

Video Streaming in the Wild West

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Northern Lakes College in north-central Alberta is the first post-secondary institution in Canada to use the Media on Demand digital video system to stream large video files between dispersed locations (Karlsen). Staff and students at distant locations of Northern Lakes College are now viewing more than 350 videos using video streaming technology. This has been made possible by SuperNet, a high capacity broadband network that connects schools, hospitals, libraries and government offices throughout the province of Alberta (Alberta SuperNet). This article describes the technical process of implementing video streaming at Northern Lakes College from March 2005 until March 2006.

What content do we or can we video stream?

One can video stream almost anything: tutorials, guides, clips and full-length films...if these are available for purchase, of course. The main thing to consider when selecting resources to video stream is that the longer the video, the larger the corresponding computer file, and therefore the more difficult it is to stream (Wikipedia). In some cases, the computer file may be so large that it creates problems with bandwidth usage.

The provision of audiovisual material for learning purposes is an essential service in an educational institution. As most teachers and librarians know, providing audiovisual reinforcement is likely to create a richer, more memorable learning environment for students.

Which factors led the library to initiate video streaming?

Geographic barriers. Northern Lakes College (NLC) in Northern Alberta is geographically challenged: there are thirty sites scattered over a service area in Alberta of approximately one third the size of France or over 165,000 square kilometres. Constant fluctuations have to be contended with. Sometimes sites are closed or new ones opened to meet the demands of rural and Aboriginal students. The sites or trailers are very small in order to be transportable to other areas should the demand arise. In some areas the trailers are only temporary depending on local demand and in others their presence has been fairly consistent over time. There is little or no storage capacity on site.

Physical delivery methods or library-to-site loans of VHS and DVD copies are costly and inefficient, and although the delays caused by bad winter roads and so on are understandable, it impedes operations. Using a private courier service is expensive and not a fool-proof method of delivery either. One can buy many VHS or DVD copies and essentially do the same thing as the video streaming method, but it still means contending with physical delivery difficulties and lack of storage space.

Time constraints. Teachers ask for the same resources at the same time in the curriculum. As with the geographical constraints, one could get around the timing problem by buying many physical copies but online delivery presents a good answer to a lack of convenience with regard to timing. With video streaming, the material is available on site at all times during the day and simultaneous requests for the same material are easily accommodated. Sometimes it is a bit difficult negotiating a license for material with respect to synchronous or asynchronous delivery. Some vendors want to dictate which method may be used and the price is adjusted accordingly. NLC sites are smaller in terms of student numbers and asynchronous delivery seems to fit the needs of staff and students.

Competition. There is a vigorous climate of online education in Alberta. NLC is located next to Athabasca University, a well-established distance educator, and there is also a newcomer to the distance education market: eCampus Alberta. Thus there is a need to keep up with new resource delivery technologies capable of engaging students and enriching classes.

Timing. In the past, smaller institutions did not have the technological means or sufficient money to build their own LANs or WANs. Enter SuperNet, “one of the fastest, high capacity, broadband networks” in the world (Karlsen). The creation of the Alberta SuperNet has leveled the playing field for smaller institutions and its province-wide infrastructure has allowed equal access for rural and Aboriginal communities. With its arrival, we in the rural North are almost instantly living in a different world in terms of information access and technological ability. To substantiate this claim, one need only point to how SuperNet will allow smaller communities to access the e-resources provided by the Lois Hole Campus Alberta Digital Library that will become available early in 2007. The Lois Hole Campus Alberta Digital Library will provide participating post-secondary institutions in Alberta with digital information resources for teaching, learning and research. In the last year, SuperNet has offered enough bandwidth for even smaller institutions to start streaming videos over the internet. For example, NLC now offers practical nursing resources via videostreaming.

All of these factors encouraged library staff at NLC to consider video streaming as an option. What if we could get videos to teachers and students instantaneously? Media-on-Demand-fast in fact? What if we could overcome the geographic barriers and the time constraints and deliver relevant material as required?

How did we do it? Software selection

Since it is a new field, there aren't that many options for buying software that will manage video streaming titles. Distribution Access®, however, provides Media on Demand® (MonD®) software which allows the media to be shown from the desk top. Distribution Access also provides the MonD Manager® which enables the addition of new titles and the generation of usage reports.

We chose MonD® software because of its flexibility and the fact that it allowed us to add material from any vendor by using the MonD Manager®. As a result, we were not restricted to content from a single vendor, and we were able to reconfigure the video content which we already owned from VHS to video streaming format, provided we could obtain licensing agreements from the producer.

All the material from MonD® is indexed to allow teachers convenient and quick access to relevant parts of the video. The index is like a table of contents for an individual video allowing the teacher or student to go directly to the relevant section of the video file by clicking on the individual headings. The MonD Manager® allows the addition of keywords to material from other vendors, so access is provided to all material regardless of source. When material isn't indexed, i.e., naming events in sequence as they are found in the video, it is more difficult to manage for classroom use. Some vendors provide videos that are indexed. Some vendors provide videos that are not indexed. That means that in the video collection, some videos are indexed whereas others are not. Teachers and students may come to expect indexing and be disappointed when some of the video material does not have indexing. When using video files that do not have indexing, the teacher or student does not have easy access and may be required to view the entire video file to find the relevant material.

It is important to note that NLC owns the digital content. Stability and reliability of content is important in an educational setting. If video content is dependable from year to year, then teachers are more likely and better able to include the material in their curriculum. Since we are able to add content from other vendors, it may be that eventually we will have a video streaming library that consists of material that is owned as well as material that is only accessed. There may be problems associated with this because some of the collection will be owned (stable) and some of it will not be (potentially unstable, i.e., when vendors lose the individual licenses to sell the material).

Another advantage of this particular software is that it is possible to track title use. Reports may include usage statistics for individual, selected, or a comprehensive list of video titles. NLC's video streaming project will be evaluated on the basis of student and staff use. No plans are currently in place concerning surveys to judge the usefulness of video streaming material, but it is a possibility for future evaluations.

There is however one technical limitation. So far, we cannot use the videos with ease within the WebCT® and Centra® course management software

at NLC. Video streamed material has to be reconfigured to work within either of these systems and even then only clips of entire videos may be used. Part of the issue is bandwidth usage: although SuperNet has increased our capacity tremendously, we are still not able to stream these very large video files comfortably within WebCT® or Centra®. In normal operations, the video files are hosted on an internal server and streamed out to the individual sites. When one streams video files in from the internet and then out again to individual sites this takes up twice the bandwidth, so it makes sense to have the files on an internal server. Similarly, streaming video files within WebCT® and Centra®, which already use a large amount of bandwidth, presents difficulties from a bandwidth usage perspective

In the future, developments in compression software will make video streaming within Centra® or WebCT® more feasible. Also, MonD® software will be moving to a web-based platform in the near future, at which time it will be more likely that the large video files can be used within either of these distance delivery methods.

Challenges in creating a video streaming library:

Participation. It is a good idea to encourage the participation of teaching staff in selecting video streaming content as it increases the initial sense of participation and buy-in to library-services. There are, however, some difficulties associated with encouraging participation. Staff are experts in their own areas and they may have clear ideas of how they want to use the technology in their face-to-face and distance classrooms. Some of the issues that may arise include: how to use the technology, finding content in video streaming formats and why we can't simply take a video, create a computer file and start streaming it over the intranet (even if the company that produced it no longer exists). In other words, a great deal of time is needed to explain to staff what video streaming is and what can be done with it.

Canadian content. Finding Canadian as opposed to American content for video streaming is not easy.

Lack of standardization. All vendors offer different technology, different delivery methods, different content, different pricing, different license agreements, and different indexing. Some of the material can be owned, some can be leased for one or more years. Librarians are familiar with these kinds of complications, but at the moment it seems to be a particularly intricate process to secure video streaming content.

Branding. Branding is a big challenge. Right now, the MonD® player desktop icon sits on the desktops of staff and students, and librarians are puzzling over how to bring it into the library fold so that students and staff recognize this as a library service as opposed to an IT service or even a free internet service. This is important insofar as results of exit surveys are tied to funding and provision of services, so it is important to impress upon the user that these materials are bought and presented by the library.

Future directions and speculations

There are difficulties with mainstream video licensing which directly affect educational institutions. Many mainstream videos such as *Hamlet* starring Mel Gibson, *Chocolat* starring Juliet Binoche, and *Of Mice and Men* starring John Malkovich would be attractive and useful to our staff and students, however, these and other similar titles are not readily available.

For the most part, assurances from educators and librarians of “educational use only” and “within a closed intranet system in a defined educational community” are ineffective when it comes to the mainstream movie producers. For now, we are unable to access the glamorous, full colour movies which make Shakespeare and Austen come alive, but in the future, we hope for more freedom and the ability to provide these materials for educational purposes.

The larger issue is control and profit. Video streaming over the internet would appear to free the content and make it available without cost to too many and that, in turn may affect the producer’s bottom line. Once digital content distribution is more strictly controlled for profit perhaps mainstream content will be more available. Also, once some of the dust clears in the

recent energetic skirmishes regarding intellectual property and the internet, it may be clearer where video streaming for educational purposes fits in. In addition, the rights of teachers and students to use material for educational purposes need to be more clearly delineated and defended.

One wonders what role the library will be playing in the future with regard to video streaming. There are notable organizations like the Annenberg Channel which provides free video streaming and which is used by academic institutions. There are also recent commercial developments like Yahoo Go® which is competing with TiVo® and Comcast®. All of these present more competition for libraries as they endeavor to provide video streaming to patrons. As well there are internet folk developments such as the one described in a blog from YouTube® threatening to give every user the ability to have their own channel. The commercial and free internet competes with, as well as augments library functions. We simply don't know where the library will be positioned in this evolving environment in the future.

There is always the risk that one invests in content-compatible technology only to see it superseded a few years down the road. A little bit of faith is required and one must continue to believe that the library's mandate of providing resources for educational purposes will continue to be of importance even as these new commercial, free and folk forces come into play.

The ideal for NLC is to have current videos and video clips that are relevant to the programs offered and that can be used with various distance education methods both synchronously and asynchronously. From the library perspective in particular, it would be wonderful to see catalogued records of available videos within the OPAC (SIRSI/DYNIX®) with URLs pointing the student to the actual videos. Once we have this means of presentation, it will be possible to use videos more as gateways to the written word. For example, if a student can watch Hamlet via video streaming, they may then be able to make more sense of Hamlet the written play.

There are many improvements needed in the industry, such as more adaptable and reliable technology as well as improved and standardized

licensing. Improved infrastructure with increased bandwidth as well as innovations in compression software will make it easier for large computer files to be transmitted. All of these will contribute to making video streaming libraries more attainable.

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