The Development of UCiTV (University Campus Interactive Television): UTHM Experience

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ABSTRACT

In enhancing the process of teaching and learning, many technological devices were created to facilitate these processes. As a new university in the southern of peninsular Malaysia, UTHM had introduced a new method of educational enhancement, which is the use of University Campus Interactive television (UCiTV). The changes in the development of video technology in teaching and learning process had made UCiTV a realization for this new university. The use of online video or Internet protocol television was utilized in the teaching process. Students/users are able to access and watch online video lectures in PowerPoint form. UCiTV can be accessed through campus intranet and internet, highly positive responses were given by the campus users on the whole since it can be utilized 24 hours. Viewers can also use video on demand and the concept of video streaming enable viewers to watch live telecast on any event in the university and they can be accessed continuously. These enable more interactive utilizations by the users/viewers. The quality of UCiTV depends on the content provider, networking service maintenance, infrastructure and users interests.

Keywords: Education Technology, University Campus Interactive Television (UCiTV), Streaming video, On-demand System Technology www.ucitv2.uthm.edu.my

INTRODUCTION

Technological advancement had germinated many developments in the areas of professional development, business, careers and health technology. The teaching and learning processes had also faced some drastic changes and improvement as they develop into simplified and more interesting as more information and knowledge can be assessed and gathered easily through the web. The duration of the teaching process can also be shortened as teaching materials can be downloaded from the Internet. The information and knowledge gathered would include teaching modules, lesson plans and even visual aids.

Abd Latif (2006) stated that the web utilization in the teaching process can enhance:

    a.   Preparation of teaching materials before and after lectures to help students in comprehension.
    b.   Provide students with ample opportunity to interact with the writers through e-mail.

c. Encourage students to use the internet for learning process.
d. Transmit any lectures to be assessed by students at any time and place using the internet.

University Tun Hussein Onn Malaysia had taken a drastic step in facilitating students to acquire knowledge effectively by developing a University Campus Interactive Television. This study reveals how and what are the processes involved in developing the interactive television.

TECHNIQUES IN MULTIMEDIA PRODUCTION

Multimedia production requires individuals who are an expert in their respective fields especially those who are creative and productive in designs and communications. The production of multimedia depends on the specifications of planning and development of a specific programme. This involves whether the information relayed is clear and justified to the viewer. The techniques involved in the production of a creative programme include:

- Script production
- Script content
- Format of script
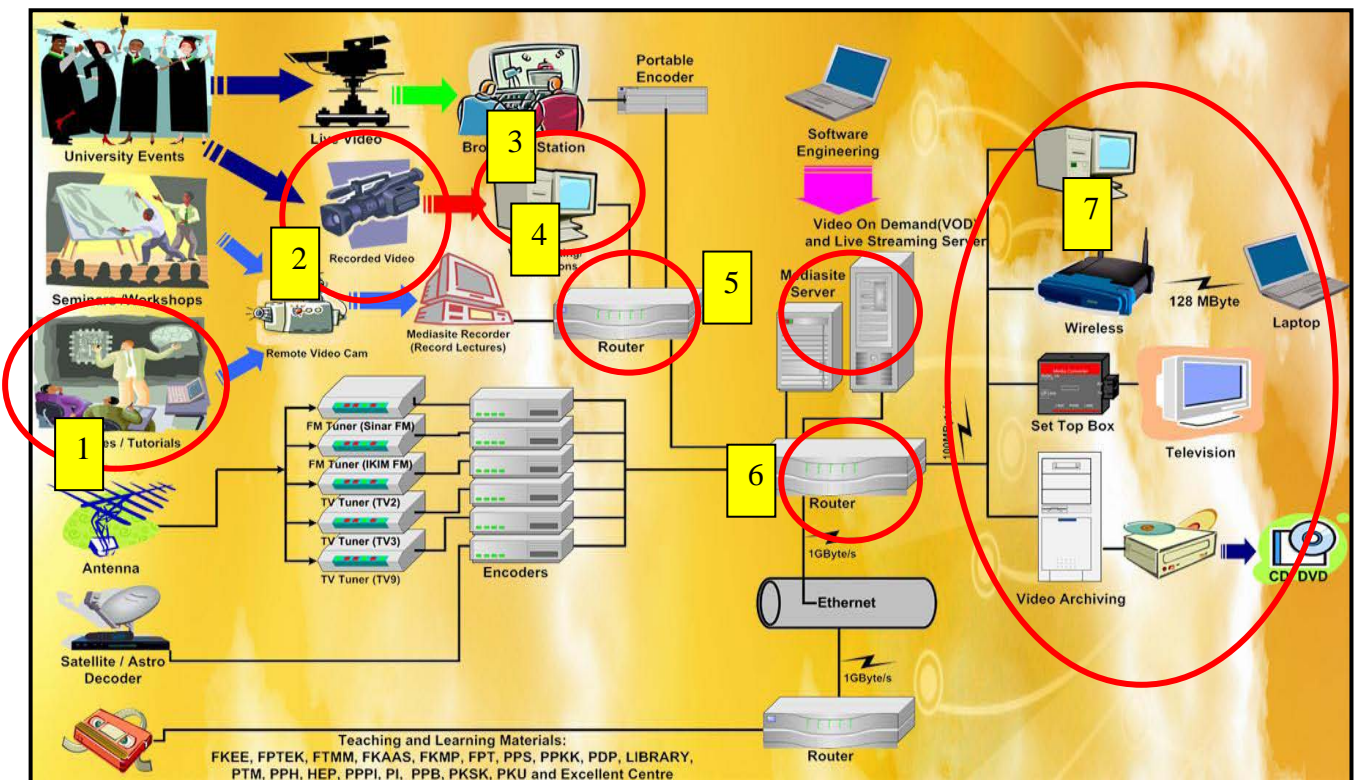- Story board production
- Video filming
- Audio production

Figure 1: Work process based on tools used in the development of UCiTV

VIDEO STREAMING

Figure 1 shows the info structure of the development of UCiTV which utilizes video streaming. Oxford Dictionary (2002) defines streaming as a means of video or visual that is in motion continuously. Video Streaming means the ability to transmit live media such as audio and video from the Internet or intranet simultaneously without first downloading the file (H. Peter Alesso, 2000).

Video Streaming can be performed by using two methods which are i) live and ii) on demand. The broadcasting of football tournament, forum and meetings can also be assessed live through video streaming. The term 'on demand' concerns with the broadcasting that has been videotaped earlier and would be broadcasted only with the demand of the viewer. The video on demand would include documentary, video clips, lectures, presentations, conferences and so on.

The first animated streaming had employed the Macromedia's Shockwave and Flash protocols. This enables the animation downloading to be performed simultaneously with streaming and real-time which can be monitored interactively. (H. Peter Alesso, 2000). The process and production of streaming depend largely on the types of software chosen. The paraphernalia and software utilized in the process of multimedia production also need to be considered. Since the adaptability and comparability of the software will influence the streaming systems.

Below are the steps which are required to be measured in the process in distributing multimedia sources through streaming:

1. preparing the source.
2. shooting the audio visual using the computer and video card.
3. editing the video and save it in files which have not been compressed.
4. compressing the file.
5. distributing the source (video/audio) through the web.

These steps must be followed carefully to ensure the best outcome of the video. These steps are crucial in ensuring a quality production of the video, which can be accessed successfully. The biggest problem in effective multimedia streaming might be due to limited access broadband. Therefore, files that are going to be streamed should not be too big as this may affect the picture quality of the specific video productions.

The system will enable the users utilizing the LAN network to receive all kinds of information in the form of audio and video effectively. Internet users within the range of LAN can easily access the program. The greatest advantage is that, the process of teaching and learning can be viewed and shared by many users. Thus, teaching and lecturing is more effective as students can view the lectures repeatedly using the streaming anytime and anywhere provided that they can access the internet. As students can access the lectures repeatedly, they will have a better understanding on difficult topics without the lecturers being there.

MEDIA STREAMING CONCEPT

There are two ways in transmitting and distributing multimedia components to the users in the web, these are downloading and streaming. To enable data or files to be streamed live, the files need to be transferred into a specific format. The basic video format such as *.mpg.*avi or others need to be downloaded before the video can be played.   Both downloading and streaming possess advantages and disadvantages in their own ways since it depends on the content of the media or the video utilized in the process.

Undeniably, each electronic tool may possess constraints. The main constraint in media streaming is actually the real time in to play the specific media since the efficiency of the streaming depends on the broadband and the web quality in distributing files. The focus of Windows media is to produce a system that can make and distribute the streaming content in whatever situation. It also needs to endure any limitations of the nature of website as to ensure an effective and quality production to the users (Que, 2000).

MEDIA STREAMING DELIVERY IN THE WEB

Streaming components that existed in Windows Media server will be executed through the Internet or Intranet by Windows Media Player that can be found in the user's computer. Transferring data from the server to the user requires the data to be formatted into specific forms of files, which can be read easily by router, modem, server and other elements involved in the web. Windows media server will distribute the data by streaming them into packets. These packets will be streamed by Windows Media Player and converting them into audio and visuals (Que, 2000).

The decision on how each packet is combined and distributed depends on the variety of internet protocol. Transmission Control Protocol (TCP) is used to transmit most data such as website, pictures, documents and downloaded data. On the other hand, User Datagram Protocol (UDP) is needed in delivering media through streaming as it allows Windows media components to provide security on how and when packets can be distributed effectively. (Que, 2000).

For a stream file to be transmitted and executed in an organized way, the user needs to receive all relevant data within the specific time frame in order to build audio and video frame. Bit rate of stream is the term used to determine the speed of data in producing the best media production. The main factor in limiting the distribution of streaming is the speed of broadband. The broadband determines the maximum stream bytes load in the web connection. Unfortunately, producing a quality video and audio requires a larger speed of broadband compared to the provided broadband for users. With the high demand of media streaming, more advanced technology on website, compressor and media distribution had been developed to assist a more functional media streaming.(Que, 2000). Streaming quality usually depends largely on the speed and the quality of the web between the server and the player.

SOFTWARE AND ELECTRONIC HARDWARE MANAGEMENT

The media production from an abstract idea requires different electronic hardwares in realizing the ideas. The ability to manage the variety of electronic tool in the production of quality multimedia is compulsory as it will make the message send to the user as clear and accurate. An effective multimedia production requires hardware tools such as computer and extra devices only. A person managing the multimedia production needs to be well informed and an expert who has to control two types of computer systems that are hardware and software management.

HARDWARE UTILIZATION IN DEVELOPMENTAL PROCESS

In developing the video presentation, Microsoft Office PowerPoint and E-learning On Demand system (EoS) must combined to produce an effective and viable presentation. These combinations will enhance the quality of the animated video production since each software will provide its best quality in the video production. E-learning On demand system technology is utilized for information sharing through on-line. It is the best internet connector that is involved in a variety of fields. E-learning On demand system will collect and capture all relevant and accurate information for distribution to the users effectively. Users or students can view and review the latest lectures or presentations through the E-learning On demand system according to their likes and interests. To its greatest advantage, the users can also record and distribute or share their presentations with other users online. In short, E-learning On demand system offers the latest technique which enhance human communication through the web and how users receive and transmit information such as career, professional development, security and education globally in no time.

E-learning On demand system offers automatic training services online, lectures and courses. It is the most suitable medium in demonstrating on how learning and working process takes place. In E-learning On demand system presentation, the presenter will give the lectures or presentation as usual and the technology will adapt the visual and audio simultaneously. As the lectures are progressing, E-

learning On demand system will stream it into the Internet. The web will consist of video and audio of the presenter interactively in the form of slides. E-learning On demand systems (OeS) is one of the soft wares that provides the best effect in providing information to the users. This software also provides an effective service anytime and anywhere, it also lessens travelling time, lessens disturbances, down time and increases the world wide web information gathering.

E-learning On demand system uses interface that contains visuals that are easy to manage where a variety of new elements can be introduced. There are three easy ways in making E-learning On demand system functions well:

- o Train, discuss and teach using any video and digital devices. E-learning On demand system Recorder will record the presentation simultaneously with the notes of presentation (slides))
- o Distributing recorded programme to the users according to their own specific time using the live in real time or later on demand or creating postcast voice for the listeners automatically. The users will view the presentation through E-learning On demand system Viewer as this will facilitate the users to view according to their needs at any point of the presentation. .
- o Constructing catalogues, surfing and findings any customs presentations using E-learning On demand system (EoS) Server.

E-learning On demand system (EoS) also assists users to manage mobile information sources that comprises of multimedia presentations.

E-LEARNING ON DEMAND SYSTEM LIVE

By using this software, any content, information or presentation can be edited and stored directly in CD's or DVD's, USB device or stream into the internet. The interface will display the product presentation, name of presenter, time of presentation, place and the duration of the presentation. Therefore, the interface provides the appropriate information on the product to the users.
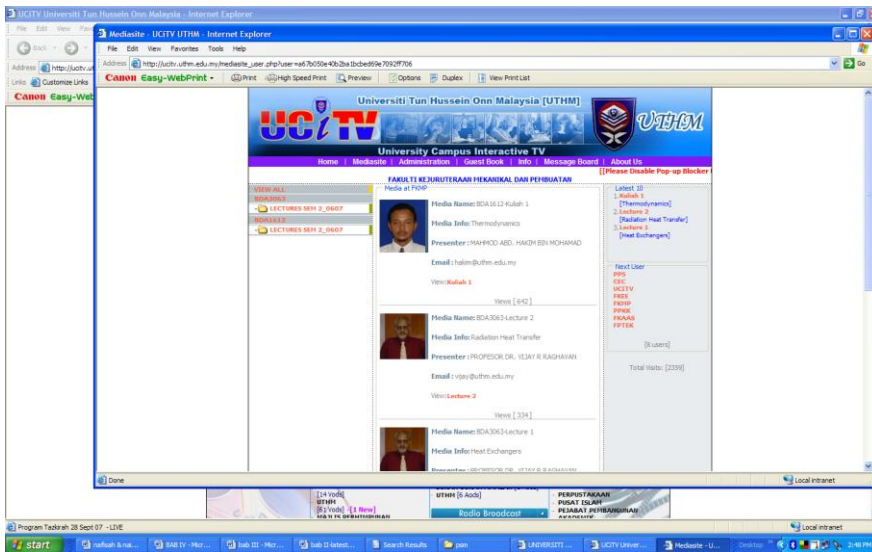
Figure 2: E-learning On demand system (EoS) Software

Figure 3: E-learning On demand system Interface Software

Microsoft PowerPoint seems to be presentation software that is the most popular and commonly utilized among presenters currently. By using Microsoft Power Point, the lecturer can plan and present lectures effectively and accurately. This software also enables images, clip arts and photos to be inserted by changing the slide design, slide layout or slide animation. The edited presentation can be streamed into E-learning On demand system.
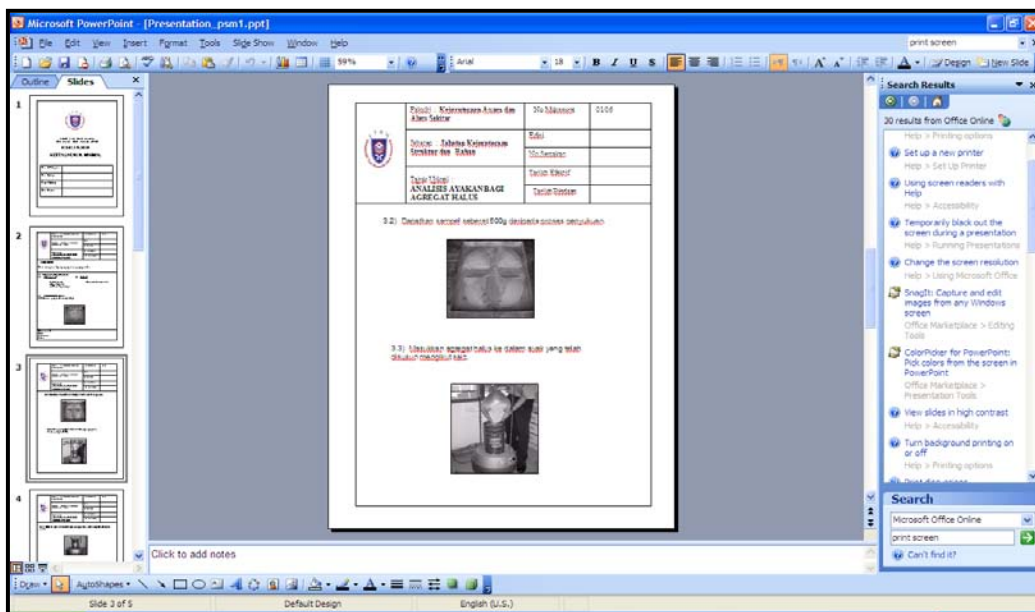

Figure 4:   Power point slide in VOD presentation

TOOLS UTILIZATION IN DEVELOPMENT PROCESS

Most of the tools used in the development process of video animation for UCiTV consist of two parts, these are the preparation of slide presentation; and editing and shooting. The tools used in the development are:

Computer multimedia set

E-learning On demand system set that consists of:-

- Special computer that serves as:
    - E-learning On demand system EX Server Software
    - E-learning On demand system Recorder Software
    - E-learning On demand system Editor
- Camera and recorder.

UCITV ACHIEVEMENT

University Campus Interactive Television (intranet version) has run for about 2 years and been viewed by 600,000 viewers. The internet version which started early 2008 has been viewed from 39 countries. There are about 500 titles video on demand for this version mostly from International Seminars of various related fields like engineering, education and management. The analysis was done by using Google Analytic recently.

Lecturers, students or even the public are able to access the UCiTV web from anywhere and at anytime as long as broadband terminal is available.

CONCLUSION

1. UCiTV existence with IPTV concept can distribute information and knowledge effectively and interactively. Lectures broadcasting or university's events can be aired as live or as video on demand (VOD).
2. Broadband technology will always be upgraded to enhance the video service on line effectively.
3. The quality of video service on line depends on the content provider, service maintenance, network provider and consumer technology.

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