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Deaf Students Higher Education System Using E-Learning

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Abstract: Objective: To provide efficient sign language videos in E-learning for deaf and dumb students in higher education institutions.

Method: In these paper deaf students' higher education system is surveyed. This survey has taken only in Chennai deaf peoples studied colleges. Nearly 3 colleges are provided courses for deaf peoples. We implement e-learn teaching method in this colleges and taken the merits and demerits of e-learn system from 100 deaf peoples and analyze the report. Deaf people are able to communicate in hand sign language. In e-learn technology we add sign language videos and images by easily understanding the subject knowledge and improving their skills. It's one of the direct and easy access to deaf peoples those who study in higher education. They can utilize the mobility feature to learn anywhere at any time. In this paper we use sign language method in e-learning

Findings: In this paper we study and find out deaf and dumb students how to use sign language videos e-learning system in higher education.

Application: learning system is mostly used in higher education. Deaf students used e-learning with the help of sign language. It should be implementing in higher education institutions especially for deaf peoples

Keywords: E-learning, deaf and dumb learning, deaf students higher education, sign language..

1. INTRODUCTION

E-learn represent a wide range of methods for the electronic delivery of information in order to provide education or online training. It includes computer and electronically supported learning and teaching methods. E-learning used in Web-based learning, computer-based learning, virtual based learning and digital technology.

World Health Organization reports says (2015), 360 million people all over the world are Deaf or have hearing difficulties¹. According to the tamilnadu census data 27273 peoples are hearing impaired in Chennai². World Federation of the Deaf, 80% of Deaf peoples is illiterate or semi-literate³. So we must take more efforts to the Deaf equal opportunities in education and in working with others. E-learning is the excellent ways to increase the percentage of educated Deaf people by optimizing new technology. Today, many new systems were designed to assist Deaf people access the web for learning and training. E-learning is commonly referred to the intentional

use of networked information and communications technology for teaching and learning. Fig- 1 shows about e-learning system.

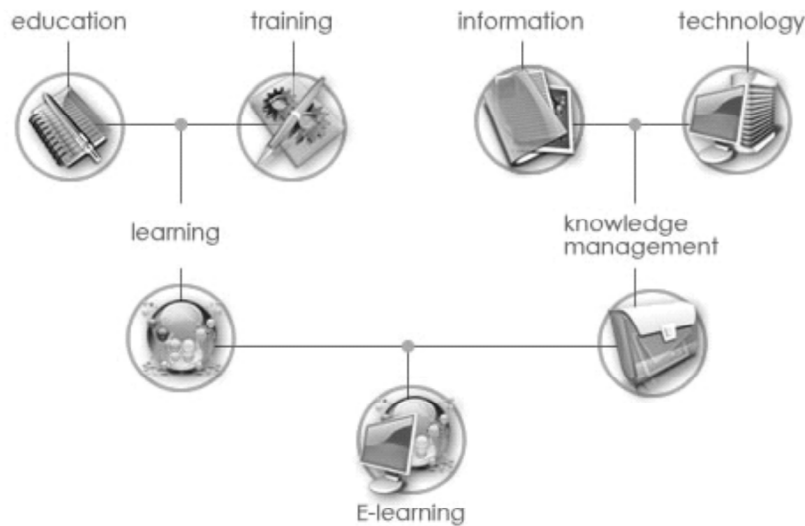


Figure 1: E-learn system

E-learning is one of the most growing research fields. Many new technologies have been developed recently in these fields. In this situation we have to assist deaf people with their study material translated into the Sign Language based on e-learning technology. The user-friendly of multimedia, telecommunication and internet information based services are used as a standard electronic platform to support procedures of distance, lifelong and continuing training for the Deaf people.

E-Learning courses provide an enabling platform by virtue of which the professionals can upgrade their knowledge without going for regular courses. Deafness is a hearing disability in which a person is incapable of receiving auditory information. Most people who are deaf are also speech-impaired and they use sign language (SL) as the main way of communication⁴. Sign language uses hand signs, facial expressions, lip patterns and body language instead of sound patterns. As on spoken languages, sign languages vary amongst countries and have their own vocabulary and grammar. They also vary within the same country and there is no standard sign language⁵.

In India only low number of institutions implement e-learn method to deaf peoples. So most of the peoples lose to get e-learn skills. In Chennai only few number of higher education institutions used e-learn method, due to lack of telecommunication devices, multimedia software's and high implementation cost. If implement e-learn method we can achieve the great result in deaf people's learning skills. Here we present effectiveness of e-learn for deaf peoples using sign language.

2. HAND SIGN LANGUAGE

2.1. Two handed sign language

Sign language is being among the deaf people⁶. Fig -2 shows example pictures of deaf peoples two hand sign language that represent alphabets . Two handed hand signs is a sign to represent all the things. Using the 10 fingers to join and show some meaningful signs that the people can understand. For example to join two thumb fingers from both hand in vertical position, can get the sign of A.

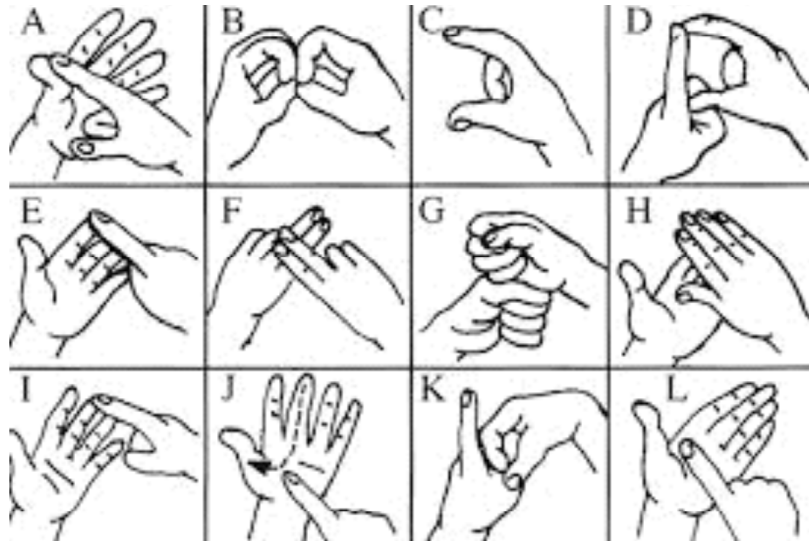


Figure 2: Deaf peoples two hand sign language

2.2. Single handed sign language

Single hand sign is also a sign with same meaning of two handed, but the different is some people has single hand only from birth or lose hand in some incidents. But most of other foreign countries deaf peoples use single hand sign for communication. Our e-learn represent videos including both hand signs. Fig -3 is single hand sign language

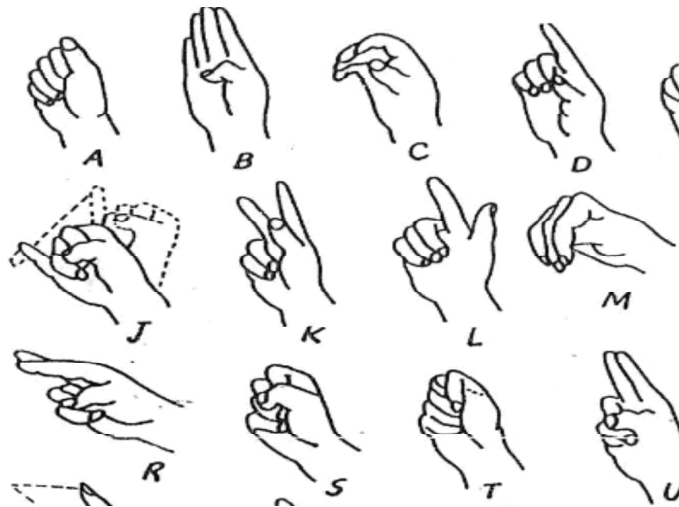


Figure 3: Deaf peoples single hand sign language

3. HIGHER EDUCATION SYSTEM FOR DEAF

The higher education for the hearing-impaired individuals plays a key role in each nation's education development. In Chennai only two courses (B.C.A and B.Com) allotted to deaf students to their higher education. Deaf students in higher education make a significant body of knowledge about the barriers these students face in gaining access information in the classroom. We need the depth of research on the effectiveness of such support services

as interpreting, notes writing, real time analyzing and tutoring with regard to their impact on academic achievement⁷. E-learning environment is a useful technique for educational purpose and this includes the education for hearing impaired (HI) students. However most e-learning environment available does not particularly can be useful to deaf students because of its feature which is lacking in terms of adaptability. They often encounter problem in accessing the information available in terms of understanding it and using it in a proper manner⁸. E-learn system assist deaf people to communicate hearing people. One of most important impacts of the technical revolution has been in the field of education and learning. Distance learning is very convenient for people in different demographical locations and who are not able to continue formal education⁹.

Now a day's e-learning has the shape of learning that gives Information and Communication Technologies (ICT) in education by using different types of multimedia (audio, video, images, and animations) and different technologies (DVD, video tape and TV). E-learning can occur inside or outside of a classroom learning¹⁰. All segments of society can benefit from e-learning and mobile-learning facilities, including disabled people. If they do not become familiar with new technology, it can negatively affect their life¹¹.

Deaf people learning method is different. They use sign language for communicating Sign language is a computer vision based intact intricate language that engages signs shaped by hand moments in amalgamation with facial expressions and postures¹². In their class room also the teacher must use sign language for teaching. In India we follow Indian sign language (ISL). It has more signs. The ISL videos available in internet. In Fig - 4 are the samples for sign language teaching in class rooms.



Figure 4: Teaching deaf people using Sign language

3.1. Application of Sign language

A sign language is a language which chiefly uses manual communication to convey meaning, as opposed to acoustically conveyed sound patterns. Sign language is important one to communicate with deaf and dumb peoples. Now days, deaf peoples used Indian sign language to communicate each other. It's a standard sign. But for some other convenient peoples can add and alter the sign and make new signs for their use has more opportunities to gain knowledge using in all areas. Using the sign language interpreter they can easily understand information. The sign language is very important for hearing impaired people. Finding an educated translator for the sign language every time and everywhere is difficult task¹³.

Now a day's sign language interpreter available in all places including schools, colleges, hospitals, police stations, court, hotels, restaurants, etc. In one of the T.V news channel provide sign language news especially for deaf and dumb peoples. Fig. 5 represent the sample screen shot in television sign language news. Sign language is a computer vision based intact intricate language that engages signs shaped by hand moments with facial

expressions and postures. This can involve simultaneously combining hand shapes, orientation and movement of the hands, arms or body, and facial expressions to fluidly express a speaker's thoughts.



Figure 5: Sign language news

3.2. E-Learning Systems For The Deaf

E-learn system is important to deaf people for gather knowledge. To implement e-learn we need the following

1. virtual classroom with all devices
2. text and video materials
3. Dictionary for sign language.
4. computer and communication devices
5. sign language interpreter
6. Hand sign images
7. sign language educational content video
8. sign language learning video

4. DEAF STUDENTS HIGHER EDUCATION SYSTEM USING E-LEARNING

In higher education system most of the institutions using e-learn system. Students of this generation mostly like system based teaching. They like to learn easily and quickly update subject knowledge. They always like advance technology using in all devices including in mobiles as well as class room even if they absent in the class they can copy the teaching file/material later. In this situation most of the schools and colleges using technology based teaching like projector, video conferencing, and subject materials are in audio and video based method. it will be very useful to all types of students.

We discuss the above matter not only in normal (speech and hearing) students but also deaf students. In normal teaching method teachers explain the concept as much as quickly. But in deaf teaching we have to explain until the student understand .in this deaf teaching in higher education we have to separated school and college level teaching.

In school level most of the schools not implement e-learn method of teaching. They use some times when students need. And other reason for not implement e-learn is lack of technology, lack of computer and communication devices and implementation cost.

In college level teaching we appreciate that most of the institutions using and implement e-learn method of teaching. So that college level students easily update technology level knowledge easily. In Chennai three colleges are especially available for deaf learning courses in arts and science. They use LCD projector in class rooms, writing exams in online, sharing and copying subject based videos and notes in pen drives, CD, DVD, mobile phones, tabs and laptops. It's one of the good e-learn method to the deaf peoples.

5. DEAF STUDENTS EDUCATIONAL INSTITUTIONS IN CHENNAI

Nearly seven schools for hearing impaired available in and around Chennai. Due to lack of technological device and communication system they were not implement e-learning system for teaching. Sometimes if they need to show any multimedia related image and video, they have to use e-learn method. Student studied in these schools mostly got minimum e-learning skills.

In these seven schools only 4 schools has higher secondary education and remaining schools has only secondary level education (up to 10th). To give successful education to deaf students we must implement e-learn method of teaching in all schools.

Only three arts & Science Colleges avail in Chennai for teaching deaf students. After finishing their school education deaf peoples utilize these three college, one college is a fully government and other two colleges is self finance. All of these colleges used/ implement e-learn method.

6. BENEFITS OF E-LEARNING IN HIGHER STUDIES

In olden days the learning method was written in board and copying in note. Till most of the educational institutions following the same method. If student absent or missing the class, then lack of knowledge only. So that we implement e-learn system, if missing or absent the classes also next day the people will use the educational content video through computer and communication system.

To give better education to the deaf peoples is possible through e-learn system. During the e-learn method we need the infrastructure, software and platform.

7. RESULT AND DISCUSSION

In this paper we find out that which type of learning method is suitable to deaf students are discussed. we conduct e-learn teaching and ordinary board level traditional teaching of out of 100 deaf students. the teaching concepts are computer basics, software, hardware, input devices, output devices, language, package, and internet. The comparative report of ordinary learning and e-learning for out of 100 students are shown in the following table 1. and the statistics chart is shown in the fig. 5.

Table 1
Outcomes report of e-learn and traditional learn

<i>Topics</i>	<i>E- Learn</i>	<i>Traditional Learn</i>
Computer Basics	80	20
Software	85	15
Hardware	90	10
Input Devices	78	12
Output Devices	81	9
Language	94	6
Package	92	8
Internet	90	10

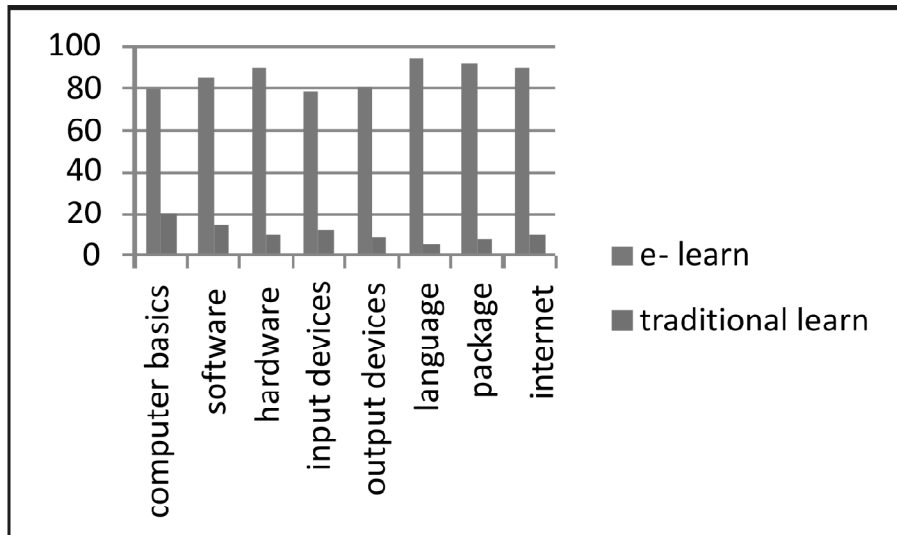


Figure 6: Chart of e-learn and traditional learn statistics

8. PROPOSED SYSTEM

- To implement e-learn with cloud computing and big data in all deaf education institutions
- To upload new educational sign language video, controlling video speed
- To implement good computer and communication system with advance software.
- User tracking Chatting(text chat and video chat)
- File sharing and all educational updated materials.
- Implement ICT.
- Deaf People can access anywhere at any time.
- Deaf people can send and retrieve videos in cloud

9. CONCLUSION

E-learning system is mostly used in higher education. Deaf students used e-learning with the help of sign language. During their higher education they can get various knowledge, related to using computer and communication devices. So we suggest and implement e-learning based teaching and training with sign language in all higher education institutions.

10. FUTURE WORK

To implement various advanced technology in e-learning with the help of sign language videos and information and communication technology (ICT). This system especially used for deaf and peoples. In future, can implement e-learn system for all types of disable peoples (visually challenged, mentally retarded and orthopedically handicapped)

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