



## The impact of e – learning on the hearing impaired (Empirical study on Hearing-impaired students in middle school)

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### Abstract

This study describes the approach to e- learning and Realization for people with disabilities, especially the Hearing Impair. The researcher is trying in this research that measure the effectiveness and impact of e-learning on the Hearing Impaired, By knowing the different educational problems faced by the hearing impaired and try to eliminate these problems by applying them to an e-educational program in one of the subjects and find the difference before and after the application of the program. If the results are, positive we try to apply this method in their educational lives and this provides a lot for the hearing impaired (integrated educational environment of the cadres of education and educational presentations of lessons and exercises appropriate to the number of times many training and examinations) and the teacher's role here is different from previously. The teacher's role here will be the facilitator of the educational process. This helps the hearing-impaired integration in the Egyptian society and not linked to the idea of sign language and education in order to participate Hearing Impaired any kind of education or different cultures with the Egyptian society through e-learning.

**Keywords**—e learning, hearing impaired, disability, education.



## Council for Innovative Research

Peer Review Research Publishing System

Journal: International Journal of Computers & Technology

Vol 11, No.5

[editor@cirworld.com](mailto:editor@cirworld.com)

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## INTRODUCTION

E Learning is now an essential component of education Globalization, the proliferation of information available on the Internet and the importance of knowledge-based economies has added a completely new dimension to teaching and learning. As more tutors, students and trainees, and institutions adopt online learning there is a need for resources that will examine and inform this field. [1] In the online environment, students and instructors are virtually, but physically, present in the same environment. It expected that also improves computer performance of the ordinary. The use of people with special needs would be more effective because they are in desperate need for learning multi-sensory, turning of their attention, develop their thinking, and lead them to learn all that is new. In addition to that, the computer plays an active role as a tool entertainment in their agreement to improve psychological and social suffering. Given the growing demand for the introduction of educational techniques, promote the capabilities of students and their mentality have been introduced computer education to distinguish the possibility to take advantage of multimedia. The ability to magnetically store information, processing and retrieval, as it provides the learner the opportunity to experimentation and discovery during the educational process and increase the element of suspense to him. In the online environment technology mediates learning, it mediates communication and information transfer between the student and the instructor, between the student the content [ 2] . E learning has come a long way from being just a book-like content. Today, with the Technological advances and the availability of higher bandwidth, E-learning became richer with multimedia content, more interactive and personalized.

\*(Schlosser & Simonson, 2006, p. 65) they identify each of the Distance education and E-learning, Distance education:" A generic, all – inclusive term used to refer to the physical separation of teachers and leaders" E- learning "Instructional program delivers online or through the internet, includes tutorials delivered on campus. Workshops, short courses, and worksite- based instruction". [ 3 ].

E -learning practices and skills includes Promote, search, Select, Explore, test, collaborate, analyze, Create, Discuss, Apply, Understand, synthesize, Such as shown in figure (1).

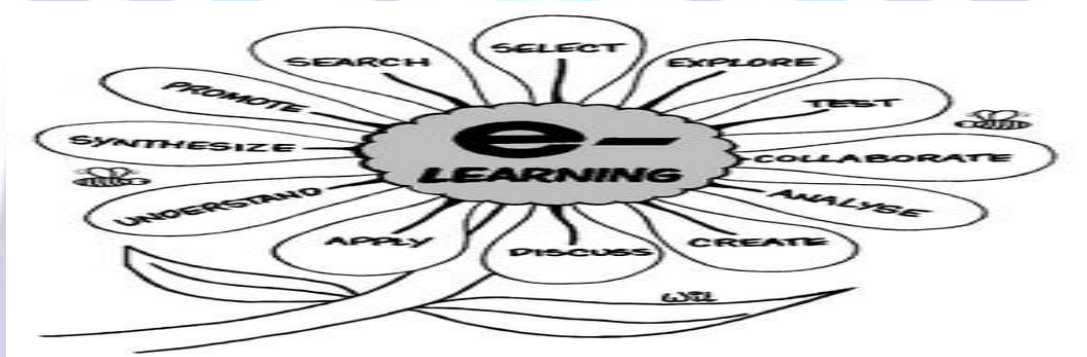


Figure (1) a flower petal framework (non-hierarchical) fore e-learning practices and skills. [1]

Hearing loss and hearing impairment are term used to describe a wide range of hearing losses that occur due to a problem with one or more parts of the ear. On one end of the hearing loss spectrum are children who completely deaf cannot hear sound at all. On the other end of this spectrum are children with less severe hearing loss, who can hear to some extent.

There are different types for the hearing impaired and different levels as shown in the following question. What Are the Different Kinds of Hearing Loss? Hearing loss classified according to the area of the hearing pathway that there is a problem with each type of hearing loss can be something the child is born with, something that develops over time, or something that occurs suddenly. The four types of hearing loss are conductive hearing loss (CHL) which comes from a problem in the outer or middle ear. Sensor neural hearing loss (SNHL) which results from a problem with the inner ear, mixed hearing loss that is a combination of conductive and sensor neural problems, Central hearing loss which results from damage to the auditory nerve itself, or the brain pathways that leads to the auditory nerve. Central hearing loss is rare in infants and children, Causes of hearing loss that occur during or soon after birth, Hypoxia (where the baby does get not enough oxygen), Bleeding in the brain, Severe jaundice, THE born early or having or low birth weight.

Why E learning for hearing impaired? Training Centers for hearing impaired are in most cases localized in big cities. Consequently it is time consuming and expensive to participate in these courses. If the training is not designed especially for hearing impaired a sign language translator is needed, who costs money. This study aims at studying the effects of e-learning of tutorial lessons for Hearing Impaired students on their motivation towards learning the related Subject of tutorial lesson Lessons pertaining to the topic of computer. Individuals with disabilities face a hearing difficulties in academic performance and educational attainment compared to the collection of non-disabled students. When the hearing impaired students apply in the hearing-impaired schools. they have good a ability language and good ability verbal but these schools cause isolation of these students from the reality technical environmental because it interested with the education of sign language .So anyone can not deal with the hearing impaired students. Only by sign language and most

of teachers do not know sign language and the learning of the computer is limited to learning games, drawing, Due to the importance of information technology in the live of person disabilities' in general, and hearing disabilities.

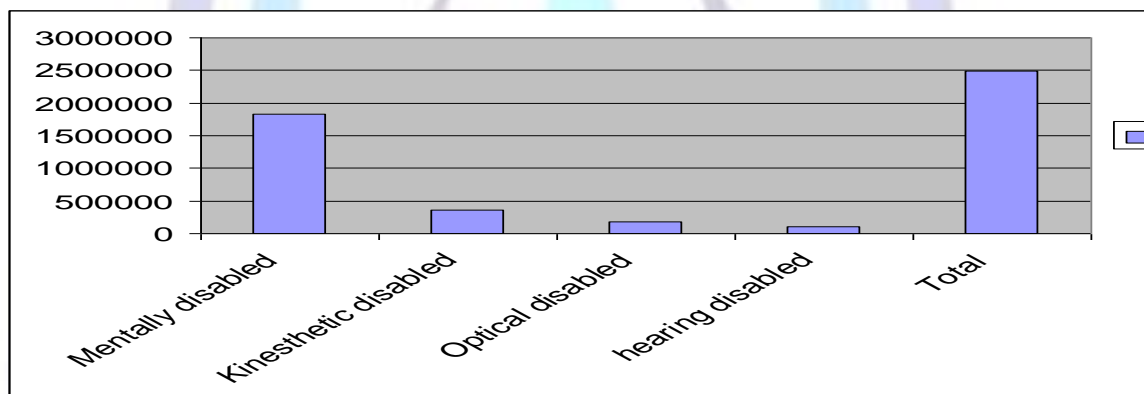
Hearing impaired are an important segment in the Egyptian society, they Have different capabilities, such as regular students but not reach them appropriately information, For a set of reasons, including lack of experience with dealing with hearing-impaired , Or place long distance from the school ,Not available of specialist teachers . So when the availability of scientific material by e learning this affects the hearing impaired.

Statistics indicate before 2005, that among all 2500 people there someone is deaf an increase of four in every 10.000 people. emphasizes the World Health Organization that there are 42 million people over the age of three, in the world are living with hearing loss between medium and strong, and estimates of disability in Egypt that there are about 859109 hearing disabled[4]

seems size of the problem in Egypt need to stop for example ,is expected to reach the number of disabled people in Egypt in 2006 to about 2.5 million ,according to estimates by the World Health Organization and the following table illustrates this [5].

Mentally disabled	Kinesthetic disabled	Optical disabled	hearing disabled	Total
1830975	366195	183098	109859	2490127

Number of with disabilities in Egypt 2006



Number of with disabilities in Egypt 2006

In Egypt, around 9.4 million PWD [WHO, 2007] and their families suffer from lack of education and health services. This percentage extremely be decreased by raising awareness among the public regarding the prevention, symptoms & diagnoses, and treatments. People with disabilities may be different but they have the same needs as everyone else. Given a helping hand, they can live independently and contribute to society. Access to information, services and the ability effectively communicate is a key need.

According to the Central Authority for Public Mobilization and Statistics, there are approximately two million persons with disabilities in Egypt, which represents about 3.5% of the total population.

### METHODOLOGICAL FRAMEWORK

In order to explore the impact of e learning on the hearing impaired and to understand its use for hearing impaired students in middle school, this study will use a qualitative methodology: a multiple case study approach. Qualitative research involves collecting data and trying to understand it in a particular context (M. L. Smith, 1987).

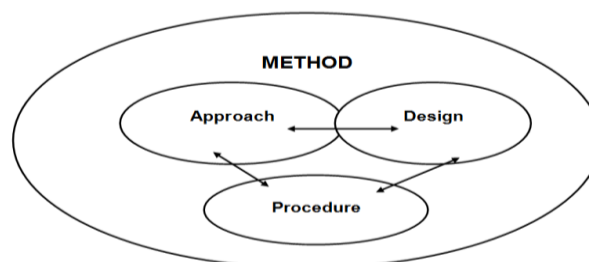


Figure (2) diagram overviews the approach & Design & procedure process [4][6]

When we design, we define objectives then decide information needed, the information split into (design interview questions then conduct interview) and (determine participant profile then select sample) then transcribe responses, analyze, report. As shown in Figure (3)

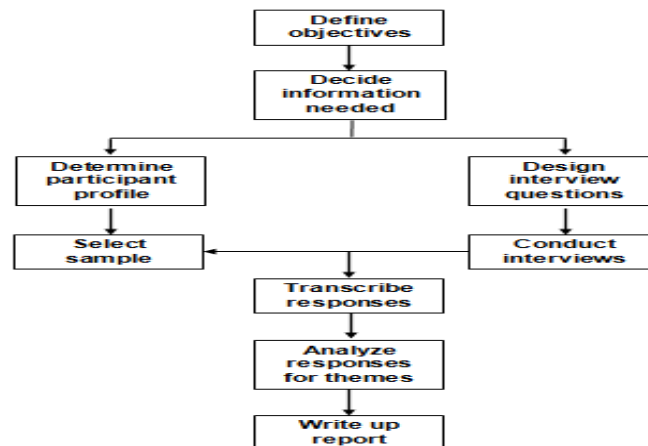


Figure (3) flow chart overviews the research process.

### Overview of research process

Research processes include the identification of the study population and the constraints that met the researcher while working and research design will be discussed that in the following sub sections.

#### A - The study population

Include research on a sample of hearing impaired students in the middle School, enrolled in school "Madiha Qansuh", the Sample size (23) students Researcher chose the sample which constitutes 100% of third grade from students prep for the hearing impaired school Madiha Qansuh,

Grade	students	
	Male	Female
Grade three	15	8
The sum	23	

Table No. 1 for the hearing impaired students in school "Madiha Qansuh"

#### B - Research Limitations

In the process of preparing this study, we faced some problems and obstacles that caused some limitations to our study. Some of these limitations were, Most of the students did not have hearing aids. Inaccuracy degrees for hearing-impaired students of different subjects, especially. Transitional classes such as the first prep and second prep. There was no Specialist of school talkie for the hearing impaired. not available trainee teacher to deal with the Hearing Impaired. First in dealing reliance on the movement of the lips or sign language, they are not deaf, hearing.

#### C- Research Design

An empirical study conducted to analyze the impact of e learning on the hearing impaired

**Data collection** Using method observation and personal interviews And was obtained degrees third grade prep for the first half of the academic year (2012 – 2013) from the School of " Madiha Qansuh " sent to it by the "Education Administration" for" the Eastern Nasr City" and is the result of an official number of 23 students and a student third grade prep and were excluded scores first grade and second prep for not confidence or uncertainty in their grades because they are placed within the same school.

**Interviews** Participants in the study said that data was difficult to obtain using other tools that is, they give way to an individual's freedom of expression.

**Interview Directory** built where semi-open questions (semi – structured) include relevant to the objectives of the study. The researcher has launched a range of questions on the headmistress for subjects in which students find it difficult to understand.

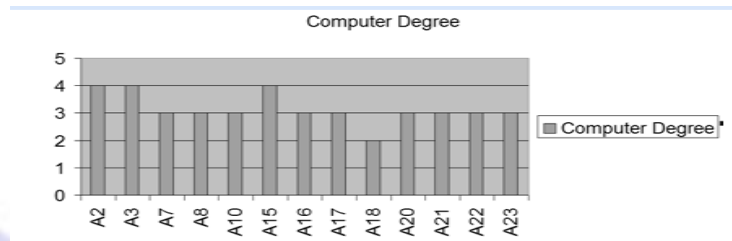
**Observation** , 1 - Hearing impaired student have very intelligent.2 - Do not carry out any work yet to be convinced or did not understand it.3 - Like dealing with the Internet in personal works.4 - Unconvinced in current teaching style education or –traditional Style.5 - They are very like the school and did not like that they reported absent on any day. 6 -



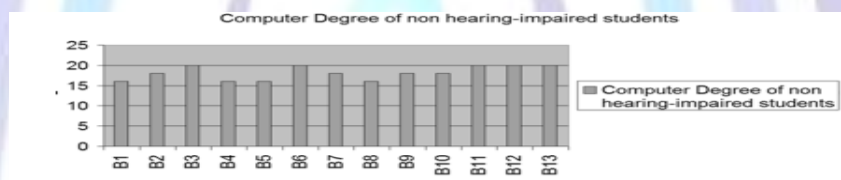
On the opposite, the hearing impaired teachers wish the hearing Impaired students absent for the school. 7 - Hearing impaired teachers explain their lessons in the traditional style, although the school has the labs, computers and Internet. 8 -The lack of cadres of teachers who deal with the Hearing Impaired.9 - Non-availability of conversational Specialist in Hearing Impaired School. 10 - Non-availability of Doctors for the detection of hearing aids .11 - Non-availability of Doctors Ear and Nose school for the hearing Impaired. 12 - Lack of understanding of those who work in Hearing Impaired schools originally Hearing Impaired issue.13 - Educational level for Hearing Impaired, in fact, very low because they did not traditional style.

**D - Action exams**

Action exams before application the E learning program, the researcher tested on computer subject on two sets of students, the first group of hearing-impaired students from the School of Madiha Qansuh, third grade prep and the second group from another school non-hearing impaired and in the third grade prep the exam was the first lesson in the curriculum. Final score from 10 degrees as shown in Figure (4) and (5)



**Figure (4) the first test applied on 13 hearing-impaired students from Madiha Qansuh, school for the hearing impaired (final score from 10 degrees)**



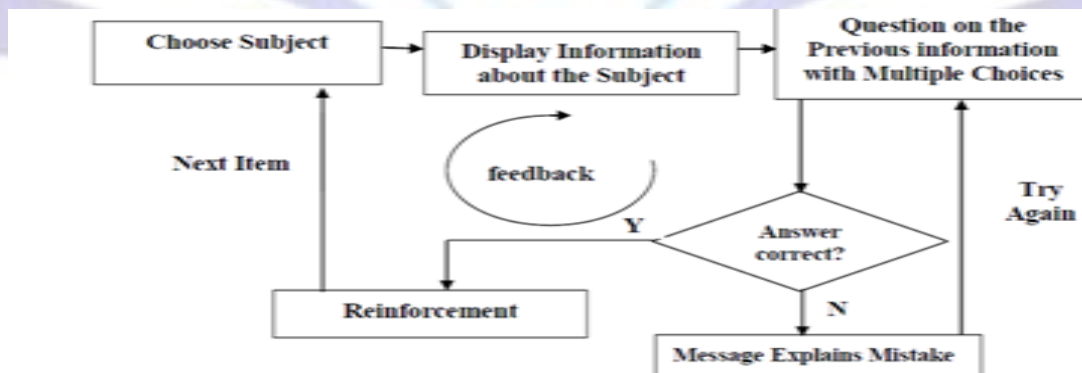
**Figure (5) the results of the second group Of non hearing-impaired students (Pre test)**

We note that there are large differences in the scores of the first group (A) and the second group (B)

**E- Learning program Design**

Courseware formats can vary from PowerPoint slides, to flash files, and Language vb.net and (movies and sounds,)

The following in Figure (6) Diagram Explain and Training of E learning program, the program in the start choose subject then display information about the subject then shows question on the previous information with multiple choices if the answer (Yes) go to reinforcement then next item, if the answer (NO) Appears message explains mistake and try again.



**Figure (6) : Flow chart (a)**

**Diagram Explain and Training of E learning program**

Next Series tests carried out on (group A) the hearing-impaired students after applying e program And the tests results, And compare them with their colleagues from the Hearing Impaired, which they did not apply the program on them and also compared with hearing impaired students is at the same level of education

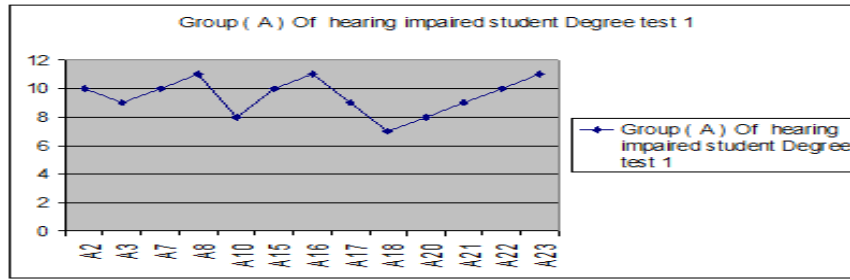


Figure (7) Group (A) of hearing impaired student Degree Test (1)

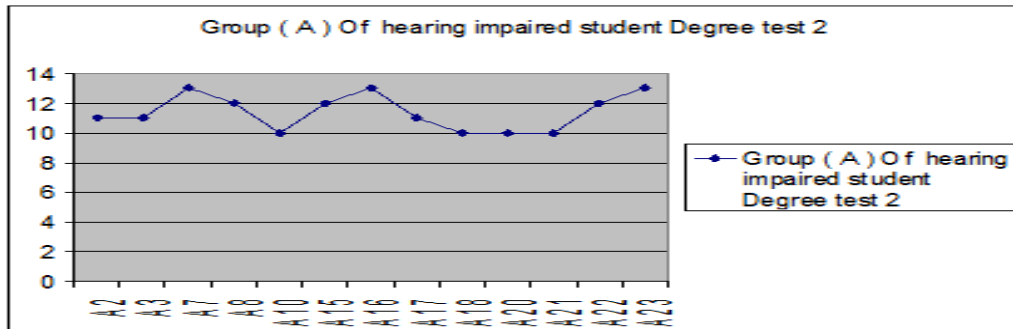


Figure (8) Group (A) of hearing impaired student Degree Test (2)

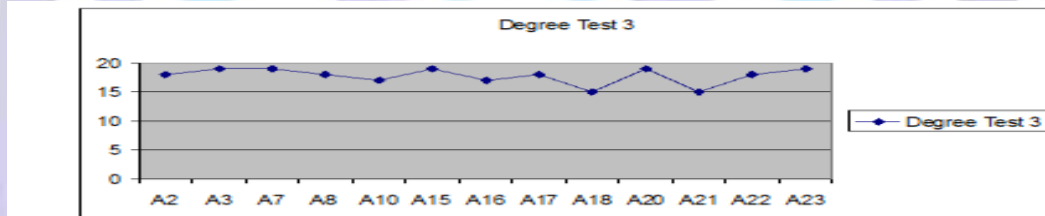


Figure (9) Degree Test (3)

Average degrees three tests group (A) of hearing-impaired		
Test 1	Test 2	Test 3
9	11	18

Table No.2(Average degrees three tests)

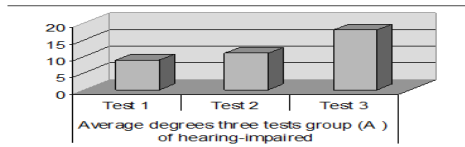


Figure (11)

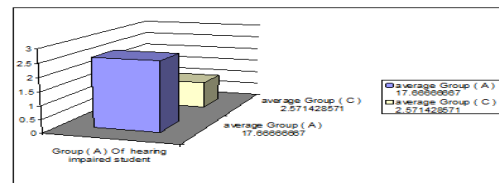


Figure (10) Results of the four test after the application Of the E program on the Group A

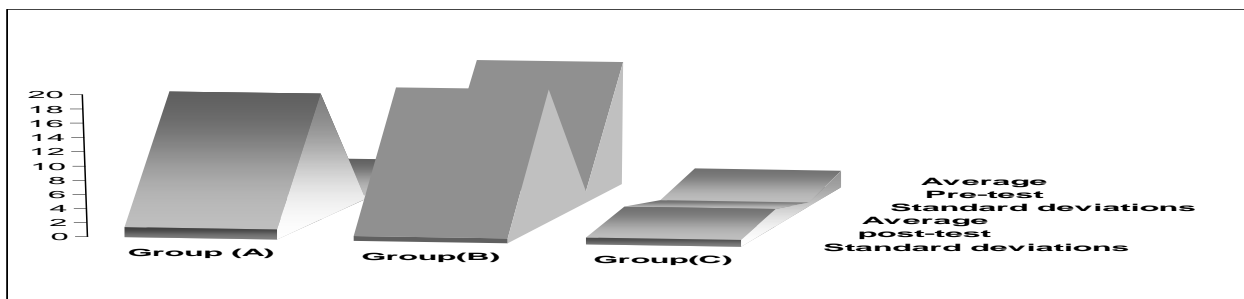


Figure (12) compare between group (A , B , C)

## Results and Discussion

This section will present the results obtained from the semi-structured interviews conducted with teachers of hearing impaired students and the results obtained from deferent tests on hearing impaired students and non hearing-impaired students. We will describe Educational level before the application of the e program for hearing-impaired students and after the application of the e-learning program for hearing-impaired students in the following sub sections.

### A- Methodology:

The study of quasi-experimental studies and aims to know the impact of e learning on the hearing impaired in Preparatory stage. Researcher chosen as the two sets of hearing-impaired students one experimental group (A), the control group(C) and the training program applied to the experimental group. while the training program did not apply to the control group, And a third group (B) of non-hearing-impaired students at the same middle school to make sure the educational level , Test was conducted before apply the E learning program and after apply the E learning program through measurement tool consisting of the Average and standard deviation and charts .

Various data collection methods were using in this study. at this stage, semi-structured interviews with teachers of data collection. This section will present the results obtained from the semi-structured interviews conducted with teachers of hearing impaired students

### B- Groups of students

For facilitating the process of displaying and organizing data Use a Group of symbols and

Signs, which are as follows

<b>Group (B)</b> From non hearing-impaired students	→	<b>The first group</b> (Control group).
<b>Group (A)</b> From hearing-impaired students	→	<b>The second group</b> (the first experimental group)
<b>Group (C)</b> hearing impaired student, e -program was not applied to them	→	<b>The third group</b> (experimental group II)

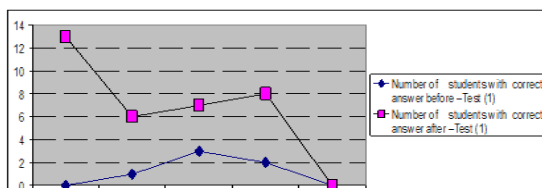
Table NO.3 Group (A, B, C)

### C- Demographic data

The study conducted on a group of hearing-impaired students, their number 13 students, and Registered in the third grade prep in a Madiha Qansuh school for the hearing impaired. This ranges in age from 15 to 16. The proportion hearing be Hearing percentage 85 db: 15-db and Intelligence percentage for students from 80 to 117.E learning program has been applied to (13) students from the hearing-impaired experimental sample. It was use of a control sample of non-hearing-impaired students and the (13) and have been using the number (6) of hearing-impaired students none applied them E-program. So we would have 19 hearing impaired students and 13 students non-hearing impaired, and the total is 32 students.

### D - Descriptive Analysis Results

Descriptive analysis used to produce a situation analysis, which consists of level information such as Scores of Students' Responses to Pre-Test, Scores of Students' Responses to after –Test, education level and this data provides a snap shot of the situation of the samples under study. The relationship between the students' perception and attitude measured .by descriptive analysis and shown in tables below, Educational level before the application of the e program for hearing-impaired students and after the application of the e-learning program for hearing-impaired students.



Question number	Total number of students	Number of students with correct answer after -Test (1)	Percent of class with correct answer
Question 1	13	13	100 %
Question 2	13	6	46 %
Question 3	13	7	54 %
Question 4	13	8	61.5 %
Students with 100%	13	72.2 %	Average 65.5 %

Figure (13) Scores of Students' Responses after and before –Test (1)

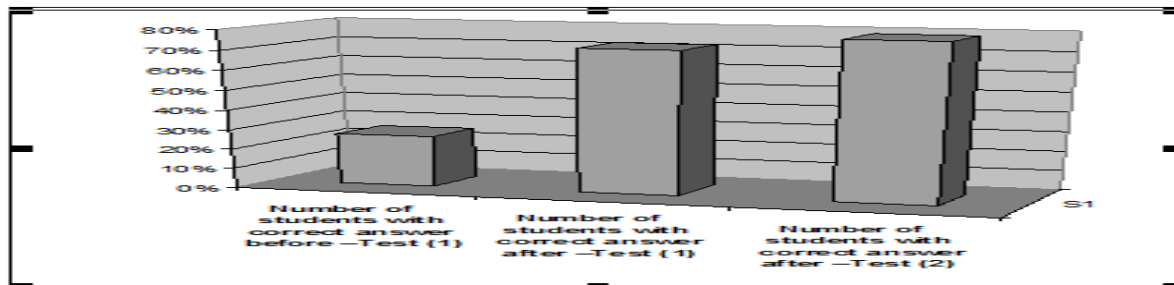


Figure (14) Scores of Students' Responses after -Test (2)

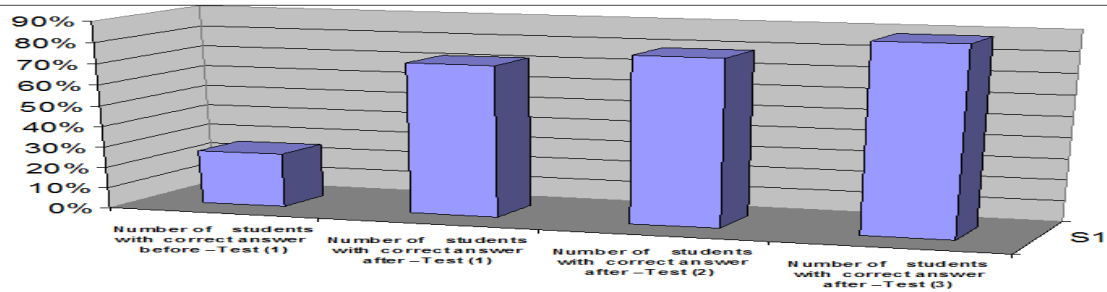


Figure (15) Scores of Students' Responses after -Test (3)

Groups	Pre-test		post-test	
	Average	Standard deviations	Average	Standard deviations
Group (A)	3.2	0.56	18	1.4
Group(B)	18.1	1.73	19	0.7
Group(C)	2.5	0.56	2.5	0.98

Table NO. 4 Standard deviations for Group (A,B,C)

### Conclusions and Future Work

In the introduction, Researcher expressed the hope that the work in this thesis could be a " first step' towards a general purpose" Effective attention towards the hearing impaired in the Egyptian society" In this final. Researcher conclude by describing the progress made towards this goal, Researcher will also suggest some future research directions that could provide the next steps along the path to a practical and widely applicable inference system.

### Results

We got set of results after the application of the e-learning program for hearing-impaired students, as shown in the following lines we have noted after the application of the e-learning program for hearing-impaired student's .Remove the psychological barrier between the student of the hearing impaired and his desire to improve. The development of feelings of learners abilities and contribute to the achievement of self-growth and societal growth. Provide educational programs based on the needs of real benefit the community. Speed access to information. The role of the teacher in the classroom is as a mentor and guide. The use benefits of virtual classrooms. Increase the capabilities of teachers to deal with poor hearing. Provide educational programs based on information technology. Contribute to the teaching and learning programs for the hearing impaired. Provide educational services to disadvantaged segments of society the correct learn.

### Conclusions

The aim of this thesis has been Measure the impact of e learning on the hearing impaired, Moreover, noticed the academic progress of the group, which has been the application of E learning program on them from hearing impaired student that they did not apply to the e program.. In addition, the progress of the group that has application of e learning program, More than from the other group of hearing-impaired that they did not apply to the e program. This is proof the importance of e learning in the lives of hearing-impaired students and hope that it applies to the hearing impaired in all subjects.

### Suggestions for Future Work

A number of open problems must be solving to allow the development of truly general-purpose e- learning .These problems suggest a variety of research directions that need to be pursuing to make such e learning programs





feasible. Schools hearing impaired are available by appropriate classroom and appropriate laboratory and the teacher is not appropriate.

1. Lack of hearing aids for hearing-impaired students in school
2. Scarcity of owning a hearing-impaired students for hearing aids
3. Not convinced managers and teachers of the importance of hearing aids them in Preparatory School For hearing impaired and use the language of the lips or sign language.
4. the work performed in this project provides basis for future research in several areas.

## The recommendations

1. Prefer to use E learning for hearing-impaired students from pre-school, where mothers using the appropriate CDs for the hearing impaired to know the environment and Language.
2. When developing educational programs for the hearing impaired must be placed at the hands of educational cadres and psychologists and specialists talkie and reviewing well.
3. Traditional teacher cannot deal with hearing-impaired students and is the main reason for the lack of academic progress.
4. Hearing-impaired students need of their attention in e learning in all curriculums.
5. Hearing-impaired students in need who believes their education, they get the best education to help them on the presence of future business opportunities and understand the different subjects.
6. Preferably be applied to electronic exams on Hearing Impaired Schools\7. Electronic educational software making in spoken and written language help the hearing impaired speech and education in all levels of education.

## Acknowledgements

I would like for expressive my heartfelt thanks and appreciation to my advisor, Professor. Yehia Mustafa Kamal Helmy and Dr. Mohamed Marie for his comments, criticisms and guidance on this thesis work. And special thanks to my husband and my children because they have given me help and encouragement.

## REFERENCES

<b>E-Books Material Type</b>	<b>In-Text Citation</b>	<b>Reference List Entry</b>
E-book	[ 1 ]	[ 1 ] E-Learning ,Concepts and Practice - Bryn Holmes and John Gardner 2006
Article from an Electronic Encyclopedia	[ 2 ] [ 3 ]	[3] Schlosser & Simonson, 2006, p. 65. [6] Richards& Rodgers1985:17, <i>Brown 2001: 17-18</i>
<b>E-journals Material Type</b>	<b>In-Text Citation</b>	<b>Reference List Entry</b>
Journal Article from the Internet	[ 4 ] [ 5 ]	[ 2 ] Sethy, Satya - 2011-01-00 , <b>Journal</b> Articles; Reports – Evaluative Journal of Educational Multimedia and Hypermedia, v20 n1 p83- 95 Jan 2011. [15] A Measurement Framework for Knowledge Transfer in E learning Environment, <i>Information technology journal</i> 10 (5):927-943, 2011
<b>Internet Documents Material Type</b>	<b>In-Text Citation</b>	<b>Reference List Entry</b>
Electronic Document	[ 6 ]	[10] Richard JH Smith, MD, A Eliot Shearer, Michael S Hildebrand, PhD, and Guy Van Camp, PhD. January 5, 2012
Government Publication	[ 7 ] [ 8 ] [ 9 ] [ 10 ]	[9] Audiology Information Series © ASHA 2011 7976-16 by ©1997-2012 American Speech-Language-Hearing Association [13] MADA QATAR ASSISTIVE TECHNOLOGY CENTER An Open Call for the development of assistive technologies to support the needs of Arabic speaking disabled people January 2012 page (10) [14] Collins JG. Prevalence of selected chronic conditions: United States 1990-1992. <i>National Centre for Health Statistics Vital and health statistics</i> (, 1997, 10(194): 189 [16] Measuring Disability Prevalence, March 2007, The World Bank

**Theses****Material Type****Unpublished Thesis****Published Thesis****In-Text Citation****Reference List Entry**

- [11 ] [4 ] ماجستير الباحث تامر الشرباصي محمد الراجحي عنوان الرسالة دراسة تحليلية لبرامج العمل مع جماعات المعاقين سمعياً ودور خدمة الجماعة في تطويرها تاريخ النشر او المناقشة 2005 جهة النشر كلية الخدمة الاجتماعية جامعة حلوان الدولة مصر
- [ 12 ] [5 ] الاتجاهات الحديثة في تدريس الرياضيات للغئات ذوي الاحتياجات الخاصة إعداد / د. محمود إبراهيم محمد بدر الأستاذ المساعد بكلية التربية بينها
- [ 13 ] [7] Australasian e learning Solution to Overcome the Pediatric Hearing Loss 2011-Global Pandemic that is
- [14 ] [8] Jl. of Educational Multimedia and Hypermedia (2006) 15(2), 159-173 , BECKY SUE PARTON, University of North Texas- USA -[parton@cc.admin.unt.edu](mailto:parton@cc.admin.unt.edu)
- [15 ] [11] A [thesis](#) submitted in partial fulfillment for the requirements of the degree of Doctor Philosophy at the University of Central Lancashire, 2011.
- [16 ] [12 ] The Effect of Student Background in E learning —Longitudinal Study —Seta Boghikian - Whitby and Yehia Mortagy- University of La Verne, La Verne, CA, USA [mortagyy@ulv.edu](mailto:mortagyy@ulv.edu) (P.N 110)

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