Exploring Teachers’ Insight on ICT Education via E-Learning For The Deaf Learners

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Abstract: - The existence of computers and internet has established to be important in human’s life, as it offers an entrance into the World Wide Web. The web that acts as a platform for e-learning education is an essential technology development; thus the humans’ accessibility issues in Web applications are crucial. This includes the Deaf Learners. The objective of this research is to investigate the levels of knowledge, use, satisfaction and interest of the school teachers (involved in the Hearing-Impaired Education Program of the Secondary Level), on Computers, ICT and E-Learning, for the Deaf Learners. The Methodology of this research is Interview that acts as the research instrument, whereby 2 teachers are being interviewed from each school, to view their opinions. A total of 24 schools executing the Hearing-Impaired Education Program from the whole of Malaysia is the research location; therefore this brings a total of 48 teachers as the research sample. In evaluating the interview results, most teachers had shown positive results in having ICT Education (online) for The Deaf Learners, mainly for reasons like computers being deaf-friendly. Moreover, computer enhances the students’ deaf-creativity in graphical visual of drawing images, web-design, 3D-animation, and multimedia purposes. Results also showed that the majority of respondents were not satisfied that the Deaf Learners are left out on the popular computer courses in schools.

Key-Words: - ICT Education; E-Learning; The Deaf Learners; Computer Courses

1. Introduction

The existence of internet and computers has established to be important in human’s life, as it offers an entrance into the World Wide Web. The web that acts as a platform for e-learning education is an essential technology development; thus the humans’ accessibility issues in Web applications are crucial. This includes the Deaf Learners. The Web evolutions given by legislation on Web accessibility have also motivated academic teachers to include this theme in online Internet courses. Following a research on Web Accessibility, it is very crucial for societies to have the capability and right to use any software, hardware or any assistive technologies to understand and fully interact with the website content, regardless of disability, geographical location, language barriers, or other impairing factor [1]. To support this, the Ministry of Education Malaysia has introduced the concept ‘Education for All’, this means that equal opportunities and education services should be for every students, without judging the aspects of religion, race, sex, and the individuals’ difference, hence without unbalancing the normal-hearing and the hearing-impaired as well. This concept focused on the ability, functions, skills, development, power, and achievement of these students towards the Skill Development.

Learning online also known as Electronic-Learning; can be defined as the Learning Education conducted through the
computer technology medium [2]. Since there is no face-to-face interactions exist, learning via electronic means is carried out in advance virtual-learning spaces. It is extremely vital that these virtual learning environments (VLE), learning management systems (LMS), web-based trainings (WBT) and other e-learning applications and educational technologies are to be accessible to all types of individuals; mainly in this study are the Deaf Learners.

In this research, this study investigates the interests of the teachers teaching the Hearing-Impaired Education Program towards the various ICT-Education courses (Information Communication Technology), via E-learning for the Deaf Learners. The Deaf Learners’ higher education is significant, as it allows them to attain valuable knowledge and skills for social survival and employment, just like the Normal-Hearing Learners. An individual with disabilities is integrated in as natural an environment as possible, as defined in Education in a fully inclusive model [3]. Nevertheless, for The Deaf Learners who does not have the ability to perceive sound due to their loss in the sense of hearing, this affects the ability to both receive and produce spoken language. Therefore, the Sign Language is used by these individuals to communicate with one another. In higher education, numerous universities institutions do have interpreters who are fluent in both signing and speech, to support the students, teachers and staff in the Education process.

ICT Education has increasingly become a demanding subject in the higher education, not only for the normal individuals, but for the deaf learners too. To ensure the deaf learners have full access to computer applications and programming tools, academic Educators teaching Computer courses must make efforts to make this possible, alongside with the existing tendency towards teaching Graphical User Interfaces (GUI). Subjects like Computer Graphics, Multimedia, Web-Design and 3D-Animation, are among the popular courses, as it attracts the vision of these Deaf Learners, being hearing-impaired. These subjects are taught, learnt and shown with the Sign Language. The continuous computer technology development has made ICT and Educational Technology becomes progressively more vital in education. However, subject to learning in an online-virtual environment, although Academic educators play a primary role in the use of online learning environment by students, these students can only utilize those that the educators make available to them, in a specific learning context [4].

Computer Education field offers high-paying careers yet rather challenging, which are accessible to the Deaf Learners. Computing careers are potentially open to individuals with disabilities because of advancements in assistive technology that provide access to computers [5]. Moreover, ICT has unlocked many opportunities for the Deaf, because most jobs in ICT industry uses computers which are deaf-friendly. By using computers, many career opportunities are open up for the Deaf, in such areas like Data Entry, Graphics animation, Computer Operations, Computer Programming, Computer Technician, Software testing and development, Web Design Development and more. There are acknowledgments in computing innovation that requires various workforces of qualified systems designers, computer scientists, software developers, information professionals, information systems analysts, technology teachers, computing faculty, and other computing professionals. ICT Education is important for the Deaf Learners. Supported visual media aids like graphs, charts and tables are frequently used for computer education, as these individuals have to depend more on vision, due to their defect of hearing [6]. Since computers are adaptable to the Deaf Learners, Computer education does fit for them, mainly for reasons like minimal supervision, enhances deaf-creativity, as computers are Deaf-Friendly. Because these individuals’ have lost their hearing senses, huge majority of them are highly skilled in visual aspects like drawing and designing. They tend to excel better in area like Web Design, Visual Arts and Animated-Graphics.
This perspective is suitable for them to learn computer courses, as it studies how they interact with the learning materials online.

2. Research Methodology
This study is descriptive where it explains the current status of the scenario that is being studied, by emphasizing on the current practice and criteria that exists in the situation, and the process involved forming the situation. This study uses Structured Interview whereby the purpose is to collect data from a number of teachers. This is because Interview questions offer a wider space for the respondents to voice-out their opinion in the extent of the questions. In this research, structured interview is chosen mainly because similar questions can be asked in the interview sessions, though to different respondents. This will generate a much more consistent yet still in the extent of the question responses; from respondents. Moreover, this study also explores the current scenarios in a particular school, by understanding the relationship among the teachers with students, and the teachers’ usage of computers, and interests in Computers, ICT and E-Learning, for the Deaf Learners.

This study was carried out throughout the whole of Peninsular Malaysia, Sabah and Sarawak. The location background chosen was the Secondary Schools executing Hearing Impaired Education Program (in specific, the levels of Form 4 and Form 5), for the whole of Malaysia, including Sabah and Sarawak. Altogether, there were 24 schools involved being the research location, which consists of 20 schools from the Peninsular of Malaysia, and 4 schools from the East Malaysia; that executes the Hearing-Impaired Education Program. This means that there were 24 schools that became the location of data collection.

2.1 Research Instruments
Research Instrument is a tool used by researcher to collect data, hence for this study, the Interview protocol acts as the research instrument. Interviews are a popular research instrument among researchers and respondents because it gives information directly fast. This is important because interviews generate answers faster as it is done face to face. Interviews have given alertness towards the context, by analyzing the answers given, organized, then interpret the data into its own context.

The interviews were formed to answer all the research questions prepared. This Focus Group Interview has two respondent groups identified for this research; therefore researcher has formed two sets of interviews (for Group A and Group B). The usage of two different sets of interview allow researcher to obtain information from individuals of different groups. Group A consists of the teachers from the schools that have ICT Courses, and Group B consists of the teachers from the school that does not offer ICT courses.

The interviews gave respondents a space to answer them freely. This way, the teachers can justify their opinion appropriately. The aspects of this study were analyzed in accordance with the aspects of the problem stated in this study. All the interviews mainly seeks to explore on the levels of knowledge, use, satisfaction, and most importantly the interests of teachers towards the ICT Education, mainly on courses like Computer Graphics, Multimedia, Web-Design, 3D-Animation for the deaf learners. Simultaneously it also focused on the exiting Computer Education Program that was already in some schools for the Hearing-Impaired Education.

2.2 Research Sample, Data Collection and Data Analysis
The research sample involve in this study, are the teachers teaching the Deaf Learners who are from the schools all throughout Malaysia, including Sabah and Sarawak. The respondents of this study are divided into two groups of teachers, which are from schools that offer ICT Courses, and schools that do not offer ICT courses.

Researcher has used the Non-probability sampling to choose the teachers for
interview. Through this sampling technique, respondents were chosen based on their free-time and readiness to be interviewed during the time researcher is in school. Researcher did not ask for the help of the school’s manager to provide the respondents’ names; because if this is done, then the research is seen as intended to control the data. Thus, the sampling techniques used are more illustrated, for the reason to get an internal perspective of the teachers involved in the Hearing-Impaired Education Program, based on their experience, knowledge and opinion.

Table 1 below shows the Interview Respondents from Group A (schools that do offer ICT Courses) and Group B (schools that do not offer ICT Courses). Overall, there are 48 respondents of teachers for the interview’s data collection technique, as 2 teachers represented for each school (24 schools all throughout Malaysia). To breakdown according to schools, a total of 7 schools offer ICT courses, and the remaining 17 schools do not have any computer courses at all offered in their schools. This is clearly shown in Table 1:

<table>
<thead>
<tr>
<th>Group A (Schools that do offer ICT Courses)</th>
<th>Group B (Schools that do not offer ICT Courses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 (7x2) = 14</td>
<td>17 (17x2) = 34</td>
</tr>
</tbody>
</table>

For the Data Collection Method, 20 schools were from Peninsular Malaysia, and 4 schools were from East Malaysia, that was involved in the execution of the Hearing-Impaired Education Program. Data collection was done by the interviews sessions with all 48 teachers (2 from each school), after their process of teaching and learning (PnP sessions). Researcher does not wish to disturb the PnP (Teaching and Learning) in each school, therefore each interview sessions are conducted based on the teachers’ convenience. All interview sessions were written down, and each interview sessions took around 20-30 minutes per sessions.

Researcher had started the research from North, including Penang, Kedah, Kelantan, and goes down to Perak, and Kuala Terengganu. Then, researcher started at Central, which are Selangor, Kuala Lumpur, and goes south to Negeri Sembilan, Malacca and Johore. The last destinations were the East Malaysia which are Sabah, and ended with Sarawak schools. All interviews were done weekdays, and it took 2-3months for the researcher to cover all the interview sessions for the whole of Malaysia.

Based on the data analysis, the data of this study is the qualitative data. Thus, the answers were analyzed straightforward, based on the respondents’ answers; hence it is easy for researcher to analyze them. Overall, the interview questions have given alertness towards the context, by analyzing the answers, organized and interpreted.

3. Findings
A total of 48 teachers teaching Hearing-Impaired Education participated in this study. From that total, 14 are male teachers (29.2%), and 34 are female teachers (70.8%). The number of teachers in this study is 48, being 2 teachers from each school, and there were 24 schools involved.

For the race category, 37 teachers (77.1%) were Malay respondents, 3 teachers (6.3%) were Chinese respondents, and another 8 teachers (16.6%) were from other ethnic races, like Kadazan, Iban, Bidayuh, Melanau, etc. For the state category, 8 teachers (16.7%) were respondents from Johore, 6 teachers (12.5%) were respondents from Kedah, 6 teachers (12.5%) were respondents from Perak, 6 teachers (12.5%) were respondents from Kuala Lumpur, 4 teachers (8.3%) were respondents from Sarawak, and the remaining 18 teachers are 2 respondents from each states of Terengganu, Selangor, Negeri Sembilan,
Malacca, Pahang, Labuan, Sabah, Penang and Kelantan, with 4.16% respectively.

On the interview question asked whether the Deaf Learners enjoy playing computer, all 48 respondents (from 24 schools of Group A and Group B) unanimously answered YES, which generates a 100% positive answer. Another question that gives a 100% positive answer was on the question whether the Deaf Learners would be interested to have various ICT courses in school (in Visual/Graphic form), whereby all 48 respondents (from 24 schools of Group A and Group B) answered YES unanimously.

In Table 2 and Table 3 below, the percentage shows the views from the teachers on a certain ICT Course (Computer Graphics). This interview question was asked to both Group A teachers (schools that do offer) and Group B teachers (schools that do not offer). While Table 2 shows the result of the interview question whether the teachers are interested in having the Computer Graphics course taught to the Deaf Learners, Table 3 shows the result of the teachers’ view on whether the Deaf Learners are interested in learning the Computer Graphics course.

From the total of 48 respondents (24 schools), 45 teachers answered Yes (93.75%), and 3 respondents answered No (6.25%), on the question whether the teachers are interested in having the Computer Graphics course taught to the Deaf Learners. This can be seen in Table 2.

Table2: Teachers’ interest in having CG-Course taught to the Deaf Learners

<table>
<thead>
<tr>
<th>GROUP B</th>
<th>Freq</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>45</td>
<td>93.75</td>
</tr>
<tr>
<td>NO</td>
<td>3</td>
<td>6.25</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>100.0</td>
</tr>
</tbody>
</table>

In Table 3, from the total of 48 respondents (24 schools), 42 teachers answered Yes (87.5%), 6 respondents answered Maybe (12.5%), and 0 respondents answered No (0%) on the question of teachers’ view whether the Deaf Learners are interested in learning the Computer Graphics course.

Table3: Teachers’ insight on the Deaf Learners’ interest in learning CG-course

<table>
<thead>
<tr>
<th>GROUP B</th>
<th>Freq</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>42</td>
<td>87.5</td>
</tr>
<tr>
<td>MAYBE</td>
<td>6</td>
<td>12.5</td>
</tr>
<tr>
<td>NO</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100.0</td>
</tr>
</tbody>
</table>

In Table 4 below, based on the 48 respondents of teachers throughout Malaysia who are were interviewed, 42 respondents (from 21 schools) unanimously answered Yes (87.5%), and 6 respondents (from 3 schools) answered Maybe (12.5%), and 0 respondents answered No(0%) on the question of having ICT courses via e-learning for the Deaf Learners. This shows that almost around 90% of the teachers agree on the fact that the Deaf Learners should learn ICT courses online, compared to the 10% who disagrees. This can be seen clearly in Table 4.

Table4: Teachers’ answers on ICTcourses via E-Learning (for the Deaf Learners)

<table>
<thead>
<tr>
<th>Answer</th>
<th></th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>42</td>
<td>%</td>
</tr>
<tr>
<td>Group A - (Schools that do offer ICT Courses)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Group B - (Schools that do not offer ICT Courses)</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>MAYBE</td>
<td>6</td>
<td>12.5</td>
</tr>
<tr>
<td>Group A - (Schools that do offer ICT Courses)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Group B - (Schools that do not offer ICT Courses)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4. Discussions
For a specific interview question, when being asked whether the respective schools offer any ICT courses, 14 teachers responded Yes (7 schools do offer); while, the remaining teachers of 34 answered No (17 schools that do not offer). Some of the teachers gave explanation that they are very
much interested in teaching computer courses in school, exposing the ICT Education for the deaf learners. However they couldn’t, as they would have to follow the time-table (subjects) schedule set by the Ministry of Education. This problem does not only affect the teachers, but for the students too, as the numbers of interested deaf learners in ICT Education are many, yet impossible to fulfill their desires.

Moreover, another problem was due to the inadequate computer equipments and classrooms/labs, computer courses were not offered for them to teach. Infrastructure has a major role in creating comfortable learning space for students. By having adequate facilities and teaching aids, this can improve the effectiveness of learning, because only then a fun/interesting environment can attract students to study. The teaching aids that the teachers are mostly using now are visual images like flash card, charts, objects, other reading instruments like e-dictionary, newspapers, magazines, reference books, OHP (transparency materials), LCD (powerpoint/word notes). Some of the respondents indicated although a few teachers are given a computer, however there is no stable computer class provided for the deaf learners, and also no multimedia infrastructure equipment is inadequate.

Overall, on the interview question on having various ICT courses available online via E-Learning, 42 teachers optimistically agree that this can help the deaf-learners to access anytime, anywhere, to attain the tutorials, notes, slides etc. In particular, on the question of which ICT courses would be highly demanded by the deaf learners, all 42 teachers unanimously answered Graphics Courses like Computer Graphics, then followed by courses like 3D Animation, Multimedia and Web-Design. This is mainly because the teachers feel that courses that contains attractive graphics, multimedia-supported content, and attractive animation and designs; are more suitable for the Deaf Learners, as these elements catch their attention/vision, compared to the plain black and while graphic-less courses.

Various answers were given more by teachers as to why the Deaf Learners enjoy courses that contain more graphic elements. This is because these elements surround their activities while using a computer, such as playing games, drawings, watching 3D animation movies and cartoon, Internet purposes like social network of facebook, myspace, twitter, etc, chatting, finding articles, and other internet purposes. Since the Deaf Learners’ interest lean more towards the graphical elements, 42 out of 46 teachers claim that an E-Learning that offers these courses will surely attract them to learn, positively.

5. Acknowledgements
The authors would like to express our highest appreciation to Ministry of Education, Malaysia and all the officers and staffs at the schools involved. High appreciation to all teachers for their full cooperation and involvement in providing information and data during this research study was conducted.

6. Conclusions
In conclusion, overall the results proved that most teachers do agree that ICT courses via E-Learning should be offered to the deaf-learners too. In schools, although some schools that do not have ICT courses offered to them at all; still wish to have these courses taught in their schools. Some teachers claimed that the ICT courses are being taught for the Normal-Hearing students, however not for the deaf learners. An equal teaching and learning should exist for both the normal-hearing students and the hearing-impaired students. Although in certain classes, some teachers claim that the Deaf Learners are combined with the normal learners, therefore this imbalance learning do affects the confidence and faith of the deaf learners. Learning ICT Courses will give the deaf learners chance to be professional in the ICT era too, and develop their own potentials concurrently.

Moreover, since the Ministry of Education Malaysia has introduced the
concept ‘Education for All’, this means that equal opportunities and education services should be for every students, without judging the aspects of religion, race, sex, and the individuals’ difference, hence without unbalancing the normal-hearing and the hearing-impaired as well. This concept focused on the ability, functions, skills, development, power, and achievement of these students towards the Skill Development. Many opinions were raised individually by the teachers, from the interview sessions conducted. In terms of ICT Education, computer courses were definitely a demanding major, and this research proves that E-Learning for ICT Education was resulted in a positive form.

References: