying a new approach which is technology-assisted (Medjrab, 2017).

According to Black (2002), the traditional approach is traditional teaching in the classroom where the student and the teacher as well as student and student communicate face-to-face. Hu and Hui (2010), on the other hand, defined technology-assisted approach as an attractive and cost-effective learning approach that includes a varied use of computer technology.

Hearing impaired learning necessity is increasing at a time when the growth in the use of educational technologies and technological devices, and the number of users of these devices have increased significantly, especially since these devices have become relatively cheap. And began to use these technological innovations in the educational process, which changed the role of the teacher from the cursor and the transfer of knowledge to guide and leader to learners (Abou El-Oula, 2015).

2. Statement of the Problem

The reason that has led the researchers to conduct this research is finding a suitable method that can help the teacher to teach English for deaf and hard of hearing pupils. Based on the observation of the teacher of English of deaf and hard of hearing pupils of first year level by the researchers during the first term of the academic year 2019-2020 in the special school of hearing disabilities at Bakkaria. In the traditional approach, the trainer usually speaks more and uses such instructional materials as blackboards and chalks (Prof & Titthasiri, 2013). The researchers observed the inadequacy of the applied approach. Additionally, most of the world's schools and universities for deaf and hard of hearing learners, like Gallaudet university in Washington, the school of deaf in California and the Langston school in new York rely on many different technological applications and modern communication devices such as computers, smart phones, LCD projectors (which is a type of projector based on liquid crystal displays which can display images, data or video). An LCD projector works on transmissive technology, and portable tablets in educating deaf and hard hearing people in the different educational stages (Mohammed Ali, 2015). . But, if their education is limited, primitive and not adapted to their conditions, it will create many difficulties that make them helpless and marginalized and this is the case of the deaf community in Algeria. In this context, The Algerian League for the Defense of Human Rights confirmed that deaf and hard of hearing people suffer from marginalization and they are deprived from many rights starting from education and employment till the sense of respect which constitutes a real crisis in their involvement in the society. Unfortunately they do not receive media or responsible attention to solve their problems, instead they only receive fake promises (Medjrab, 2017). Hence, the current research investigates the stated problem and examines the possible solution which advocates the use of technology for teaching English to deaf and hard of hearing pupils.

3. Research Questions

The main questions of this research are:

1. Is there a correlation between the application of the technology-assisted approach and first year middle school hard of hearing students' achievement in English?
2. Which of the following approaches is more effective for the teaching process among students with hearing disabilities in Bakaria, Tebessa?
 - 1) Traditional
 - 2) Technology-assisted

4. Research Assumptions

In the light of the aforementioned research questions, it is assumed that:

1. There is a positive correlation between the application of the technology-assisted approach and first year middle school hard of hearing students' achievement in English in Bakaria Tebessa.
2. The technology-assisted approach is more effective in the learning and teaching process among first year hearing disabled students in the school of Bekaria, Tebessa

5. Aim of the Study

This research aims at comparing and testing the effectiveness of both the traditional and technology- based approaches in learning and teaching English for the first year middle school students with hearing disabilities (Bakkaria School for students with hearing disabilities, Tebessa).

6. Research Methodology

In order to answer the research questions and check to which extent the assumption stated above are true, the study compares both traditional and technology-assisted approaches in learning and teaching English for first year middle school students with hearing disabilities.

Thus, a one-group pre-/posttest design will be employed since the sample is limited. The research tools are as following: an interview for the teacher of English and (pre-test, treatment, post-test) for the students with hearing disabilities and a classroom observation. The population consists of the students with hearing disabilities and their teacher of English from the special school of Bakkaria in Tebessa. Due to the small and manageable number of respondents in this study and because they share the hearing disability as common characteristics. The sampling design used in this study will be total population sampling and pre-experimental research approach.

7. Structure of the Dissertation

This dissertation consists of two chapters; one theoretical and one practical. The first chapter includes two sections. The first section provides an overview of the hearing disability. The second section is devoted to explain the traditional and technology-assisted approaches in the process of teaching and learning deaf pupils. The second chapter is also composed of two sections; the first one is devoted to present a detailed description of the methodology used in this research while the second one presents the analysis and the discussion of the main findings.

Chapter One: Literature Review

Introduction

Hearing is a very important sensation for human beings. It helps to understand the surrounding environment and can alert of any coming danger around us. Being able to hear is an important part of an active and enjoyable life. Technology allowed hearing for hearing disabled people, connect with the world around them, to have conversations with friends, enjoy TV and music, and hear warning signals such as fire alarms through assistive technologies. Technology also said to be an effective tool that enhances the education process for students who are deaf and hard of hearing and their teachers that is hindered by many difficulties since hearing disability is a serious sensory deprivation that generally afflicted their academic achievement in particular.

This chapter is divided into two sections. The first section displays a general overview of the hearing disability. It starts with defining the hearing disability, the degree, the types and the causes of hearing disability. Then the methods of communication with people with hearing disability and the impacts of hearing disability of the cognitive functioning . Finally, the characteristics of hearing disability learners.

The second section is devoted to the traditional and technology-assisted approaches . This section begins with introducing the both approaches technology and traditional of teaching, Background of both approaches, technology in education and in deaf education, problems and limitation of both approaches. Then, it provides the problems that hinder the process of teaching and learning English to deaf learners . Most importantly it highlights the training for programs preparing teachers of hearing disabilities learners.

Section one: A General Overview of the Hearing Disability

1.1.1. Definition of Hearing Disability

According to Naff (2010), the term hearing disability differs in its significance; it can refer to different acoustic disorders such as “partial, complete, or temporary hearing disabilities.” Naff (2010), defined hearing disability as acoustic disorders that occur due to “physical trauma or infection, and genetically determined structural deformation” which results in a loss or decrease in the ability to distinguish any auditory information (p.17).

1.1.2. Degrees of Hearing Disability

1.1.2.1. Deafness

Hallahan and Kauffman (1978) (As cited in Napierkowski, 1981, p.106) defined deafness as a deep hearing disability that occurs before the first 2 or 3 years of life. Thus, before an infant acquires language completely. Hallahan and Kauffman (2006) declared, “A deaf person is the one whose hearing disability precludes information through audition, with or without hearing aids” (p. 322). In the light of what Hallahan and Kauffman said, it is concluded that this severe hearing disorder prevents the deaf from speaking and understanding verbal language even with the use of amplified hearing aids as he/she cannot acquire linguistic information or develop skills related to speech and language through the sense of hearing. In presenting the types of deafness, Nodoushan (2008, p.16) said that the one that occurs before the acquisition of language is called pre-lingual. Allen & Cowdery (2011, p.123), on the other hand claimed that deafness which occurs after language acquisition is called post-lingual.

Hans Furth (1973) explained the experience of deafness saying

You can simulate how it feels to be an adventitiously
deaf person by watching television with the sound

turned off; your problem is to read lips. But if you want to simulate how it feels to be a prelingual deaf person you must watch the screen of a foreign television station. Your problem now is not merely to read lips: even if you could, you would still be faced with the task of comprehending language.” (p. 7)

1.1.2.2. Hard of Hearing

Turkington and Sussman (2004) defined hard of hearing as: “a term used to describe mild to moderate hearing loss. This term is preferred over hearing impaired by the deaf community” (P.95). In the same line of thought, hard of hearing people who suffer from mild to moderate hearing disability can depend upon their countrywide language in communication, in contrast to deaf people who suffer from severe hearing disability and can only depend on sign language in communication.. (Domagala – Zyśk, 2015, p. 19). Recently, different technological aids permit hard of hearing people to hear and acquire their national language unlike deaf people that have severe hearing loss and cannot hear even with the use of these technological aids. In the light of what Turkington and Sussman (2004, p.95) and Domagala – Zyśk, (2015, p.19) said, the variance in the degrees of the hearing disability leads to a variance in the communication methods among hearing disabled people.

1.1.2.3. Hearing Impairment

In some contexts, the term hearing impaired refers to deaf people as being marginalized and disabled. Turkington & Sussman (2004, p. 100) said that the term “deaf and hard of hearing” is more appropriate and is commonly used to indicate all the hearing disability suffers unlike hearing impaired which is not appropriate and less used. Also, Winnick (2011, p.253) saw that deaf people do not like to be referred to as hearing impaired because they

consider themselves as normal people without any deficits. Consequently, there is no impairment. This dissertation will not contain any term that offends the category of deaf and hard of hearing people because it raises the slogan "their disability does not mean their inability".

According to the American Speech-Language-Hearing Association (2015), the degrees of hearing disability can be graded according to its intensity. The numbers presented in the following table represent the intensity levels of the hearing loss range in decibels (dB):

Table 1: *Degrees of Hearing Loss* (Winnick, 2011, p. 253)

Hearing threshold	Degrees of Hearing Loss	Levels of Loudness
27-40 dB	Mild	Faint or quite speech
41-55 dB	Moderate	Normal speech
56-70 dB	Moderate-severe	Loud speech
71-90 dB	Severe	Extremely loud speech
Greater than 90 dB	Profound	Extremely loud or inaudible

In the Table above Winnick (2011) identified the five degrees of hearing loss by providing decibel's statistics which describe the intensity of each degree after exposing the deaf or hard of hearing person to loudness. Consequently, the results of hearing this latter differ according to the degree of the loss as shown in the third column.

1.1.3.Types of Hearing Disability

According to Weber & Klein (1999, p.1), hearing disability has three forms. First, Conductive hearing disability is the result of the suppression of sound from accessing to the inner ear. This suppression may be caused by a simple thing as “a fluid in the middle ear, an

ear canal filled with cerumen, a complex thing as ossicular chain fixation” (p.1). Second, sensorineural, which includes the “auditory nerve, or the inner ear, or a central neural lesion, cochlea” (p.1). The third type is mixed loss which is a combination of sensorineural and conductive hearing disability.

1.1.3.1. Conductive Hearing Loss

In this type, the voice is not well transferred to the inner ear (Similar to a radio with a low voice). Thus, no deformation is noticed, but words are low. The majority of children with conductive hearing loss have clear speech. Since a conductive loss is a mechanistic problem in which nerves stay unharmed, it could be refined with medicine or surgery. Hearing aids usually increase volume efficiently (Winnick, 2011, p. 253).

1.1.3.2. Sensorineural Hearing Disability

The American speech-language-hearing association (ASLHA, 2015) declared (as cited in Winnick, 2011, p.253) that Sensorineural hearing loss occurs when the inner ear is harmed to the brain; in this case, the damage affects either the inner ear or nerve tracts from the inner ear to the brain. Besides causing a reduction in the ability to hear even faint words, sensorineural hearing disability also impacts the comprehension of speech. It is a lifelong hearing disability and cannot be treated either medically or surgically (ASLHA, 2015).

1.1.3.3. Mixed Loss

Winnick (2011, p.253) saw that mixed loss is a mixture between sensorineural hearing disability and conductive hearing disability. Furthermore, it is a result of damage that can occur in the outer or middle ear and in the cochlea or auditory nerve (ASLHA, 2015).

1.1.4. Causes of Hearing Disability

According to Winnick (2011, p.253), hearing disability is due to a group of causes that are determined by the time in which these causes occur. During birth; such as congenital anomalies and factors that occur after birth like:

- genetic causes
- continuous exposure to noise
- Weakened immunity
- ear or head injuries
- toxic drug allergies
- Infection to viruses that affect the sense of hearing

1.1.5. Methods of Communication with People with Hearing Disability

1.1.5.1. Definition of Communication

Martínez and Nosnik (1998) defined communication as “a process of social interaction of a verbal or non-verbal nature, with intentionality of transmission and that can influence with and without intention, in the behavior of the people who are in the coverage of said emission.” (p.10). Communication is the passing on of information from one person to another using any means possible.

1.1.5.2. Methods of Communication with Deaf People

According to Goldman and Mallory (1992) there are many strategies to communicate with people with Hearing Disabilities.

1.1.5.2.1. Facial Expression

According to Cherry (2014) when someone is talking, changes in facial expressions are noticed according to which the receiver will respond. These include raising eyebrows,

yawning, sneering, rolling eyes, gaping, and nodding. The meaning of these movements is pretty much the same in all cultures (Kendra Cherry, 2014).

Figure.1:Facial expressions of Different emotions. Retrived from

https://www.123rf.com/photo_90473730_stock-vector-facial-expressions-of-a-cute-woman-different-female-emotions-set-attractive-cartoon-character-vector.html

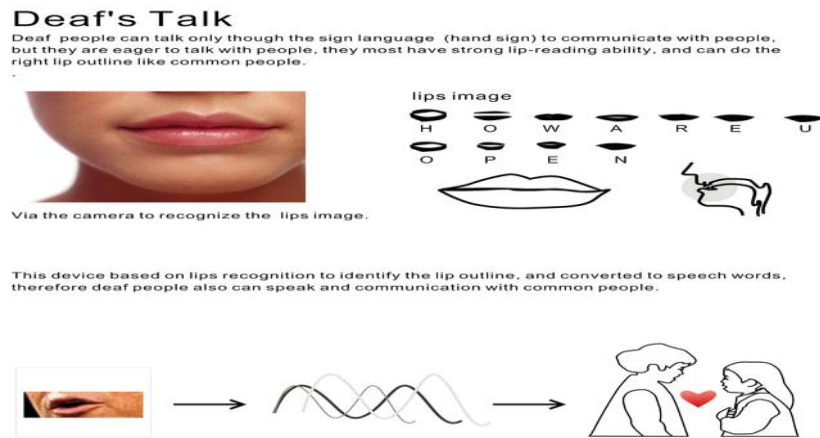


1.1.5.2.2. Lip Reading

For Goldman and Mallory (1992, p. 26), lip reading entails deducing verbal messages through watching lip movements. This is the ability to read lip patterns. Deaf children naturally pick up lip-reading but many speech sounds look the same (for example pat and bat) so it is difficult to rely on lip-reading on its own and it is usually used alongside other communication methods (Goldman and Mallory, 1992, p. 26).

Figure.2: Lip reading to talk with deaf people. Retrived from

<https://ifworlddesignguide.com/entry/134025-dumbs-sound>



1.1.5.2.3. Writing to Communicate

Writing is one of the best ways to get a message across to a deaf person, especially when speech does not seem to be conveying the desired message. Writing information is particularly helpful when the message is detailed (Goldman and Mallory, 1992, p. 25).

1.1.5.2.4. Attention

kimberly (2014) proposed the following tips for teachers to get the attention of their deaf and hard of hearing students

- You should have the attention of the student.
- Be sure they look at you and know they are being listened.
- Touch the person on the head.
- Stand up in front.
- Eliminate obstacles and even inquire if they are ready if they have been disturbed.
- Do not raise your hand in front of their ear, please, because it is disrespectful.

1.1.5.2.5.Haptics

Cherry (2014) said that haptics is touch is a unified system for providing or receiving visual and environmental information as well as social reactions via touch signals on the body. Communicating through touch is an important behavior. There has been a great deal of research on the importance of touch in infancy and early childhood. Harry Harlow's classic monkey study demonstrated how deprivation of touch and contact impedes development. Young monkeys raised by wire mothers had permanent deficits in behavior and social interaction. Touch can be used to communicate affection, familiarity, sympathy and other emotions (Kendra Cherry, 2014).

1.1.5.2.6. Sign Language

Goldman and Mallory (1992,p.27) said that sign language is a language which uses manual communication and body language to convey meaning, as opposed to acoustically conveyed sound patterns. According to Goldman and Mallory (1992,p.27) Sign language can include a mixture of hand shapes at once, The direction and movement of the hands, arms or body. Sign language is the conversion of the letters, ideas as well as the concepts to correspond to hand signals

Figure.3:The ASL finger spelling.Retrieved from

<https://www.nidcd.nih.gov/health/american-sign-language>



1.1.5.2.6.1.Types of Sign Language

1.1.5.2.6.1.1. American Sign Language

American Sign Language (ASL) is a complete language. It is very complex language that uses physical means of communication such as body language and lip patterns ,instead of oral sound in order to communicate. It uses motions of the one hand to make signs. The ASL is a way to use hand movements, gestures, and facial expressions to convey thoughts (The Deaf Society, 2015).

Figure.4:The ASL Alphabet

Finger. Retrieved from <https://www.redbubble.com/fr/i/carte-de-vœux/Diagramme-ASL-Alphabet-américain-en-langue-des-signes-par-kevinobrien/40226867.5MT14>

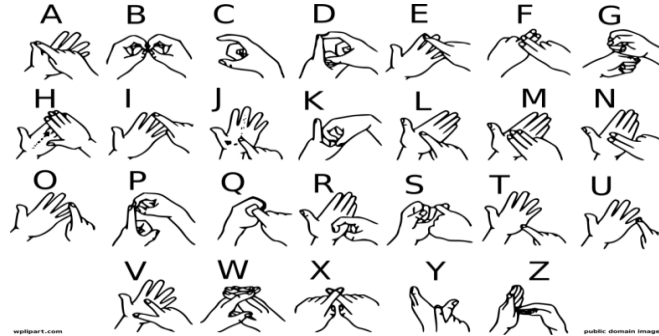


1.1.5.2.6.1.2. British Sign Language

British Sign Language (BSL) is a form of sign language that is used in Britain and involves the use of hand movements, gestures, body language and facial expressions to communicate. Also, BSL speakers use both hands to form their letters .(The Deaf Society,2015) .

Figure.5:The BSL Alphabet

Finger. Retrieved from <https://www.pinterest.co.uk/pin/717057571896475246/>



BSL is structured in a completely different way to English. In BSL you start with the main subject or topic. After that, you refer to something about the topic. (The Deaf Society,2015)

For example:

English – ‘What is your name?’

BSL – ‘Name – what?’

Figure.6: The BSL discussion . Retrieved from

<https://www.pinterest.co.uk/pin/717057571896475246/>



1.1.5.2.7. Simultaneous Communication (Sim Com)

It is a method dedicated to deaf and hard of hearing pupils to facilitate their learning process. In this method, multiple communication methods are used simultaneously to produce a given utterance such as signs along with speech (Adams, 1997, p.58).

1.1.6.Characteristics of Children with Hearing Impairment

Embrey (1971, pp.32-33), who studies the effect of hearing loss on educational achievement, found out that the hearing impaired subject did not achieve the same level as normal hearing children. The signs of hearing impaired could be identified include the following:

- Articulation of certain speech sounds correctly often eludes the child.
- The child finds it difficult to write down dictations.
- The individual fails to respond to or confuse verbal directions.
- Complains of a buzzing or ringing sound in the ear.
- Fails to respond when called from a distance.
- Complains of discharge from the ears.
- Speaks in an abnormally low, high or loud voice.
- The child responds only when he/she sees the speakers face or gesture. The individual has frequent colds and hay fever.
- The child bends forward so as to hear or understand what is said to him.
- Asks the speaker to repeat sentences or words.
- When called from a distance, the child fails to respond.
- Gives wrong answers to simple questions.
- Often times the child dodges situations that may require him listen or talk to people.
- The individual is insensitive to sound.

- Rubs the ears frequently or turning to one direction as if trying to locate a sound.
- The individual has frequent ear aches and runny ears.
- The child often screams to express pleasure, annoyance or need.
- The child is withdrawn and does not mingle readily with classmates and neighbors

1.1.7.Impacts of Hearing Disability on the Cognitive Functioning

Baddeley (1992) said that mental tasks such as learning and understanding a language are carried out at the working memory level in which it temporarily stores and manipulates its information. (p.556). On the one hand, a set of researches have revealed that in case the target words are damaged by noise or hearing loss, the recalling process of these words is impaired (Allen & Roberts, 2016, p.2). Thus, in this context hearing disability affects the cognitive functioning negatively. On the other hand, King Jordan, who is a psychologist and later president of Gallaudet University, said addressing the graduating students: “deaf people can do anything except hear” (Marschark & Spencer, 2003, p.464). This motivational statement indicates that deaf people can achieve the same things as normal people which entails that hearing disability is not an obstacle and does not affect cognitive functioning negatively. However, hearing disability, as a sensory deficiency has some negative consequences as Mathers, Andrew, and Marisol (2000) stated, “consequences of hearing impairment include inability to interpret speech sounds, often producing a reduced ability to communicate, delay in language acquisition, economic and educational disadvantage, social isolation and stigmatization” (p.1).

Section Two: Traditional and Technology-assisted Approaches in the Process of Teaching and Learning Pupils with Hearing Disabilities

1.2.1. Definition of the Traditional learning

Rashty (as cited in Prof & Titthasiri, 2013, p. 69) defined Traditional education in his article as the unchangeable learning as it is done in the same place, with the same participants, following the same method. Rashty continued (as cited in Prof & Titthasiri, 2013, p.69), teacher-centeredness is the followed method in the traditional education where the teacher is the authority in controlling the course arrangement, time management and the presentation of the lesson following the content program. Furthermore, Black (2002, p.2), pointed that the traditional approach provides direct contact not only between teachers and learners but also between the learners because there are no assistant materials that interrupt this contact.

1.2.2. Background of the Traditional Approach

According to Richards & Rodgers (2014, p.261), 1977 was the beginning of the traditional approach when it was a new plan for teaching language at that time presented by a teacher of Spanish named Tracy Terrell in California which he called "Natural Approach". Richards & Rodgers (2014, p.261) said that this approach was an effort for developing the suggestion of language teaching that integrated naturalistic values established by teachers in second language learning studies. Richards & Rodgers (2014, p261) clarified that these values are not focusing on practice but rather on exposure to data, and they also provide a reinforcement of the cognitive preparation for learning. In this process, students are being attentively exposed in a lengthen duration to the language before they try to generate it through its traditional input sources which are printed texts and other similar tools Richards & Rodgers (2014, p261). Furthermore, Richards & Rodgers, (2014, p.261), declared that the

natural approach emerged as a result of Terrell's experiences in teaching Spanish and its remarkable use in primary to sophisticated-level classrooms and with many different languages. Later, Terrell collaborated with an applied linguist from the University of Southern California named Stephan Krashen in order to establish a theoretical basis for the natural approach. He relied on Krashen's interpretation of the results of the evolving second-language acquisition field Richards & Rodgers (2014, p.261). After that, according to Richards & Rodgers, (2014, p. 261), in 1983, Krashen and Terrell's book was published under the title "The Natural Approach" which contained their statement of principles and practices of the natural approach. Thus, the natural approach did not make a radical transfer in the teaching method; the teachers did not face difficulties in applying or adopting it because of its simplicity they were able to have a basic logic perception of the second language learning process. Richards & Rodgers (2014, p.261) stated that Krashen and Terrell introduced the natural approach as traditional language teaching approaches and saw that "such approaches have been called natural, psychological, phonetic, new, reform, direct, analytical, imitative and so forth" (Krashen & Terrell, 1983, p.9).

1.2.3. Advantages of the Traditional Approach

According to Liu and Long (2014, p.32), the advantages of the traditional approach are seen in the authority and the centeredness of the teacher which provide teachers total oversight of the classroom. Moreover, the traditional approach provides an efficient information transfer between the teacher and his learners due to the direct face-to-face contact between them, as the teacher is the essential source of information for the learners in this approach (Liu & Long, 2014, p.32).

1.2.4. Limitations of the Traditional Approach

According to Prof & Titthasiri (2013, p.69), the traditional approach is still primitive and undeveloped, its elements are restricted and unchangeable which negatively affects students' learning and restricts it. They stated that teacher-centeredness is the dominating method in this approach which indicates the exclusion of the student from participating in the class and the activities. Moreover, according to Biggs (1970) (as cited in Papanis, 2005, p.3), many institutions saw that it is better not to use traditional learning methods if they wish to remain successful.

1.2.5. Definition of the Technology-assisted

Technology-assisted approach (TAA) was labeled by many researchers with different names such as computer-aided learning, technology-aided learning, e-learning, hybrid approach. Sharma (2017) defined (TAA) saying:

Computer-aided learning (CAL) or technology-aided learning can be defined as studying or teaching subjects like mathematics, science, geography, and etc, through software programs or e-books with subject wise learning packages / materials. It may include all types of Technology-Enhanced Learning (TEL), where technology is used to support the learning process" (p.102)

ChengZhi defined it using the term e-learning (as cited in Titthasiri, 2013, p.68), he said it is an innovative educational concept with the use of the internet technology. Also, Tamsamani (as cited in Titthasiri, 2013, p.68), regarded it as an interactive learning within which students use computers as an educational tool in the learning process. While Black (2002), defined it as hybrid classroom teaching which is a combination of traditional and online classroom teaching approaches which provides direct contact between learners and

their instructor as well as education transmission through modern technological tools. (p.2). Moreover, according to Gruba, (2004) in the field of teaching second language Computer Assisted Language Learning is the most known name, it is designed to enhance the learning process of language learners by using computers as an educational tool (p.623).

1.2.6. Background of the Technology-assisted Approach

According to Nicholson (2007, p.3) the pioneering research of Patrick Suppes at Stanford and Don Bitzer at the University of Illinois has given rise to the roots of e-learning which is practised at current in business, high education, and military. Thus, based on Nicholson's words the term "e-learning" was not related only to education but, it was used currently in other fields. Moreover, Nicholson (2007, p.3) stated that although others such as Porter (1959) and Uttal (1962, p.3) were involved in this area earlier, Suppes and Bitzer were the Soloists to put technology use within a wider context of education. Moreover, Gruba (2004, p.625) said that the research that was accomplished at the University of Stanford was for the learning of Slavic language in which, a self-instructional material was formed and distributed through computer mainframe by a group of instructors.

Gruba (2004, p.625) continued his explanation by presenting the achievement of the other group of research at the University of Illinois who figured out a program called Programmed Logic for Automated Teaching Operations (PLATO) in which instructors were able to compose a Russian-English interpretation course. Moreover, Gruba (2004, p.625) revealed that besides being an authorial feature for teachers, this computer system provided both exercises and marks for student study. Also, the PLATO system later grew to include a range of foreign languages and provided them in highly advanced technological forms. Based on this point, the PLATO system assisted in enhancing both the teaching and the learning process of many languages. Gruba (2004) stated that progress reached in the sixties and

seventies in developing central computer applications through including interaction aspects to help students read scientific texts (p.625). Although heavy costs prevented the widespread use of these applications, consequently, teachers and students started using desktop computers particularly in the late seventies with the beginning of what is known as “microcomputer boom” (Gruba, 2004, p.625). This latter confirms the wide spread and the efficacy of computers in teaching and learning. According to Gruba (2004, p.625), the development of Computer Assisted Language Learning (CALL) continued its progress in enhancing the teaching and learning process especially after networked computers witnessed extensive usage during the beginning of the 1990’s. Nevertheless, the internet’s exponential development led CALL instructors to gradually embrace socio-collaborative learning forms. Gruba (2004, p.625).

The table below details the development of e-learning over time, explaining the educational characteristics that it witnessed in each era:

Table 02: *Education technology's shifting focus from 1975 to 2005 (Nicholson, 2007, p.7)*

Era	Focus	Educational characteristics
1975-1985	Programming; Drill and practice; Computer-assisted learning – CAL.	Behaviourist approaches to learning and instruction; programming to build tools and solve problems; local user-computer interaction.
1983-1990	Computer-Based Training; Multimedia;	Use of older CAL models with interactive multimedia courseware; Passive learner models dominant; Constructivist influences begin to appear in educational software design and use.
1990-1995	Web-based Training	Internet-based content delivery; Active learner models developed; Constructivist perspectives common; Limited end-user interactions.
1995-2005	E-Learning	Internet-based flexible courseware deliver; increased interactivity; online multimedia courseware; Distributed constructivist and cognitivist models common; Remote user-user interactions.

1.2.7. Advantages of the Technology-Assisted Approach

According to Lee (2000) & Taylor (1980) (as cited in Lai & Kritsonis, 2006, p.1) technology-assisted approach has a set of advantages in the process of second language learning since it:

- Supports the pupil's exercises with the practical side to enhance the learning process for them.
- Provides high sense of motivation in learning.
- Improves the pupil's academic performance.
- Enhances the education process with the assistive technological tools.
- Focuses on learning through interaction between the teacher and his learners and between the learners too.
- Delivers enjoyable and interactive exercises that minimize the pressure and worryment in learning.

1.2.8. Limitations of the Technology-Assisted Approach

Lai & Kritsonis (2006) saw that despite the advantages of technology-assisted approach is in the process of learning-teaching a second language, it is also known by a set of disadvantages that make it imperfect. According to Lai & Kritsonis (2006, p.1), these disadvantages are the following:

- High prices of technological equipment that create social and educational unfair situations.
- The need of teachers and students to have prior technological knowledge to enhance the foreign language teaching-learning process.
- The deficiency of these programs to replace teachers because they are not yet qualified enough to solve students' problems like pronunciation or syntax.

1.2.9. Technology in Education

According to Roberson, (2001, p.6), technology has an influence on the contemporary community in which many technological devices such as computers are possibly available in houses, schools, and workplaces. Roberson (2001, p.6) saw that this widespread of technology has allowed interaction among families, friends, and work associates as well as permitting transmission of instructional materials from one part of the world to the other.

Moreover, Lazar, (2015, p.111) confirmed that technology enhances education as being a well-structured process that applies new technologies successfully. Lazar (2015, p.111) said in defining educational technology that it is an evaluation and conceptualization tool of the fulfillment of the teaching and learning process with applying new methods of education.

In the same line of thought, Al-Mousawi (2011, p. 131) described the effectiveness of the new technologies on education through the witnessed shift from using traditional educational methods such as photo papers, books, transparencies, slide presentations, CDs, tape recordings and audiotapes to new “digital” educational methods such as electronic books that are available without the difficulties of space and time and can be provided by anyone.

According to Becker, (1991) (as cited in Roberson, 2001, pp.6-7) with several clicks, students become able to obtain and share language easily and abundantly with other students from different parts of their region. Becker (1991) continued (as cited in Roberson, 2001, pp.6-7) technology enables learners to receive information according to the speed and degree of their learning and then process and produce this information through the word processor program.

In a study entitled “Impact of Using Computer Applications in Education on Teaching-

Learning Process’’, Zamfir (2008) revealed progress in the teaching and learning process that was not only due to the use of the applications but also to the increased incentive of students to learn using new advanced methods. Also, according to a study conducted by Olson et al. (2011) entitled “*An Analysis of e-Learning Impacts & Best Practices in Developing Countries*”, technology use and application in the classroom improved the students’ learning level through simplifying information and providing assistive technologies. Furthermore, another study by Seo (2014) entitled “*The Effect of Using a Smartphone Application on Middle School Students’ English Expression Learning and Satisfaction*” asserted the effectiveness and usefulness of the assistance of the native mobile application on education.

1.2.10. Traditional versus Technology-Assisted Approaches

According to Prof & Titthasiri (2013, p. 69) traditional learning elements include a chalkboard, textbooks, teacher and learners and the nature of this approach requires that the learning process takes place in a limited environment, that is, within a class. They stated that the teacher speaks more than the learners therefore, what is offered is the theoretical side of the information whereas the practical side is neglected and the teacher is in charge of organizing all the students’ activities. On the other hand, Papanis, (2005) (as cited in Prof & Titthasiri, 2013, p. 69) saw that the components of E-Learning include content delivery in multiple formats, management of the learning experience, a networked community of learners, and content developers and experts. Papanis, (2005) declared (as cited in Prof & Titthasiri, 2013, p. 69) that e-Learning is personalized, focusing on the individual learner. Its environment includes “self paced training, many virtual events, mentoring, simulation, collaboration, assessment, competency road map, authoring tools, e-store, and learning management system.”

In a comparative study entitled “*Are the functions of teachers in e-learning and face-to-face learning environments really different? Educational Technology and Society*” by Díaz and Entonado (2009), it was revealed that technology-assisted approach is better than the traditional approach in enhancing the acquisition of information by students in terms of conceptual and pensive thoughts and in learning vocabulary.

1.2.11. Technology in Deaf Education

According to Baglama, Haksiz & Uzunboylu (2018, p. 54), Technology is the ideal way to bridge the deficiencies resulting from the traditional methods in the education of people with special abilities, these methods are not sufficient to achieve the learning process successfully. Thus, modern technology comes to provide comfort in the process of learning with disabilities. Moreover, Harkins (1994) said in explaining how technology changed the world of deaf and hard of hearing students by providing modern visual electronics that enhance communication in the educational process to be more visual and accessible: “it can empower them to take initiative at earlier ages than has previously been possible” (pp.195-196). Also, Harkins (1994) showed that schools with a traditional curriculum do not fit the requirements of deaf and hard-of-hearing students. She called for change in favor of the deaf and hard-of-hearing saying: “schools need assistance to update curriculum, technology, and staff skills to meet the new challenges of preparing children for lives as deaf and hard of hearing adults” (p.196). According to Vinoth & Nirmala (2017, p.42), nowadays technology is seen as a successful assistant and a catalyst that improves the educational level of deaf and hard of hearing students, it permits them to easily access to the web in which they find several systems designed to fit their learning needs.

In a study entitled “*American Sign Language in Virtual Space: Interactions Between Deaf Users of Computer-mediated Video Communication and the Impact of Technology on*

Language Practices” presented by Keating and Mirus (2003), investigators explored how creative resources such as the internet and visual imagery intervene and affect people's activity on language learning through organizing the exposure of these people to the language. This study showed the mediation of the internet, computer, and other technologies in molding modern insights of American Sign Language learning communicative practices. Thus, they reached the conclusion that the virtual space for learning ASL is significantly different from “actual” space, and the virtual space properties allow for new developments in the transfer of visual data between locations by the learner. Moreover, in another study entitled “*New Media, New Technologies and New Communication Opportunities for Deaf / Hard of Hearing People*” by Chang, Downes, Ayodeji, and Oddey (2014), it was concluded that social media platforms and advanced mobile devices opened new gates to the deaf and hard of hearing students by offering devices that allowed interaction with deaf and hearing impaired people.

1.2.13. Deaf Education in Algeria

According to Abdelouafi & Omari (2018, p22) the issue of education for people with hearing disabilities in Algeria did not gain researcher's pens attention. Exceptionally, (as cited in Abdelouafi & Omari, 2018, p. 22) the only researcher who discussed this case is Lanesman (2013) in a study entitled: " *Algerian Jewish Sign Language: its emergence and survival*", mainly she has undertaken the issue of the deaf Jews in Ghardaia. Lanesman (2013, p.12) declared (as cited in Abdelouafi & Omari, 2018, p. 23) that the Jewish community in Ghardaia is the roots for sign language existence in Algeria; hearing disability was widely spread among this community' members, they mastered sign language fluently. However, Lanesman (2013, p. 45) did not tackle the principle details concerning the education of the hearing disabled (as cited in Abdelouafi & Omari, 2018, p.23), rather she pointed out the

varied ways they acquired sign language: people belonging to hearing disabled families tended to acquire sign language from them, the others who belong to hearing families acquire it from other hearing disabled people, and people who married hearing disabled persons acquire it from them too.

The Algerian League for the Defense of Human Rights confirmed that people with hearing disabilities suffer from marginalization in the work field, where the unemployment rate for this category exceeds 80 percent. In addition to the lack of sign language interpreters and the absence of media attention, that must shed light on their issues and spread a culture of respecting them, which constitutes a real crisis in their involvement in the society (Medjrab, 2017).

In the same line of thought, in one of the many received false promises and plans that have not been implemented until today; one of the former ministers of the national solidarity and family, Mr. Djamel Oueld abbes, said in an earlier statement that the number of hearing-impaired people in Algeria exceeds 71,000 people (Hawas, 2009).

Oueld abbes added that the ministry plans to establish specialized schools for deaf children in each state at least by the end of 2009, pointing out that this will allow the transfer of the number of these schools from 34 schools in 2007 at the level of 33 states to 64 schools by the end of 2009 which will contribute to the development of sign language and open new horizons for the category of deaf and mute people (Hawas, 2009).

Ghanem Ammar, a founding member of the national federation of the deaf and sign language research, said that communicating with others is the goal of the federation as the latter offers the opportunity for the deaf to integrate into society without complexity (Hawas, 2009). However, promises of 2009 still did not see light in 2020.

1.2.14. Problems that Hinder the Process of Teaching English to Students with Hearing Disabilities

Kontra, Csizér, and Piniel (2015, p.141) saw that it is the right of students with hearing disabilities to benefit from equal foreign languages education that provides fair acquisition of knowledge as their hearing peers.

Teaching English to deaf and hard of hearing pupils can be hindered because of many difficulties according to Kontra, Csizér, and Piniel (2015, p.144) such as the following:

- The failure of pupils with hearing disabilities to acquire the first language as a foundation that enables them to acquire another language.
- Researcher's disagreement about the language that would be considered as a method of teaching and the language that would be considered as a reference for pupils to understand the foreign language system, which is for them the third language.

Moreover, Dotter (2008) declared, "Taking a sign language as the first or preferred language of deaf people, a written/ spoken national one is already their second language; any other written/ spoken language becomes the third one" (p.100). Since Algeria is an Arabic speaking country, English is a third foreign language for deaf and hard of hearing people.

Also, Marschark & Spencer (2010, p 42) agreed with Kontra, Csizér, and Piniel (2015) that the process of teaching students with hearing disability, as well as the training of their educators are threatened by many difficulties like:

- The lack of awareness about the deaf and hard of hearing needs.
- The low incidence of the hearing disability reduces the ability of their relatives to communicate with hearing disabled students into almost nonexistent. Thus, these problems serve as a barrier preventing the acquisition of the language during their early years (Marschark & Spencer, 2010, p.42).

- The provision of formal education to deaf and hard of hearing students with poor language and communication skills, in addition to poor conceptual knowledge. (Marschark & Spencer, 2010, p.43).
- The reliance of students with hearing disabilities on a variety of communicative procedures and technologies, making it difficult for teachers to be aware and experienced in using all of these procedures and techniques to communicate effectively with their students. (Marschark & Spencer, 2010, p.43).
- The inefficiency of teachers to conduct an educational psychological evaluation for their students with hearing disabilities where they are needed to recognize the specific needs of the student. (El-Zraigat & Smadi 2012, p.153).
- The incompetency of teachers with no special training. (El-Zraigat & Smadi 2012, p.153).
- The difficulty of learning to read and write for deaf and hard of hearing students while they are still learning their first language (Marschark & Spencer, 2010, p.43).
- The deficiency of phonological skills growth for the deaf and hard of hearing students created by the hearing disability Geers & Hayes ;(2011, p.2).

According to Geers & Hayes (2011, p.2) the hearing disability controls the vocabulary and the phonological skills development; pupils who suffer from pre-lingual deafness may be able to read and write with a limited vocabulary, but the situation does not fit pupils who have implanted a cochlear before the age of school as the vocabulary development continues more than before Geers & Hayes (2011, p.2).

- the presence of other disabilities in accordance with the disability of hearing such as attention deficit and hyperactivity disorder (ADHD) which cause:
- an obstacle in delivering adequate educational services.

- other educational barriers and special needs for the pupils.
- a variance in the degrees of hearing deficiency.
- Student's non- involvement in many fields that require self-reliance and the best levels of functionality for appropriate adaptation. (Marschark and Spencer, (2010, p.43) .
- Inconsistency of educational content with the needs of deaf and hard of hearing students being the same for hearing students. (El-Zraigat & Smadi, (2012,p.154) .
- The teacher's obligation to adopt the Ministry's education instructions because the content curriculum change is not legislative. (El-Zraigat & Smadi, (2012,p.154).

Conclusion

As a conclusion, the sense of hearing is closely related to the integrity of the auditory system, and any defect that affects the ear affects the hearing ability of the individual. But in general, hearing disability represents a deficiency in the sense of hearing, partially or completely, fungal or acquired. The first section of this chapter presented a general overview of the hearing disability and the hearing disabled individual. The second section tackled the issue of deaf education with a comparison of two teaching approaches, traditional and technology-assisted, in terms of the English language teaching-learning process among pupils with hearing disabilities. Furthermore, it casts light on some aspects of the deaf community in Algeria.

Chapter Two: The Fieldwork

Introduction

For Leedy (1993), research methodology forms an integral part of any research that is undertaken. This chapter provides a comprehensive explanation of the research method and the tools used in this study which aims to compare and verify the effectiveness of both traditional and technology-based approaches in learning and teaching English for deaf and hard of hearing pupils in the school of Bekkaria, Tebessa. Moreover, it presents the results of the research with an explanation and discussion.

This chapter is divided into two sections. The first section provides a description of the research methodology used in the current study. The second section is oriented to the quantitative and qualitative presentations and analysis of the results.

Section One: Methodology Research

2.1.1. Research Design, Approach, Method and Sampling

2.1.1.1. Research Design

In this study, a one-group pre-/posttest design has been employed. This research design is suitable for this investigation because it fits the case of the small sample that cannot be split into a control and an experimental group and seeks to determine the effect of the approaches intervention on the sample. This design denotes that all participants should be given the same tests and treatment.

2.1.1. 2. Research Approach

In this study, a mixed-method approach (quantitative and qualitative) was used. It is chosen because the mixed methods ensure that study findings are grounded in participant's experiences (Nestel, Kunkler, Scerbo & Calhoun, 2019, p. 237). The quantitative data

provides in-depth view about the effectiveness of the traditional approach through the pre-test and the effectiveness of the technology-assisted through the post-test according to the changes occurring in the English teaching-learning process. At the same time, qualitative data analysis explores the differences between both approaches in terms of their effectiveness in the teaching-learning process; using a qualitative interview and an observation to capture the respondents' behavior not conveyed in quantitative data.

2.1.1.3. Research Method

In order to answer the research question and to reveal which approach is more effective in the English teaching/learning process among students with hearing disability, the researchers conducted a pre-experimental method. Cottrell and McKenzie (2005, p.177) believed that the pre-experimental design findings are the primary step before conducting a sophisticated experimental design that seeks to confirm or replicate these findings in case they are positive. This research method is suitable for this study because it serves as a primary step in checking the effectiveness of each approach on the small sample.

2.1.1.4. Research Sampling

The sampling design used in this study is total population sampling. According to Glen (2018) total population is a type of purposeful sampling in which the whole population members are studied for the purposes of the shared characteristics among them. It is also suitable to study small populations (Glen, 2018). Thus, this sampling design was chosen since the respondents of this study are small and manageable and share the hearing disability as common characteristics.

2.1.2. The Population, Sample and Setting

2.1.2.1. Research Population

The population of this study consists of first year middle school students with hearing disabilities at the special school of Bakaria, which consists of nine students and one teacher of English. The traditional and technology-assisted approaches were compared in terms of their effectiveness in enhancing the teaching-learning process among the whole population.

2.1.2.2. Research Sample

The sample was reduced to eight learners after the quit of one learner for unknown reasons (see Appendix A for 1st year middle school level hearing disabled students class list). The first year middle school students were purposefully chosen since there is no other class for this level and it is the same case for all the three other middle school levels, also this class had the biggest number of students that were available to be part of the study as confirmed by the school headmaster. Moreover, it is their first year learning the English language with the traditional approach. Thus, the intervention of the technology-assisted approach makes them exposed to the learning of English by the two approaches exclusively. In addition, the sample is, also, composed of the English language teacher of these hearing disabled students. It must be mentioned that she is the only teacher of English in the school that is why the sample is limited.

2.1.2.3. Research Setting

The study was administered at a special primary and middle school of children with hearing disabilities located in the town of Bakkaria, Wilaya of Tebessa. It is the only special education (SPED) school in Tebessa with classrooms for deaf and hard of hearing students exclusively. It was built on the second of May 1989 and began teaching students with hearing disabilities on the twenty-first of September 1991.

2.1.3. Research Ethical Considerations

In social sciences researches, specifically in education, ethical considerations are very important to make sure that the research norms are committed. According to Cohen, Manion, and Morrison (2000), ethical issues may arise from the nature of the research itself, participants' nature, and research privacy and anonymity (pp. 60-63). To address ethical issues in this research, a permission to conduct the study was taken from both the directors of the special school of Bekkaria and the Department of Social Activity (DAS) in Tebessa because D/HH learners education is a joint policy between the Ministry of Solidarity and the Ministry of Education. The permission was taken through a research clearance letter (see Appendix B) obtained from the Department of Letters and English Language in Larbi Tebessi University once the subject of the study was approved by the department and the supervisor. In addition, the participants' confidentiality, privacy and anonymity were also addressed. D/HH pupils and the teacher of English were informed of the research objectives from the beginning and that their participation will be kept anonymous and will be used just for the research purposes. Furthermore, a permission to observe the class was obtained from the teacher in advance.

2.1.4. Tools of Investigation

2.1.4.1. The Observation

Cohen, Manion, and Morrison (2013, p.456) defined observation as a study tool that gives a researcher the ability to collect real evidence from social circumstances that exist spontaneously. Consequently, observation facilitates the research process for the investigator through its distinctive characteristic at observing specifically what happens in the study location instead of depending on reports from second hands. There are four types of observation according to Brain (2000, p.240):

- non-participant in which an investigator may stay at the back of the classroom without participating in any exercise.
- participant observation is where the researcher simultaneously observes and participates in the exercises as an instructor or a classroom assistant.
- covert observation happens when the investigator chooses to observe the participants without telling them that they are observed in order to receive real data.
- overt results in which the investigator tells the participants that they are watched, but it does not provide the researcher with real data though it is more ethical in comparison to covert observation.

In this study, participant observation was used as the researchers participated as teachers for the deaf and hard of hearing students in the application of the technology-assisted approach.

In this study, observation served as an effective and direct tool for collecting data about the process of learning-teaching English to deaf and hard of hearing students in two different approaches which are: the traditional and the technology-assisted approach. An observation checklist (see Appendix C) was developed to observe and take notes about the following points:

- Subject matter
- Classroom discussion
- Methods of Communication
- Learning process
- Teaching process

- Learners
- Teacher's role
- Location of the study

The following table presents the basic information about the six (6) observed sessions in the 1st year middle school class of students with hearing disabilities:

Table 1: *The basic information about the 6 observed sessions in the 1st middle school class of students with hearing disabilities*

Session N°	Date	Duration	Students N°
S1	16/2/2020	1h	9
S2	1/3/2020	1h	8
S3	11/3/2020	1h	8
S4	12/3/2020	1h	8
S5	4/6/2020	1h	8
S6	25/7/2020	1h	8

2.1.4.2. Description of the pre-test

The pre-test was administrated to the one-group (total population sample) on march 1st ,2020. The pre-test aims at evaluating the effectiveness of the traditional approach on the learning process. The pre-test tasks were prepared after reviewing the lessons that were taught by the teacher after the headmaster confirmed that the applied approach for teaching students with hearing disabilities is the traditional approach.

The pre-test is composed of four activities designed by the researchers (see Appendix D). The first task is over three points. In this task, the students were asked to match with arrows the words with the appropriate picture. In the second task, which is over three points, the

pupils were asked to fill the gaps of the given paragraph with the appropriate listed words. The third task required the pupils to order the given words to get correct sentences and it was over three points. The fourth and the last task was over six points where the pupils were asked to write down the colors found in the sketch. It should be mentioned that after the pre-test papers were distributed, the teacher and the researchers explained the questions to the students using simultaneous communication method when they saw the students' inability to understand the test questions. The time allocated for the pre-test was one hour (1h).

2.1.4.3. Description of the treatment phase

The researchers selected three topics on the basis of the pupil's deficiency in learning them appropriately as maintained by their teacher. These lessons are: colors, numbers, days, and months. The materials used in the technology-assisted approach varied according to the topic and the students' learning needs. The researchers used an FM system which is according to Easterbrooks & Beal-Alvarez (2013, p.4) an assistive technology that help in minimizing the noise in over distances between the learners and the instructor., overhead projector, colored pictures, bilingual videos, phone applications, and educational games.

The researchers used simultaneous communication method with the learners and they were very attentive concerning the students' motivation in the learning process. They rewarded the students through clapping or signing supporting messages like "well done", "good", "that's great continue" and also by giving small gifts to encourage the students and reinforce their self-confidence. It should be mentioned that although the setting changed in the last session of the treatment, it resulted impressively in the learning-teaching process.

The researchers were in charge of teaching the three topics to the students as clarified in the lesson plans (see Appendix E, F, G) except for the last session; the researchers integrated an education specialist and a speech therapist in the education process in order to create a

similar atmosphere to the one in the classroom. Thus, they assisted positively in organizing the teaching-learning process and in supporting the learners to use their voice while communicating to make sure they pronounce correctly.

The researchers designed the lessons and the activities themselves following the book of the ministry of the first middle school year “my book of English” but with making some modification to fit the integration of the technology-assisted approach and to fit the students special needs. In this approach the teacher’s role was a guide rather than a leader. Teacher-centeredness was completely avoided while learner-centeredness was fully applied.

2.1.4.4. Description of the Post-test

The post-test was administrated to the one-group (total population sample) on the 25th July 2020. It aims at evaluating the effectiveness of the technology-assisted approach on the learning-teaching process. The post-test tasks were prepared after presenting three lessons that were taught by the researchers using the technology-assisted approach.

The post-test is composed of four activities designed by the researchers (see Appendix D). In the first task, which was over eight points, the students were asked to fill the blanks with the missed letters and to color the consonants with green and the vowels with red. The second task was over six and the students were asked to write the numbers according to the order presented and to color each column carrying a number. The third task was over four where students were asked to order the letters to form the correct words of the months. The fourth and the last task was over two pupils were asked to put the days of the week in their correct order. It should be mentioned that after the post-test was delivered online to the students and the time allocated to answer this post-test is one hour (1h). The researchers explained the questions to the students using the simultaneous communication method although the students understood the questions, their questions were about the way of answering rather

than the content. It should be mentioned that despite the fact that the post-test was presented in different circumstances concerning the spread of the corona virus in comparison to the pre-test, it was well organized.

2.1.4.5. The Interview

The interview is “a specialized form of communication between people for a specific purpose associated with some agreed subject matter” (Anderson and Arsenault, 2005, p. 202) This part deals with the English language teacher’s interview. The participant was asked to answer eighteen (18) open-ended questions to elicit specific information about teaching D/HH students (see Appendix H).

However, interviews come in many different forms; they range from unstructured, semi-structured to structured interviews. The choice of a given type is determined by the nature of the research. The structured interview, which is used in this study, consists of a list of set of questions in a predetermined order (Qualitative Data Analysis, n.d.).

One of the advantages of a structured interview is that it gives the interviewer a degree of power and control over the course of the interview. Besides, misunderstanding, or lack of understanding, can be immediately sorted out during the exchange of data (Teachers’ Interview Results and Analysis, n.d.).

The main aim of the interview was to determine the teacher attitude towards the traditional and technology-assisted approaches that were applied in teaching English to first year middle school class. The interview was conducted with the only teacher of English of D/HH in the special school of Bakkaria on the 17th August, 2020 through a video call because of the imposed quarantine to limit the spread of the corona virus. It took an average of 45 minutes; the teacher was free to express her opinion. During the interview, both the researcher and the respondent had the opportunity to ask for further information so as to ensure a full

understanding and clear description. The use of a structured interview helped the researcher to take notes.

The interview was divided into three parts. The first part, entitled **General Background**, consists of three questions. The aim of this part is to know the grade, the position and the years that the teacher spent with the D/HH students.

The second part, entitled **Communication Means between the Teacher and Hearing Disabled Students** contains six questions. This part is meant to know the degree of hearing disability of learners and the right ways the teacher used to communicate and share ideas with her students. It aims to know also whether she received special education or not. **Teaching Approaches** is the third part in the interview which contains seven questions aiming to know the tools she used to teach, the difficulties she faced with the D/HH students and the subject's opinion about the traditional and the technology-assisted approaches.

2.1.4.5.1. Description of Interview Questions

Part One: Background Information:

Question One: What is your educational degree?

- It seeks to know the teacher degree.

Question Two: What is the title of your position at your special school?

- It was used to know the teacher post.

Question Three: How many years of experience do you have as a teacher of hearing disabled learners?

- It seeks to know the years that the teacher spent with D/HH students in the school.

Part Two : Communication Means between the Teacher and HH Learners:

Question Four: What are the degrees of hearing disability of your students?

- This question is intended to know the degree of hearing disability of her students if they are conductive, sensorineural, or mixed.

Question Five: Do your hearing disabled students share ideas and participate in the class?

If yes, what do they use as a means of expression?

- The teacher was asked if her students participate with her during the lesson and share their opinions and the means they use to do so.

Question Six: What means of communication do you use with your hearing disabled students?

- This question seeks to know the ways used to communicate with the pupils in the classroom.

Question Seven: Have you received special education training?

- This question is asked to know if the teacher received special training to teach and communicate with D/HH pupils.

Question Eight: How have you learnt signing?

- It seeks to know the ways that the teacher used to learn signing to communicate and to teach D/HH pupils.

Question Nine: Is there a sign language translator in your hearing disabled classes?

- This question seeks to know if there is a translator when the teacher faces obstacle to transfer the ideas.

Part Three: Teaching Approaches :

Question Ten: What is the teaching approach that is adopted in your special school?

- This question seeks to know the approach used by the teacher to teach the deaf pupils.

Question Eleven: Do hearing disabled learners have a specific curriculum and a specific textbook?

- This question seeks to know if there is a difference between the program of the deaf and their hearing peers

Question Twelve: How confident are you about assessing the deaf/hard of hearing student's academic achievement through using the traditional teaching approach? Please justify your answer.

- This question seeks to know the teachers' confidence in assessing the academic achievement of D/HH pupils through a traditional teaching approach

Question Thirteen : Do you find the whole class participation in the learning process more effective than learning in groups or by individually? Justify your answer please.

- It seeks to know if engaging the whole class participation more effective than learning individual or in paired.

Question Fourteen: Do you find the traditional method effective enough to conduct the lesson according to the study program and the existing curriculum or do you consider the technology- assisted teaching method a necessity in this case? Justify your answer please.

- This question seeks to know which method is appropriate and successful to execute the lesson for the teacher and pupils to teach and learn according to the existing curriculum

Question Fifteen: After applying both the traditional and the technology-assisted approaches in the English language teaching-learning process in the class of first-year students with hearing disabilities, which approach was more effective in your opinion? Justify your answer please.

- This question aims to know the most effective approach; the traditional or the technology assisted.

Question sixteen: Do you encourage the idea of teaching students the practical side of the information simultaneously with the theoretical one through involving a research study that combines searching for and collecting information from web data banks, or do you see that the theoretical side is enough to improve their level in acquiring English as a foreign language?

- It seeks to know which is more better teaching the practical side simultaneously with the theoretical one through involving a research study that combines searching for and collecting information from web data banks, or the theoretical side is enough to improve the D/HH pupils level in acquiring English as a foreign language.

Question Seventeen: Do the assistive teaching technologies cause a change in the student's motivation level in comparison to the traditional teaching materials? Justify your answer please

- This is used to know the importance of technology approaches in learning and teaching English as foreign language.

Question Eighteen: Which method is more effective for an enjoyable, beneficial, and controlled learning environment for all your deaf and hard of hearing students, is it teacher-centeredness or learner-centeredness? Justify your answer please.

- Its aim is to know which is more effective and more beneficial for deaf and hard of hearing pupils teacher-centeredness or learner-centeredness .

Section Two: Data Analysis and Interpretation

2.2.1. Analysis of Observation Data

2.2.1.1. Observation Report for the First Session

In this session, the researchers started to get familiar with the setting and to gather data. There is only one class for the first middle school level which contained nine pupils. The classroom consists of a table and a chair for each student that was in the form of orderly rows, in addition to the teacher's desk, a chalkboard and the student's educational stuff (books, copybooks, and pens) and a small locker in the back of the classroom. Also, teacher's centeredness was remarked as the teacher was dominating the session. The teacher started the session by re-explaining the previous lesson "my school rules" in details because the deaf and hard of hearing students quickly forget what they learn. In this context, Allen & Roberts (2016, p.2) maintained that in case the target words are damaged by noise or hearing loss, the recalling process of these words is impaired. After that she started explaining the new lesson "name and locate different places in my school/use of prepositions of the places" depending on a simultaneous communication method and repetition in order to attract the pupil's attention. The teacher started the new session by clarifying the information as much as possible despite the lack of the educational facilities adapted for the hearing disabled subjects. Thus she relied on different techniques like drawing or approximating the information by resembling it to its analog that pupils are familiar with. The observation revealed the inability of pupils to understand some of the information as well as the deficiency of the teacher in conveying it appropriately. Notably, this information demand a practical explanation that focuses on the sense of vision, and the deficiency occurs due to the availability of the theoretical explanation only. Moreover, the pupils participated only when the teacher asks them a question. Their answers were short often limited to yes or no. Among

these pupils, one was abnormally quiet; he did not participate at all and he did not write anything even when the teacher tried to explain for him solely, he gave no reaction except for moving his head up and down meaning "yes". The observation showed some aggressive behaviors among the students while the teacher was explaining the lesson, like verbal abuse (through signs) and other aggressive actions such as cutting their copybooks. Despite the fact that the teacher succeeded in controlling these aggressive behaviors, the students were easily distracted and they were not following the teacher's explanation except for the three students sitting in the front. It was noticed that the book designed for these pupils, entitled "my book of English", is the same of their hearing peers.

2.2.1.2.Observation Report of the Second Session

In this session, the pre-test was administered to the students, the researchers started the session by addressing the pupils with motivational words to encourage them saying: "your disability does not mean your inability, you are special you are not incomplete, being different does not mean that you are weak, dream and work hard to make all your dreams come true, study hard and prove to yourselves and to the world that you are able to succeed". The observation revealed the absence of one student, who stopped his studies, for unknown reasons, so the pre-test was presented to the eight remaining students. After distributing the test to the students, it was noticed that they faced some difficulties in understanding the test questions. The researchers together with the teacher read and explained the questions clearly to the students using a simultaneous communication method. A sense of motivation was remarked among the students while answering the test questions. Some aggressive behaviors were remarked too at the end of the session; some pupils were making fun of each other and abusing.

2.2.1.3. Observation Report of the Third Session

This session was the first session of the treatment. In this session the researcher presented the lesson of colors as shown in the lesson plan (see appendix F). She started the lesson by presenting an introductory bilingual video using the overhead projector and the FM system. The effect of this system vary from one hearing disabled learner to the other, it provides a similar hearing of hard of hearing people to the deaf and it provides students with “cochlear implants” with enhanced hearing, also it can be helpless for other students with very “sever” hearing loss Easterbrooks & Beal-Alvarez (2013, p. 4).

Therefore, students with hearing disabilities were able to recognize the colors through sign language, written English, and acoustically hearing their English pronunciation through the FM system. Then, the researcher gave an explanation about the colors, referring to what was shown in the video and to the flash cards that carried some colored drawings. She distributed pictures to them containing the names of the colors and colored drawings (see Appendix I) then she invited each pupil to explain a color to his classmates. Each pupil presented the color given to him/her as if he/she was presenting himself/herself like saying" I am blue, you can find me in the sky and the ocean, I am in fishes too ...etc". After each presentation, the pupils were rewarded by the teacher. The second task was a puzzle game (see Appendix I). The students were divided into two groups and they were asked to organize the letters in the puzzle to form the correct word of each color and when they finished each student spelled the words in sign language with the assistance of a mobile application. All the students were highly motivated and they succeeded in doing the task and again they were rewarded by the teacher. The last task in this session was a sum up for the lesson. The teacher brought a colored ball and passed it through the students. After that she asked the students to work in pairs. Each pair consists of one who points the color and another who names it. Motivation

was remarked through this cooperative learning and the aggressive behaviors were reduced, once more the teacher rewarded the students for their success in the task. It must be mentioned that the teaching materials found in this school are non-technological except for an (FM) system and a data projector which are not used in all sessions. The materials used during the treatment sessions was brought by the researchers.

2.2.1.4. Observation Report of the Fourth Session

In this session the researcher presented a lesson about numbers as shown in the lesson plan (see Appendix E). She presented the lesson with the assistance of different technological tools using the overhead projector and the FM system to show an introductory bilingual video about the lesson (see Appendix I) and followed it with an explanation referring to the information shown in the video and the flash cards that contained numbers. The researcher guided the learners during the activities and kept them motivated by involving them to do the tasks themselves and by rewarding them when performing successfully. In the first task, the researcher distributed numbers to the pupils and gave them sheets of papers with letters written on them. Each student was asked to form the word of the number given to him/her with the paper's sheets and spell the words with the assistance of a mobile application (see Appendix I). In the second task, each student was asked to stand in the number given to him on the hopscotch. No aggressive behavior was remarked, students were motivated and interestingly participated during the lesson.

2.2.1.5. Observation Report of the Fifth Session

Despite the fact that this session was presented during the quarantine imposed due to the widespread of the Corona virus (COVID-19), the schools were closed and the researchers were obliged to complete the experiment online. It must be mentioned that this online session was remarkably successful. The researchers managed to gather the eight students in a

social media group and connect them through a video call with the presence of an education specialist and a speech therapist. The observation showed that the presence of the education specialist and the speech therapist assisted in creating a similar learning atmosphere as the one in the classroom. Notably, they helped in organizing the students during the learning-teaching process, encouraging them to use their voices to facilitate the communication process and to make sure they pronounce the words correctly, making the right movements with their mouths, tongues and jaws and paying attention to others movements. Again, the researchers started the session by spreading motivational vibes through asking each student about “what he/she wants to be in the future?” and encouraging them to study hard in order to realize their dreams. Their answers varied, but they shared the same smiling faces and sparkling eyes. Among these innocent dreamy faces the quiet student reacted positively by smiling. The researchers presented the lesson of months and days as shown in the lesson plan (see Appendix F). The researcher introduced the months and days to the learners through sings, written words and pronouncing each word through singing with the assistance of the speech therapist and the special education specialist. The researcher linked the newly presented point to the previous lessons through asking the pupils to put the months of the year and the days of the week in the correct order together with naming the colors found in each picture of the months. The students were highly motivated, no aggressive behaviors or inattentiveness were observed. They participated and shared their answers in an organized way. Moreover, they interacted with the researchers as well as with the education specialist and the speech therapist by using the sign of “raising their pens” in case they wanted to say something which was suggested by the researchers at the beginning of the lesson. The researchers rewarded the students by smiling and clapping when answering correctly.

2.2.1. 6.Observation Report of the Sixth Session

In this session the researchers reconnected the students through a video call to present the post-test (see Appendix G). The students were highly motivated and they succeeded in understanding the questions. The researchers did not cut the call with the students till the end of the test. The students were asking only about the way of answering and not the content, some of them preferred to print the test while others decided to write it by hands. The observation revealed the parents' effective aid in organizing the test environment for their children in spite of the circumstances of the quarantine and the spread of the corona virus.

2.2.2. Analysis of the Pre-test and Post-test Data Using Paired Sample T-test

The use of the paired sample t-test involves comparing scores on two different variables (the traditional approach versus the technology-assisted approach) for one of the investigated cases (learning among students with hearing disabilities) and it includes the use of the hypothesis which runs as follows:

H1: There is a positive correlation between the application of the technology-assisted approach and first year middle school hard of hearing students' achievement in English.

H2: The technology-assisted approach is more effective in the learning and teaching process among first year hearing disabled students in the school of Bekkaria, Tebessa.

2.2.3. Paired Sample T-test of the Pre-test and the Post-test

Table 01: *Representation of the Paired Sample Statistics*

Pair 1	Mean	N	Std. Deviation
Traditional approach	9.5625	8	3.3534
Technology-assisted approach	14.7188	8	4.4269

The table above demonstrates the descriptive statistics for the difference between each pair. It shows the difference between the learning and teaching using traditional and technology-assisted approaches. It was determined that learning using technology- assisted approach ($M = 14.7188$) is higher compared to that of traditional approach ($M = 9.5625$). This means that the pupils with hearing disabilities learned English more effectively with the technology assisted approach compared to the traditional teaching approach. Also, notable difference in the scores was revealed, in which the technology-assisted approach data had a standard deviation of (4.4269) whereas the traditional approach data had a standard of deviation of (3.3534). Consequently, the group of the hearing disabled students marked a notable progress using the technology assisted approach, clearly the group marked a slight development using the traditional approach but the technology-assisted approach was the more effective in the learning process as shown through the better results.

Table 02: *Paired Sample Correlation*

	N	Correlation	Sig.
Pair1 traditional and technology-assisted approaches	8	.895101	0.0002

The table reveals the strength and direction of the relationship between the two sets of approaches. As shown in the column of correlation, the correlation between the two sets of the approaches is positive and significant since r is a positive number and p is less than $.05$ ($r = .895101, p < 0.05$).

Table 03: *Enlarged Paired -Sample T-test SPSS output*

	Paired differences					T	Df	Sig – (2-tailed)
	Mean	Std deviation	Std error mean	95%confidence interval of the difference				
				Lower	upper			
Pair-1- Traditional and Technology- assisted approaches	5,1562	2,065	,730	-6,883	-3,429	7,060	07	,002

Table 03 represents the statistical results of the paired samples T- test. This is the value measured within each subject: the Traditional and Technology-assisted approaches. The paired t-test forms a single non-random sample of the paired difference and in this case it presents the effectiveness of either the traditional/technology-assisted based on the students' achievement. The T-test data showed in the Table above clarifies the difference paired mean is positive 5.1562 which means that the pre-test mean is less than the post-test mean. The question is whether this difference is large enough to reach statistical significance.

$p \leq \alpha$. Where α is the significance value / $\alpha = 0.05$, ($p = 0.02 \leq \alpha$), so the first hypothesis is confirmed which proves that there is a correlation between the application of the Technology-

assisted approach and the 1st year hard of hearing students' achievement in English.

2.2.4. Analysis of Interview Answers

The General Background

Question Item One:

The teacher holds a master degree in Applied Linguistics. She had qualification in teaching English but she did not have a certification in special education and she is not specialized in teaching D/HH learners.

Question Item Two:

The lack of specialized teachers obliges special school to recruit non specialized teachers and this can affect the effectiveness of both teaching and learning.

Question Item Three:

She has an experience of approximately six years as a teacher of D/HH learners.

Communication Means between the Teacher and Hearing Disabled Students

Question Item Four:

The teacher stated that the degrees of deafness of her pupils vary from slight to mild to moderate which means that she needs hearing aids to teach them.

Question Item Five:

The teacher clarify that the learners participate with her only when she asks them directly by using sign language , pictures, or subjects from their different books.

Question Item Six:

When discussing the availability of learning and teaching means in the special school where she works, the teacher asserted that they use sign language, gestures, facial expressions, drawing or pictures are visualise methods and the FM system for teaching phonetics.

Question Item Seven:

The lack of training indicates incompetence of the teacher and the interviewed teacher was not trained.

Question Item Eight :

The teacher supports her sign language by watching BSL and ASL videos also she learnt from their learners and colleagues

Question Item Nine:

In the special education school there is no translator teacher to help they rely on themselves.

Teaching Approaches

Question Item Ten:

In the special school the traditional approach is the only approach used to teach D/HH pupils.

Question Item Eleven:

The D/HH learners adopt the same curriculum of normal pupils.

Question Item Twelve:

The lack of assistive technologies made the teacher unconfident about assessing the deaf/hard of hearing student's academic achievement because she believes that the student achieve more

Question Item Thirteen:

When asked about the participation in the learning process the teacher found that learning in groups is more effective to them because they understand each other and feel comfortable to share ideas specially if the task they are asked to do is presented in a game form, learners will enjoy their time and they won't forget about the lesson.

Question Item Fourteen:

The teacher confirm that the technology-assisted approach is more affective with their pupils because they interact very good with the teacher which means that they have understood the lesson.

Question Item Fifteen:

According to the teacher response, the technology approaches are more beneficial for the D/HH learners to understand the lesson and makes both the learner and the teacher satisfied .

Question Item Sixteen:

In this answer the teacher believes that it is difficult to rely on practical part except in the lesson of sounds she use the FM system in the other sessions she start by a warming up presentation and then the production of the information after that she help the students to solve the tasks to see if the objectives of the lesson has been fulfilled or no.

Question Item Seventeen:

The assistive technology changes the pupil motivation by making him more active to learn any subject with much love

Question Item Eighteen:

The teacher clarifies that learner-centeredness is the best method for teaching D/HH pupil sespecially if the teacher uses the assistive teaching technologies because in this case the

learner relies on himself to get the information which makes him more confident. However, she used to rely on teacher-centeredness to help them in getting the information since there were no technological facilities in the school.

2.2.5. Discussion of the Main Results

This study attempts to compare and verify the effectiveness of both the traditional and the technology-based approaches in learning and teaching English to pupils with hearing disabilities. For the sake of summarizing and drawing conclusions to this mixed method study, this section will state the main results obtained from both quantitative and qualitative data. The results will be discussed in the light of the research questions, thus, the hypothesis of each research question will be either confirmed or disconfirmed.

The first research question sought to know whether there is a correlation between the technology-assisted approach and first year middle deaf and hard of hearing school students' development in English in Bakkaria, Tebessa. The analysis of the observation, the teacher's interview and the pre-test post-test results reveals the most effective approach in enhancing the hearing disabled pupil's learning process:

- The Observation revealed qualitatively many difficulties in the traditional classroom that were refined by the technology-assisted classroom as the following:
- The traditional classroom: difficulties of understanding and concentrating, aggressive behavior, the lack of pupil's participation and the dominance of the teacher-centeredness, the content curriculum that does not meet the pupil's special needs, the lack of appropriate teaching materials that fit the pupil's disability, lack of pupils' motivation.

- The technology-assisted classroom: improvement in understanding and concentrating reduced aggressive behavior, the pupils participation and the dominance of the learner-centeredness, change in way of teaching the content curriculum to meet the pupil's special needs, availability of the technological teaching materials that focus on the sense of vision, high sense of motivation among pupils.
- The analysis of the pre-test and post-test scores reveals quantitatively a significant difference in the results after the treatment which explains the effectiveness of the technology-assisted approach on the English learning process of pupils with hearing disabilities.
- The teacher's interview reported qualitatively the lack of pupil's participation in the classroom and the lack of sign language translator in this classroom. In this case, the interview revealed that the teacher is supposed to be the translator. However, the interviewed teacher did not receive special training and her students were part in teaching her how to sign. Moreover the interview reported that the assistive technological materials cause a positive change in the pupil's motivational level in addition to the benefits of learning in groups especially if the activities are in a game form. The teacher revealed that she does not rely on providing the practical side to her hearing disabled students except of using the(FM) system in some sessions. Also, she revealed that the traditional approach cause reduction in the pupil's academic achievement, believing that hearing disabled students can achieve more. The technology-assisted approach was confirmed to be more effective than the traditional approach in the English learning process.

One of the disadvantages of the pre-experiment is that it is difficult to check the validity of the results since there is no control group to compare with. Also, it is not possible to guarantee that the progress was due to the treatment since it can be attributed to external factors especially in the current case in which the researchers dealt with special people with a disability and the post test was virtually conducted. For those reasons, it is concluded that the first hypothesis is partially confirmed and the results cannot be generalized.

The second research question sought to determine the approach (the traditional or technology-supported approach) that is most effective in developing and facilitating the process of teaching English among students with hearing disabilities. Observation analysis and teacher interview showed qualitative data from both the technology-assisted classroom approach and the traditional classroom teaching approach:

- The observation revealed the efforts of the teacher in repeating the explanation for the learners many times to make sure they understood the concepts whereas in the technology-assisted approach the teacher relied on visual teaching technologies in addition to the explanation to make sure they understood avoiding repetition.
- The interview reported the usefulness of the learner-centeredness and the technology-assisted approach in the teaching process in comparison to the teacher-centeredness and the traditional approach.

Therefore, the second hypothesis which stated that the technology-assisted approach is more effective in the teaching process among 1st middle school year students with hearing disabilities is true.

According to this mixed method research findings revealed from the observation, teacher's interview and pre-test post-test experiment that both hypotheses are true, it can be

said that the technology-assisted approach is more effective than the traditional approach in the teaching-learning English process among pupils with hearing disabilities.

2.2.6. Limitations of the Study

Although this research has yielded important findings concerning testing the most effective approach to enhance and develop the learning-teaching process of English among pupils with hearing disabilities, it must be admitted that some limitations were raised. The first limitation is the school's closure due to the quarantine; the study stopped and the researchers could not finish the study in the special school. Another difficulty which is the lack of the assistive teaching technologies at this special school; the researchers were obliged to provide the technologies themselves. This research is also limited to a small research sample in Tebessa.

2.2.7. Recommendations for Further Research

The researchers suggest the expansion of locale by having a greater number of respondents and using multiple assistive technologies designed for hearing disabled pupils.

Conclusion

In this chapter, the first section provided the fieldwork of this study. It included the research method, design and approach to determine which approach (traditional and technology-assisted) is more effective in the English teaching-learning process among pupils with hearing disabilities. The second section has demonstrated the report of the observed sessions as well as the statistical results of the pre-experiment and the analysis of the teachers' interview. The result of the T-test of correlated sample, the observation and the teacher's interview were analyzed and discussed in the light of research questions and hypotheses.

General conclusion

Education is one of the basic rights of the deaf and hard of hearing because it is their gateway from their silent world to the world of sounds, where they can participate effectively in the various roles in their society. This study is one of the contributions that dealt with the subject of education for learners with hearing disabilities, which is considered an important topic of interest at the present time.

This study has compared two teaching approaches (traditional and technology-assisted) on terms of their effectiveness in improving the English teaching-learning process among pupils with hearing disabilities at the special school of students with hearing disabilities Bakkaria-Tebessa.

This dissertation includes two chapters. A theoretical chapter that focused on outlining related literature to the basic elements of this study. This chapter consists of two sections. The first section provides a general overview of the hearing disability. The second section has tackled the issue deaf education and the two investigated teaching approaches taking into consideration the basic points related to this concern; the effectiveness of these approaches on the teaching and learning process.

The second chapter is devoted to the fieldwork of this study. It includes the research method, design and approach, and provides the analysis and discussion of results obtained from observation, experiment and teacher's interview.

In this study, a one-group pre-/posttest design has been employed because of the small number of the sample. A pre-test designed by the researchers was presented after they confirmed by the headmaster of the special school of Bakkaria that the traditional approach is the applied one in teaching these learners with hearing disabilities. The pupils have been taught by the researchers for three sessions. In which they applied the technology-assisted

approach (the treatment). The teacher of English was present in the first two sessions, but she was not present in the third and the pre-test session instead a special education specialist and speech therapist took part in these sessions. The results of this study were revealed through a qualitative and a quantitative analysis of the data. It was shown that the technology-assisted approach is more effective than the traditional approach in the English teaching-learning process among students with hearing disabilities.

In conclusion, instead of considering deaf and hard of hearing pupils as disabled people, it is more appropriate to provide an effective education suited to their disability to dispel this negative perception and to break the barriers they struggle from, so that they can finish their studies and serve as effective citizens in their society because “their disability does not mean their inability”.

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Appendix A

Appendices

Pupil's Classroom List

1. **Rayan Ayachi**
2. **Oussama Semmadi**
3. **khelfoun Chaouki**
4. **Hatem Samer**
5. **Safia khelaltia**
6. **Nassir khelaltia**
7. **Israa Toumi**
8. **Nabil keaza**

Appendix B

The Observation Checklist

Date of the Observation:

Lesson:

Number of Pupils:

Duration:

Elements being observed	Comments of the traditional approach	Comments of the technology-assisted approach
1. Teaching materials		
2. Subject matter		
3. Classroom discussion		
4. Methods of Communication		
5. Learning process		
6. Teaching Process		
7. The learners		
8. The teachers		
9. Location of the Study		

Appendix C

The Pre-test

Date : Sunday , March 1st , 2020

Full name :

Class : 1AM1

Time allocated : 1 Hour

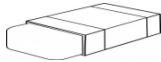
My Test in English

Task One : I match (03 pts)

-A rubber .



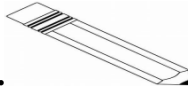
-A ruler .



-A pencil .



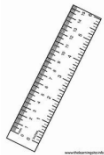
-A book .



-A scissor .



-A pencil case . .



Task Two: I Fill in the blanks (02 pts)

(What, name, my, is)

Hello,....name...Messi.....is your

Task Three: I order the words to get correct sentences (03 pts)

eg: does/ Where/ your/ work/?/ father ---» Where does your father work?

1) time/ you/? / get up/ what/ do ---

».....

2) have/ I/ at/ lunch/. / midday ---

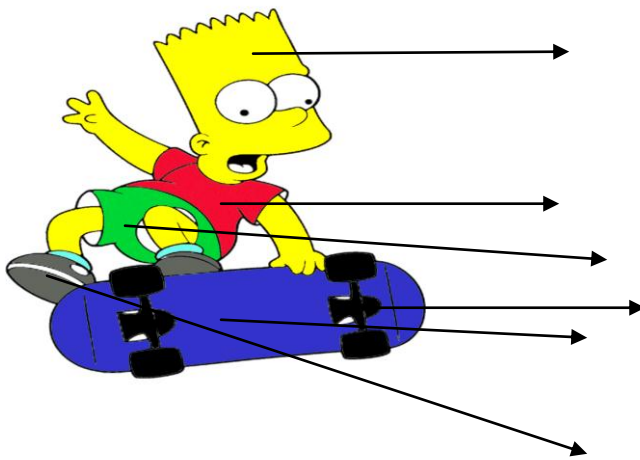
».....

3) does/ Younes/ When/?/T.V/ watch ---

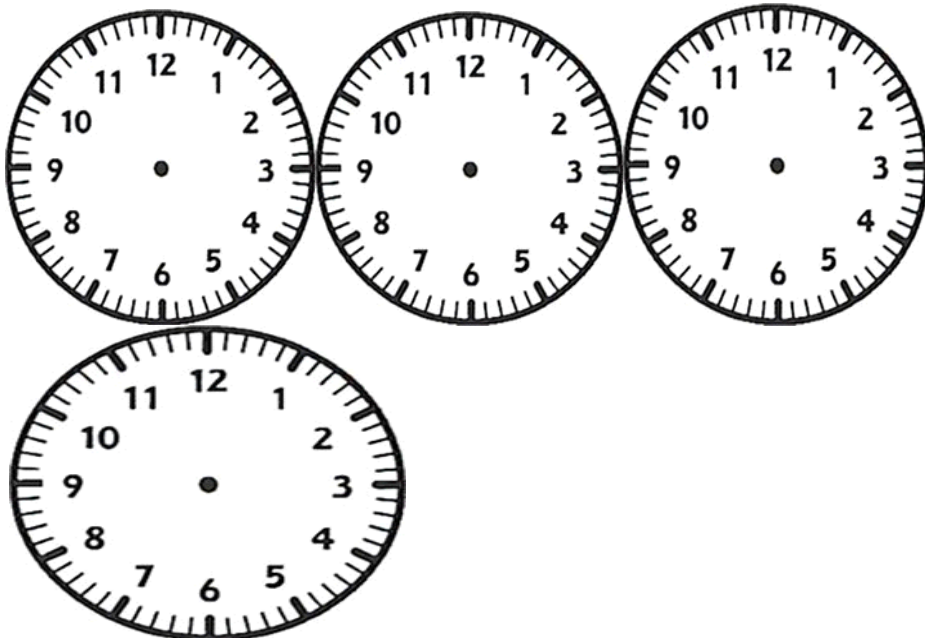
».....

Task Four: I name the colors (06 pts)

(Bleu-Red-Black-Green-Yellow- Grey)



Task Five: I read the time and draw the hands of the clock (06 pts)



-1-twenty to six

-2-a quarter to one

-3-eight o'clock

-4-twenty five past seven

Appendix D

Treatment phase Session one

Lesson plan

Sequence 01:	Lesson 03: Colors	Time: 01hour	Class: 1AM1
<ul style="list-style-type: none"> Learning objectives: this lesson enables first middle school year students who are deaf and hearing impaired to recognize the names of colors in English and American sign language and improving their reading and writing skills through shifting from teacher-centered approach to learner-centered approach by a set of activities and intellectual games reinforced with technology and concrete tools that enhances the learning process and permits the knowledge to be acquired and transferred by learners themselves, also it rises the ability to conduct an open discussion and enhances communication among learners, moreover it increases the motivation and involvement in the process on the part of learners. 			
Targeted competencies: Interact/ Interpret/ Produce.		Domains: Written/Speak with signs/Both	
Target structure: Colors.			
Core values: Being proud of Arabic, literate citizen and learning a new language.		Materials: Board/ Flashcards/ Songs/Games/Data show/FM system/Video/ computer.	
Cross curricula competencies			
Intellectual: They can understand and interpret non-verbal messages		Methodological: They can use listening strategies and work in pairs or in groups.	

Starting the lesson with a video (ASL Colors).

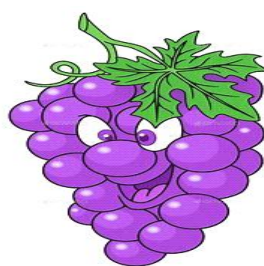
Presentation: We invite the learners to pay attention at the following flashcards.



The horse is **brown**



the carrot is **orange**



the grapes is **purple**



The lemon is **yellow**



the tomato is **red**



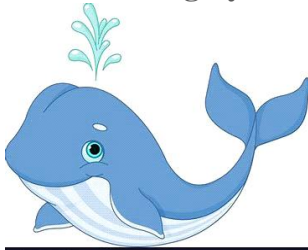
the rose is **pink**



The mouse is grey

the frog is green

the sheep is whit



The whale is bleu

Practices:

- 1- I order the letters in the puzzle game to find the name of the color and then i spell it.
- 2-I introduce the color to my colleagues with brief explanation of where can we find it.
- 3- I name the color that the teacher appoints on in the colorful ball.

Appendix E

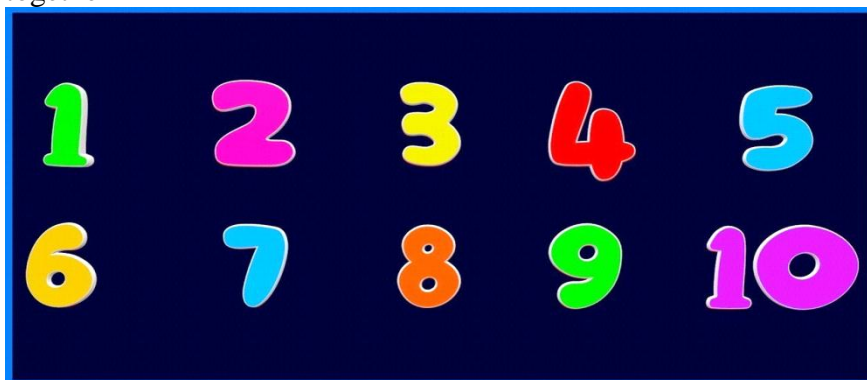
Session two

Lesson two

Sequence 01:	Lesson 04: Numbers	Time: 01hour	Class: 1AM1
<ul style="list-style-type: none"> • Learning objectives: To enable the learners to know numbers in English and American sign language and improving their reading and writing skills through shifting from teacher-centered approach to learner-centered approach by a set of activities and intellectual games reinforced with technology and concrete tools that enhances the learning process and permits the knowledge to be acquired and transferred by learners themselves, also it rises the ability to conduct an open discussion and enhances communication among learners, moreover it increases the motivation and involvement in the process on the part of learners. 			
Targeted competencies: Interact/ Interpret/ Produce.		Domains: Written/Speak with signs/Both	
Target structure: Numbers			
Core values: Being proud of Arabic, literate citizen and learning a new language .		Materials: Board/ Flashcards/ Songs/Games/Data show/FM system/Video/Computer	
<u>Cross curricula competencies</u>			
Intellectual: They can understand and interpret non-verbal messages		Methodological: They can use listening strategies and work in pairs or in groups.	

Starting the lesson with a video of (ASL Numbers).

Presentation: We introduce the numbers from (0 to 10). The learners watch then repeat. We invite the learners to listen to the numbers songs, and then they try to repeat the signs together



Practices:

1. We invite the learners to pay attention at the following flashcards and write numbers with letter.
- 2-Jump in this game and census the numbers.

Appendix F

Session three

Lesson plan

Sequence 01:	Lesson 03: Days of the week/ Months of the year	Time: 01hour	Class: 1AM1
<ul style="list-style-type: none"> • Learning objectives: To enable the learners to know days and months in English and American Sign Language and improving their reading and writing skills through shifting from teacher-centered approach to learner-centered approach by a set of activities and intellectual games reinforced with only technology. 			
Targeted competencies: Interact/ Interpret/ Produce.		Domains: Speak with signs/video call,	
Target structure: days and months			
Core values: Being proud of Arabic, literate citizen and learning a new language.		Materials: Online games/ Internet/Face book/ pictures	
Cross curricula competencies			
Intellectual: They can understand and interpret non-verbal messages		Methodological: They can use visual strategies.	

Presentation: We introduce the months and days to the learners through sings, written words and we the pronouncing each word through singing with the assistance of the speech therapist and the special education specialist.



Practices:

1. Order the months of the year and the days of the week in the correct order.
2. Name the colors that you see in the picture.

Appendix G

Post-test

Date: Sunday, March 1st, 2020

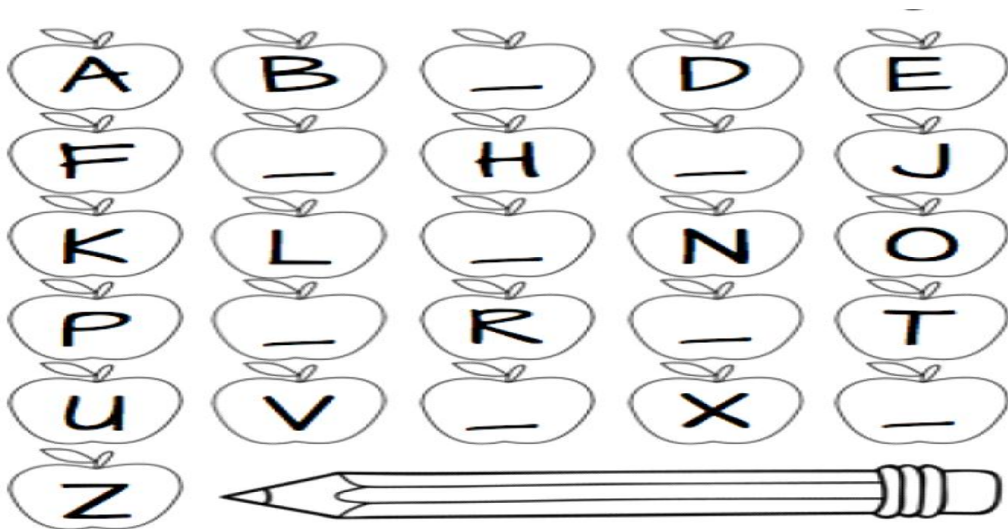
Full name: Class: 1AM1

Time allocated: 1 Hour

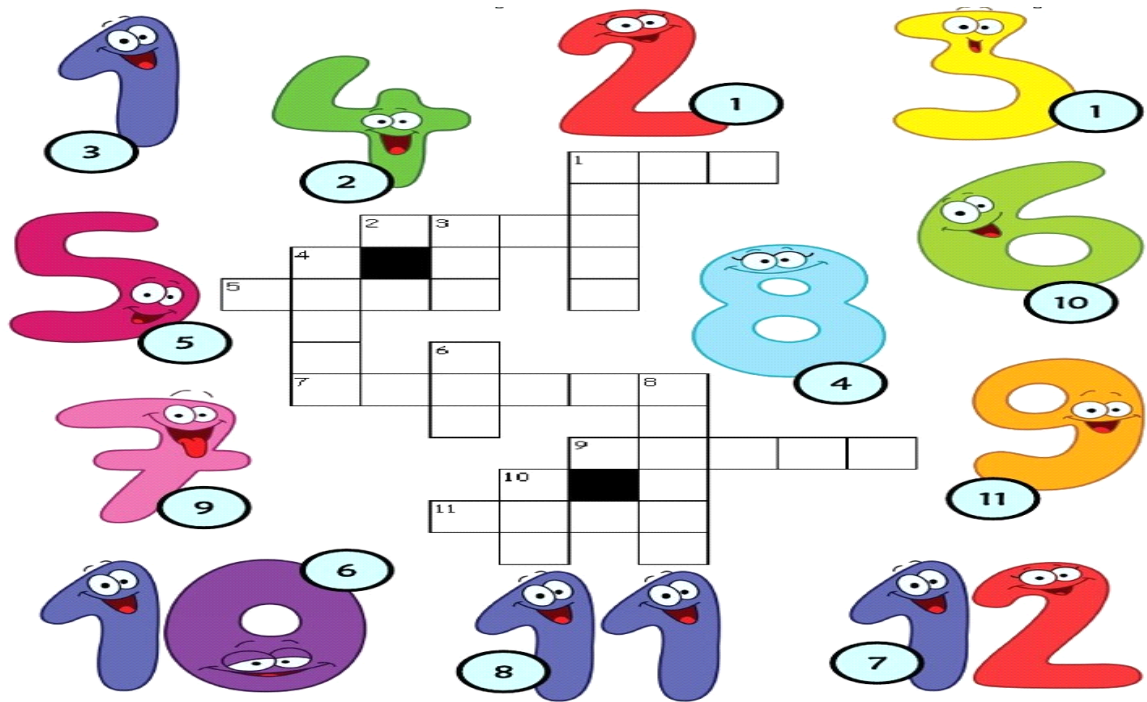
My Test in English

-Task One: (08 Pts)

I write the missing Letters. I color the vowels « red » and the consonants « green ».



-Task Two: (06 Pts) I write numbers in letters and I color the columns



1-Number one is red.

2-Number two is yellow

3-Number three is green

4-Number four is brown

5-Number five is blue.

6-Number six is white.

7-Number seven is pink.

8-Number eight is purple.

9-Number nine is black.

10-Number ten is orange.

11- Number eleven is grey.

12-Number twelve is beige.

-Task Three: (04 Pts) I arrange the letters and I write the months of the year.

A-ronemevb

B-yam

C-hrcma

D-ylju

E-oorbetc

F-plair

G-uustag

H-neuj

-Task Four: (02 Pts) I reorder days of the week.

Friday/ Monday/ Thursday/ Sunday/ Tuesday/ Wednesday/ Saturday

1/..... 2/..... 3/..... 4/..... 5/.....

6/..... 7/.....

Appendix H

Teacher's Interview

Dear teacher,

We are Master two Language Sciences students from the University of Larbi Tebessi-Tebessa. And we are currently in the process of creating out a dissertation entitled “Traditional versus Technology-assisted Approaches in the process of Teaching and Learning English for First Year Middle School Students with Hearing Disabilities”. In accordance with this, we would like to ask your permission and time to answer the following questions for us to determine your perception towards the traditional and technology-assisted approaches that were applied in teaching English to your first year middle school class. Be sure that your answers will certainly remain confidential and will only be used for research purpose. Your cooperation will greatly help us to achieve this research work objectives.

•General Background

1. What is your educational background?

I have a Master's degree majoring in applied languages.

2. What is the title of your position at your special school?

I am a Principal Specialized Teaching Professor.

3. How many years of teaching experience with hearing disabled learners do you have?

I have been teaching hearing disabled learners since 2014.

•Communication Means between the Teacher and Hearing Disabled Students

4. What are the degrees of hearing disability of your students?

The degrees of their hearing disability vary from slight to mild to moderate.

5. Does your hearing disabled student share ideas and participate in the class? If yes, what he/she uses as a mean of expression?

Actually, they rarely participate only when I ask them directly to answer. They use sign language or pictures from their different books.

6. What means of communication do you use with your hearing disabled students?

I use complete communication method including sign language, gestures, and facial expressions. Sometimes, I rely on drawing or pictures and I use the FM system in presenting phonetics lesson.

7. Have you received special education training?

No, I haven't received any training in teaching hearing disabled students.

8. How did you learn signing?

Actually, I relied on my own searches about them and about their language. I spent my few first months watching (BSL and ASL) and other videos on the internet. I also learnt a lot about signing from my students and my colleagues.

9. Is there a sign language translator in your hearing disabled classes?

No, there is no sign language translator because each teacher is supposed to be the translator in his class.

•Teaching Approaches

10. What is the teaching approach that is adopted in your special school?

The teaching approach adopted in our special school is the traditional approach.

11. Do hearing disabled learners have specific curriculum and specific textbooks.

No, they don't we follow the content curriculum and the textbook that our minister sent us.

12. After applying both the traditional and the technology-assisted approaches in the English language teaching-learning process in the class of first-year students with hearing disabilities, which approach was more effective in your opinion? Justify your answer please.

well, according to my little experience, I can confirm that the technology-assisted approach is more affective with these learners because they interact very good with the teacher which means that they have understood the lesson.

13. How confident are you about assessing the deaf/hard of hearing student's academic achievement through using the traditional teaching approach? Please justify your answer.

Honestly speaking I am not very confident because I believe that these students still can achieve more. There are multiple barriers that cause a reduction in the achievement using the traditional approach like: the variance in the degree of hearing disability and its effect on their perception, both the teacher and the learner educational effort during the term or the whole year, the lack of assistive technologies.

14. Do you find the whole class participation in the learning process more effective than learning in groups or by the individual student? Justify your answer please.

Undoubtedly, learning in groups is more effective to them because they like to interact with each other especially if the task they are asked to do is presented in a game form, learners in this case will enjoy their time and they won't forget about the lesson.

15. Do you find the traditional method effective enough to conduct the lesson according to the study program and the existing curriculum or do you consider the technology-assisted teaching method a necessity in this case? Justify your answer please.

I totally believe that the technology-assisted teaching method becomes a necessity during conducting the lesson because it makes both the learner and the teacher satisfied at the end of the lesson

16. Do you encourage the idea of teaching students the practical side of the information simultaneously with the theoretical one through involving a research study that combines searching for and collecting information from web data banks, or do you see that the theoretical side is enough to improve their level in acquiring English as a foreign language?

in fact, I do not rely on the practical side a lot except in the lesson of sounds I use the FM system in the other sessions I start by a warming up presentation and then the production of the information after that I help the students to solve the tasks to see if the objectives of the lesson has been fulfilled or no.

17. Do the assistive teaching technologies cause a change in the student's motivation level in comparison to the traditional teaching materials? Justify your answer please.

Of course, the assistive technologies changes the learner's motivation level, it makes him/her more active and more loving to learn the language or any other subject.

18. Which method is more effective for an enjoyable, beneficial, and controlled learning

environment for all your deaf and hard of hearing students, is it teacher-centeredness or learner-centeredness? Justify your answer please.

the learner-centeredness is the best method for teaching deaf and hard of hearing students especially if the teacher uses the assistive teaching technologies because in this case the learner tries to get the information or deduce the rule by his/her own effort which makes him/her more confident. However, I used to rely on teacher-centeredness to help them in getting the information since there were no technologies available.

Appendix I

Marks of the Pre-test and the post-test

The students	Pre-test	Post-test
Rayan Ayachi	14,5	20
Oussama Semmadi	13	20
khelfoun Chaouki	13	19
Hatem Samer	7	15.5
Safia khelaltia	8	10.5
Nassir khelaltia	7	10
Israa Toumi	13	11.5
Nabil keaza	6	11.25



Drawings of color names



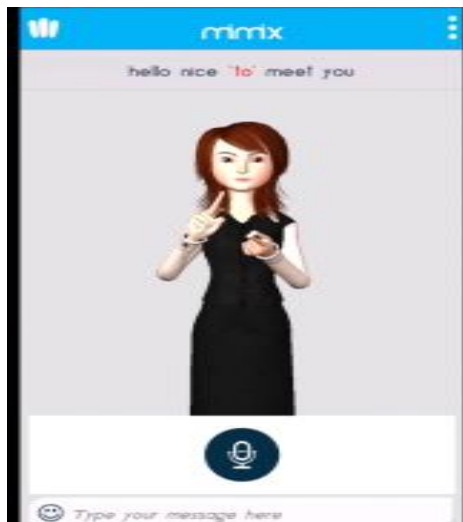
The hopscotch game



Numbers task

Appendix K

Screenshots of mobile applications



Appendix L


الجمهورية الجزائرية الديمقراطية والشعبية
وزارة التعليم العالي والبحث العلمي
جامعة العربي التبسي تبسة
كلية الآداب واللغات
قسم الآداب واللغة الإنجليزية



إلى السيد الأستاذ الدكتور محمد بن عبد الوهاب العتيبي
سعيًا بكارية

إذن بالدخول

بعد التحية والإحترام ،
لغرض إستكمال البحوث الميدانية لطلبة قسم اللغة الإنجليزية يرجى منكم السماح للطلبة الآتية أسمائهم
بإجراء زيارات ميدانية بمؤسستكم :

الطالبة:
الطالبة:
الطالب :
التخصص: لغة إنجليزية علوم اللغة

في الأخير تقبلوا منا فائق التحية و الاحترام
في :

رئيس القسم

الأستاذ المشرف


المؤسسة المستقبلة
رئيس المؤسسة المستقبلة


رئيس القسم
الأستاذ المشرف

Appendix M



الجمهورية الجزائرية الديمقراطية والشعبية
وزارة التعليم العالي والبحث العلمي
جامعة العربي التبسي تبسة
كلية الآداب واللغات
قسم الآداب واللغة الإنجليزية



إلى السيد (ة) مدير مدرسة الاطفال
المجوفين مستحيا بكاريتك

الموضوع : طلب إجراء تربص ميداني

بعد التحية و الإحترام ،

لغرض إستكمال البحوث الميدانية لطلبة قسم اللغة الإنجليزية يرجى منكم السماح للطلبة الآتية أسمائهم :

- بولماين حمزة
- حمدي نوريين
-

وذلك بغية التحضير لنيل شهادة شهادة الماستر

في الأخير تقبلوا منا فائق الاحترام و التقدير

تبسة في :

تبسة في :

رئيس المؤسسة المستقبلة

اتصافور
أري بوسر الميدير



رئيس القسم

قسم الآداب و اللغات
اللغة الإنجليزية و اللغات
الآداب و اللغات

إيبية أسماء



Appendix N

الجمهورية الجزائرية الديمقراطية الشعبية

وزارة التعليم العالي والبحث العلمي

جامعة العربي التبسي، تبسة

قسم الآداب واللغة الإنجليزية

خاص بالالتزام بقواعد النزاهة العلمية لإجازة بحث

(ملحق القرار الوزاري رقم 933 المؤرخ في 28/07/2016 المنطلق بالوقاية ومحاربة السرقة العلمية)

أنا الممضي أدناه

الطالب (ة) بولعراس جمانة

الحامل لبطاقة التعريف الوطنية رقم: 113589216 والصادرة بتاريخ: 19/02/2019

المسجل(ة) بكلية: الآداب و اللغات قسم: اللغة الانجليزية

و المكاف بإجازة منكرة تخرج ماستر

شعبة: Science of Languages

تحت عنوان: Traditional Versus Technology Assisted Approaches in

The Process of Teaching and Learning English for First year

Middle School Students with Hearing Disabilities

أصرح بشرفي أنني أنتزم بمراعاة المعايير العلمية والمنهجية ومعايير الأخلاقيات المهنية للنزاهة

الأكاديمية المطلوبة في إجازة البحث المذكور أعلاه

التاريخ:

إمضاء المعني



Appendix O



Résumé

Le terme déficience auditive fait référence à une audition altérée dont les gens souffrent à des degrés divers. Allant de léger à sévère, et c'est ce que tout le monde sait, mais une petite catégorie des gens est consciente des obstacles rencontrés par ces personnes malentendantes ou sourdes.

Comme tout le monde a le droit d'apprendre la langue anglaise, ceux qui ont des besoins auditifs ont également le droit de le faire aussi .

Par conséquent, la présente étude a le but de comparer et à tester l'efficacité à la fois de l'approche traditionnelle et de l'approche assistée par la technologie dans le processus d'enseignement et de faire apprendre la langue anglaise aux apprenants sourds et malentendants à l'école privée pour enfants malentendants - Bakaria - province de Tebessa.

Grâce à l'observation en classe et à l'expérience des apprenants de l'école privée de Bakaria, ainsi qu'un entretien avec les enseignants, les données qualitatives et quantitatives qu'ont été collectées ont montré que l'approche assistée par la technologie est plus efficace pour transmettre la parole en langue des signes que le programme traditionnel.

Mots clés: Sourd, malentendant, déficience auditive. L'approche traditionnelle. L'approche assistée par la technologie. L'enseignement de la langue anglaise.

ملخص

يشير مصطلح ضعف السمع الى الإعاقة السمعية التي يعاني منها الأشخاص بدرجات متفاوتة. تتراوح بين الخفيف والشديد وهذا ما يعرفه عامة الناس, لكن فئة قليلة على دراية بما يواجهه ذوي السمع الضعيف أو الصم من عوائق.

وكما للجميع الحق في تعلم اللغة الانجليزية فلذوي الاحتياجات السمعية الحق في ذلك أيضا .

ولهذا هدفت الدراسة الحالية الى مقارنة واختبار فعالية كل من المقاربة التقليدية والمقاربة المدعومة بالتكنولوجيات الحديثة في عملية تدريس وتعليم اللغة الانجليزية للمتعلمين الصم وضعاف السمع في المدرسة الخاصة بالأطفال المعاقين سمعيا – بكارية _ ولاية تبسة.

فمن خلال الملاحظة الصفية والتجربة مع متعلمي المدرسة الخاصة بكارية وكذا من خلال مقابلة أساتذة اللغة الانجليزية, تم جمع بيانات نوعية وكمية أظهرت أن المنهج المدعوم بالتكنولوجيا أكثر فاعلية في نقل الكلام الى لغة الإشارة من المنهج التقليدي.

الكلمات المفتاحية : الصم، إعاقة السمع، ضعف السمع، المقاربة التقليدية، المقاربة المدعومة بالتكنولوجيا، تعليم اللغة الانجليزية.