# Electronic learning of higher education for deaf and dumb using sign language

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Abstract: The e-learning platform is a useful way for learners to increase their knowledge from anywhere and at any time. The e-learning platform also stores information about each user of the platform, including security information.

In this letter, the proposed system is a safe electronic learning platform for learning deaf and mute. The proposed platform consists of three parts. The first part is the teacher, who sends the text to the Deaf application based on the TCP / IP protocol, and is used to cut the text into packets for security of the transferred information. The second part cloud is the virtual memory module containing the data set video function

A - The text is processed into letters and each character compares with the data set stored and the videos are per character

B) Using FFMPEY, the video is merged and transferred by TCP / IP to the deaf student

C - converts the size of the video to the student

The third part is the student who receives the educational videos in sign language

**Keyword:** TCP\IP : transport control protocol\internet protocol,  HI : Hearing Impaired.

## 1. Introduction

E-LEARNING INCLUDES COMPUTER AND METHODS OF ELECTRONICALLY SUPPORTED TEACHING AND LEARNING. E-LEARNING IS UTILIZED IN WEB-BASED, COMPUTER-BASED LEARNING, AND VIRTUAL BASED LEARNING, IN ADDITION TO DIGITAL TECHNOLOGY. IT IS A COMPUTER AND NETWORK-ENABLED KNOWLEDGE TRANSFER. IT IS LEARNING AND KNOWLEDGE MANAGEMENT COMBINATION. IN ADDITION TO THAT, IT IS AN IMPORTANT TOOL WHICH PLAYED A ROLE IN THE FACILITATION OF LEARNING FOR DEAF PEOPLE, WHO CAN TAKE ADVANTAGE FROM THIS TECHNOLOGY VIA THE INCREASE OF THEIR KNOWLEDGE AND IMPROVEMENT OF THEIR SKILLS. THEY ARE CAPABLE OF UTILIZING THE FEATURE OF MOBILITY BY LEARNING ANYWHERE, AT ANY TIME. E-LEARNING IS IMPORTANT IN HIGHER EDUCATION. THE MAJORITY OF STUDENTS EASILY LEARN AND DEVELOP SKILLS AND KNOWLEDGE WITH THE HELP OF E-LEARNING. NOWADAYS TOOLS OF E-LEARNING ARE WIDELY UTILIZED AS ONE OF THE LEARNING METHODS. THIS PAPER PRESENTS A STUDY OF THE WAY DEAF STUDENTS USE E-LEARNING SYSTEMS IN THE INSTITUTIONS OF HIGHER EDUCATION.

this system has been intended specifically for deaf people for the purpose of vocational and educational training for life. In LS, the special needs of deaf students, for example information (sign language), a high level of visualization, interactive learning, exploratory and peer learning potential are met through video conferencing, here, for the first time, deaf learners will be capable of learning in their own language, which is the sign language. For the sake of accomplishing the context above, LS has been adapted with certain learning issues for the intended people, ie deaf and children. Content which is provided in sign language. Experiments in sign language in deaf and hard of hearing schools showed that using sign language in the class considerably enhances reading efficiency. The primary goal of the current e-learning environment is supporting the equal rights of Deaf to their access and their real presence in vocational and educational training.

## 2. LANGUAGE OF DEAF AND DUMB SIGN LANGUAGE

This language is for specific signs of contact with people who lose their ability to hear (Deaf).

This language is used in many countries of the world, although there are some differences from one country to another.

And works to remove any barriers to dialogue and it is enjoyable for both the person with the ability to hear or a healthy person

the following figure shows the characters in English and corresponding references
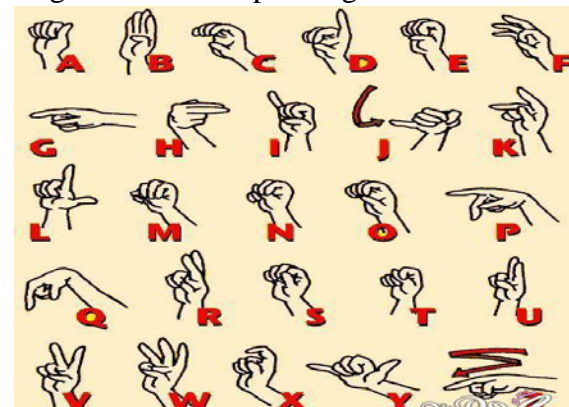


## 3- Benefits of E-Learning in Higher Studies

In the past, learning methods were writing on boards and copying notes. Until the majority of the educational establishments follow this way. In the case where one of the students is absent or had to miss a class, then the result is only lack of knowledge. Which is why, it is necessary implementing e-learning systems, in the case of missing or absence in the classes, in the next day people will be capable of using the educational content video via computer and communication system. For giving higher quality education to deaf people is possible via the system of e-learning. Throughout the e-learn approach there is a need for, software, platform, and infrastructure.

## 4- Previous Research

Based on the presented survey, there has not been sufficiently enough work on this subject, e-learn for Hearing Impaired people using effective approaches of multi-media especially, visual multi-media is a new field of study in applications of computer and multi-media.

Dr. Karim Q Hussein "AUTHORING SYSTEM OF DRILL & PRACTICE ELEARNING MODULES FOR HEARING IMPAIRED STUDENTS " (2015) As per previous factors the decision of researchers is to develop Drill & Practice (D&P) e-learning modules(eLMs) for selected topics  like Mathematics. D&P eLMs of  Mathematics for HI persons would be the case study   of this research including Developing .

Dr.Karim Q Hussein and Dr.Ayman Al-Nisoor in peper " e-Learning Modules of Tutorial Lessons for The Deaf Students : Development  & Evaluation  "View Points of Experts in Consideration" (2009) Where your vision is to develop an effective technique to support students. The main core of the technology can be represented by two branches: the first is to provide blank templates for the first time "the teacher who seeks to provide eLearning modules (eLMs) to his subjects of special interest to deaf candidates." The material is reconstructed by the teacher in the sign language and finger spelling .

A.S.Drigas1, D.Kouremenos2, S. Kouremenos3 and J. Vrettaros4 " An e-Learning System for the Deaf people"(2005) This paper presents a Learning System (LS) which offers Greek Sign language videos in correspondence to every text in the learning environment.

## 5- Aims of Research

1. implementing e-learning with cloud computing and big data in all education establishments specialized for deaf people

2.implementing good system of computer and communication with advanced software.

3. uploading new educational sign language videos.

4. Sharing of files and all education updated subjects.

5. Establish user tracking Chat (text and video chat)

6. Implementing IC

## 6- Strategy work E-learning
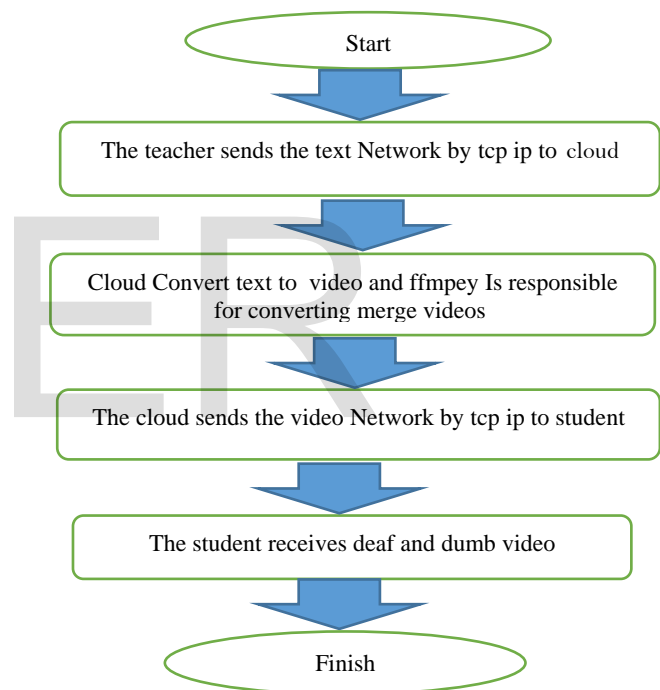


## 7- The interfaces of the e-learning design consist of three models

A- window of the teacher who writes the lecture (text).

B - window Claude moved the same lecture (text).

A student window containing the size of the video coming from Cloud after converting the text from the teacher to the video as shown in Figure (2) and send it to the student.
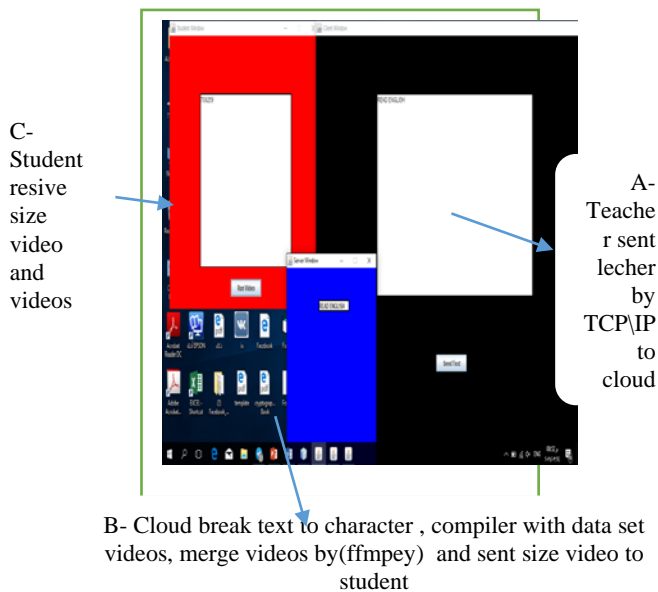
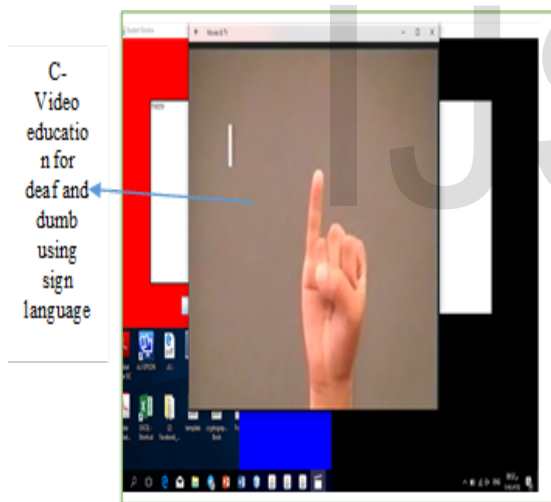**Figure1:** The interfaces of the e-learning design



**Figure2:** Video Screen Sign Language

## 8.1 HOW TCP/IP WORK IN APPLACATION

TCP splits the message or file to packets which are transferred via the internet and after that re-assembled after reaching the destination.

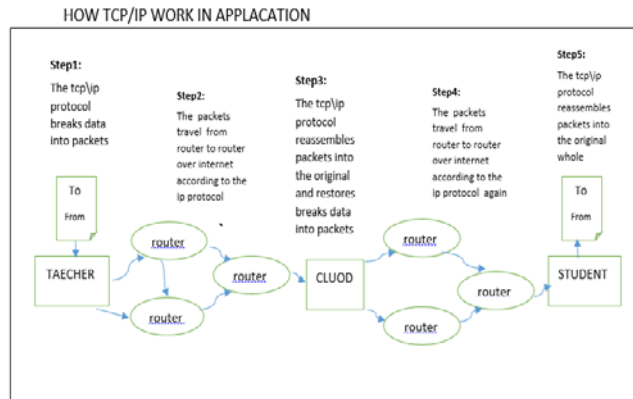- IP is responsible for addressing each packet, in order for it to get to the desired destination.



**Figure3**: how data travels over the net in the system ELearning deaf

## 8.2 The Internet Protocol (IP)

IP is an abbreviation for Internet Protocol, it indicates a collection of standards and requirements for the creation and transmission of packets, or datagrams, via the network. IP belongs to the Internet layer of the Internet protocol suite. In the OSI model, internet protocol belongs to the network layer. It is typically utilized in combination with a protocol of a higher-level, especially the TCP. The IP standard is regulated by RFC791.

IP address is a numerical value uniquely identifying a particular interface on the network.

An IPv4 address is of length equal to 32 bits. Which means that there are 4,294,967,296 ($2^{32}$) distinct addresses. An IPv6 address id 128-bit long, and that means it has 3.4 x $10^{38}$ ($2^{128}$) distinct addresses.

The number of usable addresses for the two versions is reduced because of some reserved addresses and other considerations.

IP addresses are binary numbers, however, they are usually represented as decimal values in (IPv4) or hexa-decimal values in (IPv6) for the sake of making reading and using them easier for the human interpretation.

## 8.3 How IP Works

IP is designed to be capable of working over a dynamic network. Which indicates that IP has to work with no central directory or monitor, and that it can't depend on certain available links or nodes. IP is a datagram-oriented connectionless protocol. This way, every packet has to include the IP address of the source, the IP address of the destination, and other data in the header to be delivered with success.

Combining those factors makes IP an unreliable, best effort protocol of delivery. Error correction is rather controlled by protocols of upper level. Those protocols include UDP, which is a connectionless protocol and TCP which is a connection-oriented protocol.

Most internet traffic is TCP/IP.

## 8.4 IPv4 Addresses

An IPv4 address is a 32-bit binary number, it consists of two sub-addresses (identifiers) that have been mentioned

above, and those addresses characterize the network and the host to the network, with an imaginary boundary that separates them. IP addresses are, therefore, in general shown as 4 octets of numbers from 0 to 255 which are represented as decimal values rather than binary.

For instance, the address 168.212.226.205 denotes the 32-bit binary value 10101000.11010100.11100010.11001101. The binary value is of importance due to the fact that it will show which one of network classes the IP address belongs to.

IPv4 addresses are usually represented in dotted-decimal notation, with each 8 bits (i.e. each octet) denoted by a number from 1 to 255, every one of which is separated by a dot. For example, one of the IPv4 addresses looks like this: 192.168.18.41

An IPv4 address is composed of 2 parts. The first part of numbers in the address represent the network, whereas the second part specifies a certain host. A subnet mask states which part of the address represents the network, and which part of the address represents the host.

A packet with a destination address which does not have the same network address as the source is going to be forwarded, or routed, to the suitable network. As soon as it is on the right network, the host part of the IP address specifies which one of the interfaces the packet is delivered to.

## 8.5 Subnet Masks

An IP address represents both a network, and a specific interface on the network. A subnet mask may be written as well in dotted decimal representation and specifies where the network part of an address ends, and the host part of the address starts.

When represented as a binary value, each bit that is set to 1 represents the corresponding bit in the address belongs to the network address. Every bit which is set to 0 marks the corresponding bit in the address and belongs to the host address.

The bits that mark the subnet mask have to be consecutive. The majority of masks begin with 255, and continue until the network mask ends. A Class B subnet mask would be 255.255.0.0.

IP Address Classes

## 9. Cloud computing the future of e-learning

In the era of Internet, the age of information available on the Internet is enormous and the accumulation of files within the computers of public and private, and a large sector of the community to access this information in a system that allows them to access and see them at any time, From information seekers to institutions including educational institutions (schools, institutes, universities, etc.).

As storage costs continue to rise, organizations are faced with the challenges of data recovery and backup, demonstrating the importance of Cloud Computing, which aims to effectively protect, manage, and manage data.

Cloud computing is the new solution for managing and storing data and information, where students can access applications from anywhere, anytime, from any Internet-connected device

Dealing with cloud computing The following elements must be available

- user/customer
- platforms
- Infrastructure
- Applications
- Service

## 10. How to merge / merge mp4 videos with FFMPEG

By relying on the database containing the symbols and videos corresponding to the language of the reference and each text is truncated into letters and each letter to a section in the language indicated by Cloud

FFMPEG We can combine these videos for the lecture sent by Professor Kens, which turns into characters and each character of the video signal and the integration of videos per character of the converted text to a video lecture by this feature enables us to convert any text lecture to a video in the sign language.

## Conclusion

We have to propose and implement The teacher needs simple basic skills that are not spent on the computer, nor does he need to be experienced in sign language or finger spelling. The teachers are required to submit their exercises and question keys only. Enhancement is the key to learning. This visual enhancement is shown with fun and amusement in the proposed system.

And education based on e-learning in all institutions of higher education. The possibility of converting each text into the language of reference in

1. security system Difficulty connecting deaf and dumb students to universities and institutes of education

2. 

3. The study time is open and can be re – lectures

4. Security information in the platform and the entry the authorized only

5- The System is responsible for translating the input word to the sign language in the case where the word is present it is demonstrated as a letter by letter of finger spelling via a sequential clip.

6- the presented system is important for HI students that are learning English. Which is why, in order to improve modified system that are capable of processing any wanted language of teacher is a significant challenging step forward, which supports HI people all over the world

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