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Video learning for hearing impaired students through Massive Open Online Courses (MOOC)

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Abstract: Learning for students with hearing loss needs to have several criteria for them to learn effectively. Although various learning methods for these students are available, they are only available in specific courses. The video approach to learning for students with hearing loss has a positive effect. However, studies on the effectiveness of elements that should be present in video content should be emphasized. The purpose of this study is to identify the criteria that should be included in the production of Learning disabilities video for MOOC platforms. The semi-structured interview method was applied to five video specialists and hearing aids. The description of the analysis shows that video learning for students with hearing loss needs to have a language translator for each content.

Keyword :*Video Learning, Hearing Impaired, Massive Open Online Courses (MOOC)*

INTRODUCTION

Along with the current world development, Malaysia has applied Information Communication Technology (ICT) applications in all aspects of life. ICT has enabled MOOC as the medium in Education. ICT has been widely used in the economic, social, and educational. Educators need to apply MOOC in their teaching and learning whether they like it or not. Malaysia's Education has been through some changes in the curriculum system. Ministry of Education has change the direction to fit the country's future skilled resources workers and improves the quality. Intended direction has been taken includes primary, secondary, and tertiary Education. Ministry of Higher Education Malaysia (MoHE) has set the standard regarding

the development of a curriculum for the programs offered by different institutions. This standard includes Knowledge in Specific areas, Practical Skills, Thinking & Scientific Skills, Communication Skills, Social Skills, Teamwork Skills, Responsibilities, Values, Ethics, Moral, Information Management Lifelong Learning, Management, and Entrepreneurship. However, does the curriculum is suitable for all students? Especially for students who have hearing problems. The ability of deaf students is not the same as a typical student. They require a specific approach to understand it easily.

Computers that acts as a learning platform for Education is an essential technology development; thus, the humans' accessibility issues in Web applications are crucial. This includes the learning experience of Hearing impaired Learners. The Web evolutions given by legislation on Web accessibility have also motivated academics to include this theme in MOOC. 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 disability, geographical location, language barriers, or other impairing factor (Sierkowski, B., 2002). 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 student, 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 (Special Education Services, 1998). The Hearing-impaired 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 into as natural an environment as possible, as defined in Education in a fully inclusive model (Morrison, G. S., 2004). The Disable Ones shall not be let off from the education system just because they are disabled. Hence, for the disabled ones to further their studies, a logical amendment to suit the disable ones must be provided. This includes the infrastructure, equipment and teaching materials, teaching methods, curricula, and others.

Nevertheless, The Hearing-impaired Learners who cannot 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 university institutions do have interpreters who are fluent in both signing and speech to support the students, teachers, and staff in the Education Process. In this research, this study investigates the problems and obstacles faced by the academics teaching the Hearing impaired learners in the Graphic Design Courses. Simultaneously, it investigates the interaction of Hearing impaired Learners' with MOOC in their Graphic Design classes.

ICT Education has increasingly become a painful subject in higher Education, not only for the ordinary individuals but for the Hearing impaired learners too. To ensure the Hearing impaired learners have full access to computer applications and programming tools, academic Educators teaching Graphic Design courses must make efforts to make this possible, alongside 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 Hearing impaired Learners, being hearing-impaired. These subjects are of course, taught, learnt and shown with the help of the Sign Language too. The continuous computer technology development has made e-learning, and Educational Technology becomes progressively more vital in Education.

Computer Education field offers high-paying careers yet rather challenging, which are accessible to the Hearing impaired Learners. Computing careers are potentially open to individuals with disabilities because of advancements in assistive technology that provide access to computers (Burgstahler et al., 2006). Moreover, ICT has unlocked many opportunities for the Hearing impaired because of most jobs in the Graphic Design industry use computers, which are hearing impaired-friendly. By using computers, many career opportunities are open up for the Hearing impaired in such areas as Data Entry, Graphics animation, Computer Operations, Computer Programming, Computer Technician, Software testing and development, Web Design Development, and more. There is a full acknowledgment in computing innovation that requires diverse workforces of qualified systems designers, computer scientists, information professionals, software developers, information systems analysts, technology teachers, computing faculty, and other computing professionals. Graphic Design Education is vital for

Hearing impaired 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 (Murakami et al. 2002). Since computers are adaptable to the Hearing impaired Learners, Computer education does fit for them, mainly for reasons like minimal supervision, enhances hearing impaired-creativity, as computers are Hearing impaired-Friendly. Because these individuals' have lost their hearing senses, the massive majority of them are highly skilled in visual aspects like drawing and designing. They tend to excel better in an area like Web Design, Visual Arts, and Graphics Animation. This perspective is suitable for the Hearing impaired to learn computer courses, as it studies how they interact with the learning materials via a computer.

PROBLEM STATEMENT

Hearing-impaired students have trouble learning graphic design courses because they have communication problems. Although these Hearing impaired students have the visual amenities interpreters, communication constraints still unresolved. Most institutions of higher learning that offer Graphic Design courses do not have specialized lecturers who will teach these hearing-impaired students. Most of them do not know how to use sign language. So, relying on interpreters happen. Disclosure of ICT to facilitate the learning of hearing-impaired students in Malaysia still under study. Certain of the interpreters who do not understand the course taught, indirectly failed to interpret the exact meaning of these Hearing impaired students. As a result, hearing impaired received the wrong information. Interpreter services are paid, and most of it is based on a volunteer basis. Students who can afford it are willing to finance these interpreters.

PROPOSE OF THE STUDY

To ensure that MOOC is a handy platform to enhance the understanding of hearing-impaired students learns graphic design courses. This MOOC course content and delivery of purpose-built for hearing impaired students. Explainer videos will be used in the delivery of the material that will come with subtitles. Hearing-impaired students do not need to get help

interpreters to learn about Graphic Design courses. Lecturers also do not need to communicate using sign language while teaching. By using MOOC, hearing impaired students can discuss with the forum to address the problem of understanding the courses taught. Researchers are also studying the effectiveness of explainer video, with subtitles influence hearing-impaired students' understanding. Then, develop the explainer video by using graphic communication theory to assure the effectiveness.

RESEARCH QUESTION

1. Can explainer video with subtitles enhance content delivery?
2. Can the Theory of Communication influence the effectiveness of explainer video?

MOOC

The massive open online course (MOOC) is presented as a novel idea created by maverick professors and further developed with a goal to further democratize Education on bases of quality and cost. The perception of this sequence of events as modular history has perpetuated a difficulty in developing MOOC-related research and critique within the fields of distance and online Education. At the center of this struggle is the MOOC acronym: its initial development was in 2008, and its use today happens in opposition to the theoretical and pedagogical elements of the 2008 MOOC.

GRAPHIC DESIGN

According to (Landa, 2011) Graphic Design is a form of visual communication used to convey a message or information to an audience. It is a visual representation of an idea relying on the criterion, selection, and organization of visual elements. The great graphic design imbues a message with more significant meaning. Graphic design is, therefore, one of the ways in which creativity takes on a visual reality. A graphic design solution can persuade, identify, motivate, enhance, organize, brand, rouse, locate, engage, carry, or convey many levels of meaning. With the advantages of belonging to the graphic features will help hearing-impaired students to

communicate more effectively.

HEARING IMPAIRED STUDENT

The term "Hearing Impaired" is a technically accurate description of someone who is hard of hearing or who has no hearing ability. Lack of Hearing causes difficulty in learning like an average person.

EXPLAINER VIDEO

An explainer video is a video that combines several techniques and graphical elements to make effective delivery compared to standard video. The aim is to keep the audience to understand the content to be. Usually, explainer video uses animation and graphic depiction to be able to give full attention to the audience while to see it.

LITERATURE REVIEW

There are many kinds of literature that focus on the interests and needs of MOOC, multimedia, and ICT in assisting the hearing-impaired student to learn content more effectively. There are some researchers who develop specific software to achieve specified objectives. Planning has been done for the Hearing impaired student's needs. According to (Bottoni, Capuano, De Marsico, Labella, & Levialdi, 2011) The production of multimedia materials Deaf-Centered Learning Environment (DALE) has been helping Hearing impaired in dealing with with learning disabilities. DALE is a multimedia-based learning platform Storytelling, Conceptual Metaphors, and adopts Cognitive Embodiment as a framework to address the critical subject.

According to (Bueno, Garcia, Borrego, del Castillo, & ACM, 2007), hearing impaired students have trouble finishing their studies at the tertiary level. The main problem faced by these students is reading comprehension. Nevertheless, after using the MOOC approach, student understanding was increasing. The use of technology in learning will have an impact on their lives. The hearing-impaired student could not wait but should continue to use MOOC as a learning platform.

Kumar et al. (2013), the Massive Open Online Course is a is the one way of learning in this digital social network world. MOOC is an Open, Participatory, Distributed, and Lifelong networked learning. It has the facility of various courses, with a start, end dates, and participants. It is a way to connect and collaborate while developing digital skills and engage in a learning process. MOOC can promote network learning for lifelong. People that have reputations for exceptional skills and innovative thinking besides a topic collaborate by opening an online course covering that topic. In a MOOC DHH, students can choose what they want to do, how they want to participate, and they can decide.

Although the use of MOOC is becoming more widespread, the effectiveness of the developed content is debatable. The use of video in MOOC platforms have become the norm, but how effective video for hearing impaired development is still to be made a proper investigation. According to (Debevc, Kosec, & Holzinger, 2010), adapting the learning materials for deaf and hard of Hearing required different approaches and guidelines to properly displaying sign language video. Therefore arbitrary video production may not have an impact on students. This opinion is supported by (Lopez-Colino, Tejedor, Porta, & Colas, 2011) that provides a mechanism by which teaching can be done with video wield but assisted with the subtitle generate by the tools given. Tools will convert voice into subtitles for the video provided.

Most studies of MOOC approaches just focus on language areas only. The exposure to other areas of the Hearing impaired is still minimal. However, there is some study that showed the importance of other areas and concern to the Hearing impaired student. Students who have hearing problems are more likely to give more focused on visual. The field of graphic design are using purely visual medium to communicate with others. In principle, the graphic design is the process of communication to convey information or content to the recipient. The details under field of graphic design are Web Development, Advertising, Illustration, Interactive Multimedia Content, Animation, and others. According to (Zaharudin, Nordin, & Yasin, 2011) the Hearing impaired student more interested in the field of graphic design as a visual field using computer involvement. She said the majority of the Hearing impaired student-tested, choose graphic design area for their future courses.

METHODOLOGY

Specific Methodology used to answer the research questions. To ensure that a study carried out successfully, several processes that have to be considered among them is the Research Design, Sampling, Internal Validity, Conceptual Framework, and data analysis. Researchers use Design & Developmental Research (DDR) to carry out this study. DDR has its own uniqueness because it structured the procedure. DDR is a systematic research tool that allowed the researcher to identify and solve the issues accordingly (Richey & Klein, 2007).

SAMPLING

The researcher uses the purposeful sampling method to identify an expert and hearing-impaired students. The experts must have the experience, and empirical knowledge on video making plus with capability to map with the Hearing impaired students' needs and preferences.

INSTRUMENT

According to Wimmer & Dominick (2011), the interview method is the question and answer where the researcher asked the respondent question with the opportunity for a follow-up question. There are several benefits in using the Interviews method as the respondent will give a specific answer by elaborating on their opinions, values, motivation, concern, and feeling. In this research, the interview was carried out to understand the topic accurately and to find an answer to the research question. The research used a semi-structured interview with the experts and hearing deaf students to get the criteria in developing explanatory video learning for hearing impaired students.

RESULTS

Researchers have interviewed five experts to identify the need for explanatory video learning for animation modules and learning disabilities. The five selected experts have experience with teaching hearing-impaired

graphic arts courses at SMPKV, Shah Alam, Malaysia, with permission from the Ministry of Education, Special Education Division, and School Principals. Researchers use semi-structured interview methods and use interview protocols because interviewers can ignore questions that they feel are inappropriate or add to the need (Robson, 2002). Each expert is interviewed individually so that their opinions are not influenced by the other teacher while the group is being interviewed as the researchers need to use the translator services at the same time.

Based on the analysis of student questionnaires and teacher interviews, there are some commonalities in developing video learning for hearing impaired students. The choice of graphic arts course is a priority for students with hearing impaired according to the opinions of three experts. The findings of this study also support studies conducted by Rozniza Zaharudin, Norazah Nordin, & Mohd Hanafi Mohd Yasin (2011) in which students with hearing loss are more likely to learn areas involving Information Communication Technology (ICT) related such as web design, animation, and multimedia applications.

Although graphic animation is one of the most popular areas for hearing impaired students, the findings show that graphic animation courses are the most challenging courses for students to see. This animation course is not only challenging for students with hearing problems but also for the average student to have difficulty mastering animation (Mohd-Riaz & Zaman, 2011; Zhang, 2015). Studies conducted by McKenna and Zeltzer (1990) also suggest that animation is a challenging course to learn because it involves creative thinking and imagination. However, experts think animation is one of the things that will interest students. This fact was supported by a study conducted by Kacorri, Huenerfauth, Ebling, Patel, and Willard (2015), who used animation in the learning of hearing-impaired students. According to a study conducted by Kacorri et al. (2015), animation has been used as a learning method, and it is different from this study because students with learning disabilities will learn to make animations. Researchers will, therefore, develop learning videos that focus on graphic animation courses.

As a result of the interviews, the use of sign language is an effective means of communication-based on students' Hearing impaired. This requirement supports the highlights of a study conducted by Le Bel, Pineda, and Sharma

(2009), who says the use of sign language for hearing impaired people still needs to be refined. According to a study conducted by Nagalingam (2008) states that although reading texts can help students with hearing problems, it cannot match the smoothness of communication with sign language. Therefore, this learning video will use sign language translation services throughout the content. The findings of this study are in agreement with the theory of cognitive-communication theory by Festinger (1957) and accommodation communication theory by Barnette (2009) because students have the right to choose the right type of communication to study graphic animation courses.

CONCLUSION

The analysis of students' Hearing needs further shows that technology plays a vital role in learning. As well as expert opinion, the interview results show the video should help students. This finding can be attributed to the instrumental theory of technology by Feenberg (2002), who argues that technology approaches such as video as tools in learning. From a specialist's perspective, video is a must for learning modules. Teachers feel that explanations in sign language need to be recorded and shared so that students can see them again and again. The use of video as a learning resource is also the highest view of students. This assertion is supported by a literature review by Al-Rousan, Assaleh, and Tala'a (2009), which explains that videos without audio require additional elements such as subtitles and translation. Therefore, every description in the graphic arts learning module needs to have sign language translation in the form of video.

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