

MAKING LESSONS COME ALIVE THROUGH VIDEO STREAMING

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Abstract: This poster presentation discusses the rationale of why Singapore went from the broadcasting of educational videos to the production of Video CDs and later to broadband streaming. Digitised videos on Video CDs not only solved the problems of broadcasting but it also brought about greater conveniences in the integration of videos into teachers' lessons. Streaming educational videos online further enhanced the use of the videos. Features of the streaming website are reported in relation to their enhancements to the use of educational videos such as greater access and control of educational videos. We believe that our experiences may be relevant to small countries like Singapore which are exploring ways to better disseminate educational videos to schools.

INTRODUCTION

Video, in whatever form it may be delivered, brings the advantages of compression, consistency, and visualization to the learning process (Minoli, 1996). For example, it is challenging to teach processes and abstract concepts such as communication skills through text but a video would be able to present visually rich material which would otherwise be difficult to explain. Similarly, the video medium is most suitable for skills learning, learning of values, cultural understanding and the establishing of commonality amongst a multi-cultural audience. In terms of consistency, every student will receive the same content eliminating instructor differences or emphasis of the course. Being a direct and emotional medium, video can hold student interest and influence peoples' views about the realities of life as the audience can be made to feel sad, happy, scared or relieved (Hart, 1990).

Educators have recognised the attributes of video and integrate it into classroom teaching and learning. This poster presentation discusses the rationale of why Singapore went from the broadcasting of educational videos to the production of video CDs (VCDs) and later to broadband streaming. Features of the streaming website are then reported in relation to their enhancements to the use of educational videos.

FROM BROADCASTING TO VIDEO CD

Television broadcast has long been the predominant means of disseminating video programmes to support teaching and learning for many countries. In Singapore, educational video programmes have been in use since the 1960s. The videos are closely linked to the curriculum developed by the Ministry of Education (MOE), Singapore. The earliest videos were broadcasted over free-to-air channel for public viewing. However broadcasting posed problems for teachers. First, teachers needed to spend time to record the programmes on tapes for playback at more suitable time slots in the classrooms. Second, the recorded tapes had a short lifespan due to fungus growth in the hot humid climate of Singapore. A third problem presented to educationists was the big budget needed annually for the purchase of broadcast air time from the private broadcasters.

For Singapore to thrive in the knowledge-based economy in the 1990s, the government recognized that the way forward was to prepare its future workers with information technology (IT) skills. The Masterplan for IT in Education (MOE, 2002) was therefore implemented in all schools in 1997. This Masterplan succeeded in providing all schools with IT infrastructure and hardware such as school-wide networking, computers in classrooms and

laboratories. Teachers also received about 30 hours of training in basic IT competencies such as the use of Microsoft Office tools and other educational software designed to enhance the teaching and learning of different subjects. Singapore schools now have one of the world's lowest computer-student ratios (6.6:1 for primary school; 4:1 for secondary schools). Of special relevance to this paper is that the computers came with CD-ROM players for playing multimedia software. This was the impetus for the solution of the problems of broadcasting mentioned before: digitized educational videos (eVideos) in Video CD (VCD) format that can be played back in the CD-ROM players.

A decision was made to cease broadcast of videos in 1999 and schools were given multiple copies of eVideos in VCDs. As Singapore is a small island of less than 50 kilometres in distance between two farthest points, it appears that delivery of VCDs by postal service is an efficient method of disseminating videos to schools. There was a big cost savings from not having to buy broadcast air-time annually as the cost of producing VCDs was about one quarter that of broadcast. Teachers welcomed this move as they no longer needed to spend time and resources recording programmes off the air and to maintain the VHS tapes. The eVideos could also be projected and played back to the class at any time of the day. This allowed teachers to have greater flexibility in lesson planning and preparations, where they were able to preview the video programmes and design their lesson to better engage students in their learning. Teachers also had greater control in the use of video snippets as the digitized clips could be integrated into PowerPoint presentations and randomly accessed with bookmarking features.

Each year, schools are given VCDs of new video programmes that are produced for new curricula. However, feedback from teachers revealed that some teachers were not aware of the availability of these VCDs. Several reasons have been cited for this phenomenon, the most common of which was that some teachers were not informed of the new titles. Another problem faced by teachers was that there were insufficient copies of VCDs when many teachers in a school needed to use the same title concurrently.

FROM VIDEO CD TO BROAD BAND STREAMING

To overcome the above problems, a streaming website was therefore created as a pilot by MOE in 2005 to stream selected video programmes online as all schools have broadband internet connectivity. Teachers could then play the eVideos from the website (www.evideo.edu.sg) in practically any location in the school as most classrooms have internet access. This new initiative served as a test bed to elicit teachers' response when provided with direct access to eVideos. After a favourable feasibility study, the website was subsequently populated with more video programmes.

Presently, about 800 video programmes are made available to teachers via streaming. These eVideos are curriculum related and cover a variety of subjects taught in Singapore schools such as Art, Music, Science, Mathematics, Languages (English, Chinese, Malay and Tamil), Civics and Moral Education. The practice of giving schools copies of VCDs are still on-going in addition to streaming because some classrooms do not have broadband access.

The eVideo website (originally a video-hosting platform), has since evolved into an eVideo portal with the introduction of new functions that would further guide the use of eVideos to bring about engaged learning in Singapore classrooms. The next section elaborates on the new functions and how they can be used by teachers.

THE EVIDEO WEBSITE: MAKING LESSONS COME ALIVE!

INTERFACE DESIGN

The eVideo website was conceptualized with the teacher as end-user. This resulted in a systematic organization of eVideos by subjects and levels, which the teacher would be able to browse through intuitively. For example, a teacher teaching English Language at Primary 1 Level can browse for relevant eVideos by first selecting the subject "English Language" and then the level "primary" (Figure 1).

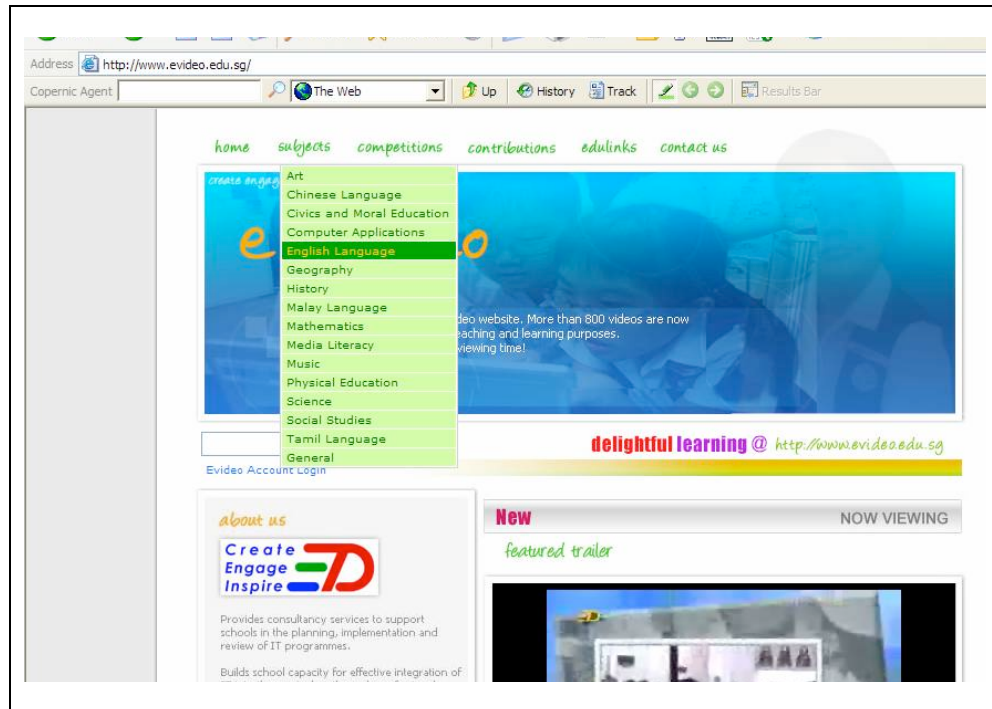


Figure 1. eVideo Website

A listing of videos would then appear for the teacher to select (Figure 2).



Figure 2. Organisation of eVideo programmes

As each title is accompanied by a brief synopsis of the eVideo, the teacher is able to quickly shortlist the eVideos that could potentially be used for a particular lesson without having to view all available videos for that subject and level. As such, teachers are required only to view the short listed eVideos, resulting in time-savings which could be re-channelled into other areas of their lesson preparations. To further enhance the website's capacity to provide teachers with relevant eVideos, a search function is introduced. Another function, 'Send me this video' allows a teacher to request for the video to be sent to the school in VCD format in case a hard copy is needed. Teachers who prefer their students to view the videos outside classroom time can send the URL of the selected eVideo to their students for viewing prior to lesson with the "Recommend this video" function found on the eVideo website (Figure 3). This function further allows the teacher to customize the message for each group of recipients, where the teacher can set expectations or deliverables for the viewing activity, as well as prompt students to focus on certain aspects of the eVideo.



Figure 3. The streaming website

We recognise that video viewing can be a passive activity which may not be mentally engaging and purposeful. One way to overcome this is to develop lesson ideas and activities around the eVideo. These lesson ideas are to accompany each eVideo so that Singapore teachers can adapt the suggested activities when they use the eVideos for classroom teaching and learning. Presently, about one third of the 800 eVideos have accompanying lesson activities and we are working towards 100%. The lesson ideas prompt learners on the issues they should focus on (pre-viewing activities), and the follow-up activities after they have viewed the video (post-viewing activities). These lesson ideas are conceptualized by experienced school teachers, and are subjected to stringent quality control measures and vetting, to ensure sound pedagogy. One quality control criterion is that the lesson ideas should be easily carried out by teachers. Lesson ideas thus serve as a guide to teachers who are unfamiliar with the use of eVideos.

FUTURE ENHANCEMENTS

In October 2006, a review of the eVideo website was completed, resulting in some proposed enhancements to the website which would be completed by end 2008.

Firstly, a "download" module would be created to allow registered teachers to download the selected eVideo in mpeg-1 format from the eVideo website. The additional step of registration is to authenticate that the

users downloading these eVideos are in-service teachers of MOE. Mpeg-1 format is deemed to be of a higher resolution than wmv (streaming format) and allows full screen playback with acceptable quality. The download module allows for instantaneous access to eVideos and teachers do not need to wait for VCDs to be produced and sent to them through the “Send a request” button. Teachers can then make VCD copies from the mpeg-1 files using available burning software.

To encourage teachers to be creators of video programmes, a new “upload” module is being developed so that teachers can upload their video resources and/or lesson ideas instead of being passive recipients. The purpose of this is not merely to expand the pool of eVideos for immediate use, but more importantly, to facilitate an environment and culture of sharing of video resources among teachers.

To encourage interactivity between teacher and students, a “quiz” module will be developed to allow teachers to create an online quiz based on the eVideo. The teacher can email the created quiz to their students for completion upon watching the eVideo. Teachers would also be receiving regular e-newsletters to inform them of the latest eVideos available on the website.

The above enhancements to the eVideo website are aimed at encouraging teachers to explore various ways of using eVideos for learning by the provision of online tools.

CONCLUSION

This paper began by highlighting the positive attributes of video in enhancing learning. Three problems related to the broadcasting of television programmes were related in the Singapore education context. These problems were solved when educational videos were given to school teachers in VCDs instead of broadcast. Teachers immediately appreciated the value of digitized eVideos in bringing about new ways of integrating videos into their lessons and the time savings of not having to record programmes off the air. Further improvement to the accessibility of eVideos was realized when the eVideos were next streamed online. Teachers now have the choice of either using VCD versions or playing the videos in real-time by streaming and projecting in class using internet broadband which are available in schools. MOE is constantly looking into ways to further enhance the functionalities of the streaming website with the plan to add more powerful features to better support teaching and learning needs.

More importantly is that teachers play a critical role in harnessing technology for education (Schrum, 2005). There have also been attempts to engage teachers in collaborations to produce quality eVideos that can be shared with other teachers and students, for example through hands-on training workshops in video production and the Schools Video Awards (SVA), a national educational video resource production competition for teachers and students. We hope that our learning journey of finding new ways to disseminate and use educational videos to enhance teaching and learning may be useful to countries similar to Singapore.

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