

Exploring a Video Repository Solution for Education and Administration

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Abstract

Online videos are used increasingly in higher education, both inside and outside of the classroom, to engage students and enhance the learning process (Sherer & Shea, 2011). Online screencasts are also frequently used, since new tools are readily available and easy to learn (Oud, 2009). Research shows that using technology to address a variety of learning styles improves learning, especially when introducing complex subject matter (Dunn & Griggs, 2000; Gardner, 2004; McLaughlan & Kirkpatrick, 2004). Research also shows that providing instruction in a hybrid modality demonstrates improved learning outcomes as compared to traditional face-to-face environments (CUNY, 2013). Finally, video accessibility for learners with disabilities has reduced the barriers students face for comprehending material (Rose, Hasselbring, Stahl, & Zabala, 2005). The College of Staten Island (CSI) has embraced the use of video technology; however, the technical challenges associated with streaming and storage have overshadowed its effectiveness in the teaching and learning environment. In order to address these challenges, CSI has researched video repository and streaming technologies. This paper will share CSI's strategy in determining the appropriate video technology to explore, as well as findings from a pilot study leveraging the video repository solution in various disciplines and administrative areas.

Introduction

Technology can create opportunities to engage students and provide interactive activities that effectively enhance the learning environment (Sherer & Shea, 2011). Challenges associated with video storage and streaming can sometimes become a monumental task as architectures and tools need to be in place to allow for concurrent usage (Dey, 2012). There are websites, such as YouTube and TeacherTube, that provide an interface for video sharing; however, these services have limitations and may not provide for an adequate viewing experience (Crowell, 2011). Alternatively, pay for cloud services can be an option, as described by Dey (2012). However, these services are not without challenges, such as subscription prices, scalability, network implications, and branding.

Institutions of Higher Education are in a quandary, since the use of video technology to enhance the learning environment is grounded in research (Sherer & Shea, 2011; Oud, 2009; Frydenberg, 2008). Colleges and Universities need to arrive at a solution that provides the learning environment expected by today's digital-native learners (Dietz, 2010). Finding an appropriate solution that is affordable and scalable to foster this environment can be a challenge.

The College of Staten Island (CSI) has researched video repository solutions using a collaborative approach involving faculty, staff, and students. The objective was to find a solution that meets the following criteria: (a) easy to use, (b) secure location accessible using active directory credentials, (c) scalable, (d) ability to provide closed captioning, (e) integrates with Blackboard, (f) streaming, (g) robust searching and meta tagging functionality, and (h) flexibility with viewing permissions.

Based on this criteria, CSI focused on two commercial video repository solutions, Kaltura (<http://www.kaltura.org/>) and NJVID (<http://www.njvid.net/>) for their evaluation. Both of these

solutions have similar functionalities and can support the requirements outlined by CSI. This paper will speak to the methodology CSI used to evaluate these solutions, which included the selection of a working group and technical staff, selection of the faculty and administration involved in the pilot, challenges involved in the execution of the pilot, survey results and next steps.

Technology Status at the College

The College of Staten Island (CSI) (<http://www.csi.cuny.edu/aboutcsi>) is a four-year, senior college of The City University of New York (CUNY) that offers exceptional opportunities to all of its students. Programs in the liberal arts and sciences and professional studies lead to bachelor's and associate's degrees. The master's degree is awarded in 16 professional and liberal arts and sciences fields of study. The College participates in doctoral programs of The City University Graduate School and University Center in Biology, Chemistry, Computer Science, Nursing, Physical Therapy, and Physics. There are 14,199 students enrolled, 13,155 of whom are undergraduates. Enrollment gender is 61 percent female, and 41 percent are classified as non-white ethnic background (<http://colleges.findthebest.com/1/2757/CUNY-College-of-Staten-Island2014>).

CSI has been on the forefront of providing quality education to a diverse student population (U.S. News & World Report, 2012; Washington Monthly, 2012). CSI's infrastructure provides the technology backbone that enables a variety of tools to be used in support of teaching and learning. The 10G network backbone and high speed wireless connection provides for an environment conducive to creativity and flexibility in the learning environment. The Blackboard Learning Management System (LMS), which provides the foundation for course material in both

synchronous and asynchronous modalities as well as numerous third party applications that integrate into the LMS, is among the technologies currently in use at CSI.

Despite CSI's advancements in state-of-the art technology, the selection of a video repository solution has not been the primary focus. Instead, alternative solutions are being used, such as YouTube and storing video content directly within the LMS course environment. These solutions are not considered to be ideal as they respectfully introduce challenges regarding security and storage costs. The College is, however, now ready to make investments in a video repository solution that will be used to enhance pedagogy and enhance productivity in administrative areas.

Technology Options for Consideration

There are quite a few video repository and streaming solution options available. To put this into perspective, over 400,000 results were displayed when performing a google search on the term "video repository and streaming solution." In order to assist with determining the appropriate video repository and streaming solutions to evaluate, the criteria outlined in Table 1 were considered, as well as prior relationships with vendors and familiarity with open source solutions. Based on this criteria, The College of Staten Island (CSI) focused on two commercial video repository solutions, Kaltura (<http://www.kaltura.org/>) and NJVID (<http://www.njvid.net/>), for evaluation.

Table 1

Video Repository and Streaming Solution Criteria

Feature	Description
Secure Streaming	Secure end-to-end encrypted streaming of videos and audio files from streaming servers to end users.

Visibility Options	Content visible to specific users or groups based on role attributes
Collaborative Platform	Ability to collaborate with other higher educational institutions
Commercial Video Licensing	Support commercial licensed educational videos
LMS Integration	Allow for linking and embedding videos within Blackboard
Robust Searching Capabilities	Advanced full-text search capabilities
Archival Preservation	Original content preserved and can be retrieved any time
Closed Captioning	Users can create captions on video content
Robust Administrative Tools	Provide fine grained administrative controls to manage hierarchy and permissions.
Reporting and Analytics	Quick and easy reporting tools that provide detailed statistics on usage.
Support and Training	Extensive support
Ease of Use	Integrated easy to use solution

Methodology CSI used to evaluate these solutions

A working group was formed in order to assess the feasibility of Kaltura and NJVID. This group consisted of faculty from Education and Media Culture, as well as administrative staff from the Library and the Office of Technology Systems. The group received formal presentations from both vendors and provided anecdotal feedback as outlined in Table 2.

Table 2

Feedback from NJVID and Kaltura Presentations

NJVID	Kaltura
Simple and straight forward	More commercial
Anchored in our world	Has close captioning but additional price by a 3rd party
Not as commercial	
Price point	Doesn't handle digital rights management
Commercial video content	Overwhelming
Integration with LMS and AD	Very robust
Consortium	Has all bells and whistles
Hotspots disappearing	
Assistive technology supported but not literal	

Based on these results, the group decided to move forward on piloting NJVID and proceeded to set up the pilot environment. Project leads from the Library and the Office of Technology Systems were assigned administrative roles in order to develop the site, working closely with NJVID. In addition, using a “train-the-trainer” model, these individuals provided a hands-on workshop for the team who would be using the technology for teaching, learning, and administrative purposes. Ample documentation and video tutorials were provided by NJVID, created specifically for this project, and made accessible through the CSI website.

(see Figure 1).



Figure 1. CSI webpage created for NJVID pilot.

From "College of Staten Island website," 2015. Retrieved July 16, 2015 from <http://www.csi.cuny.edu/technologysystems/njvid/>.

NJVID Pilot

NJVID was piloted from March through May among faculty and administrators. Key users were from the School of Education, Media Culture, Library/Media Services, and the Office of Technology Systems. The following details how each of the areas used the repository and describes opportunities and challenges.

School of Education

NJVID was piloted in two small courses, one undergraduate and one graduate, each with five students. In the undergraduate course, students were learning about science curriculum and standards for secondary schools. Video assignments required students to collaborate and develop a video explaining the standards documents, how to find information in the standards documents, and how to use these documents to align lesson topics with grade levels of K – 12 students. The NJVID repository was used by the students to upload video and by the instructor to review video and provide feedback.

In the graduate course, all students were middle school mathematics teachers. The key assignment of the course was the development and teaching of a lesson plan that addressed student misconception. Students had to videotape the whole lesson and upload their videos to NJVID. Students were asked to select a 10-15 min clip of their lesson video that demonstrated the activity that specifically focused on the misconception being addressed in the lesson and used the NJVID option to develop clips with annotation. The annotation explained what was happening in the classroom and whether the activity met the objectives they setup for their lessons. At the end of the semester, each student prepared a presentation for the class about the lesson which included the video clip they selected from the lesson video.

Media Culture

The department of Media Culture found the search feature in NJVID particularly useful. The ability to add detailed metadata about the film genre provided a search functionality that was similar to library cataloguing. It is not uncommon for faculty in Media Culture to show obscure films. These films are not easily found on YouTube, which lacks the ability to add detailed information. NJVID addressed this challenge by providing a robust environment to provide

metadata information that facilitated browsing and searching for video content. One other advantage was the affiliation NJVID had with diverse group of commercial videos, providing easy access to a plethora of films used by Media Culture.

Library/Media Services

From the Library/Media Services perspective, NJVID offers solutions and opportunities on several fronts. NJVID allows the Library to service a growing number of faculty who create video content but do not have a simple way to store and stream their videos. Oftentimes, in the past, faculty would simply upload their videos to the University LMS; however, that would use up their entire course space allocation and violate the use policy. In an attempt to serve the needs of these instructors, we set-up a file server that permitted the streaming of Flash based videos. This was both arcane and difficult to manage—beyond a small cadre of faculty who were willing to endure its limitations. On the other hand, our group of pilot faculty easily mastered NJVID's user friendly interface. In addition to allowing faculty to upload self-created content, NJVID offers another benefit in that it works cooperatively with many commercial streaming video vendors, such as the Films Media Group (Films on Demand), Ambrose Videos, Alexander Street Press, etc. (<https://www.njvid.net/commercial-vendors.php?id=1>). As a result of these agreements, we would be able, in the future, to use NJVID to host videos that were purchased from these vendors. Finally, it should be noted that Media Services videotapes many of the activities and events around campus and then stores them on tape, which makes access difficult. With the acquisition of NJVID, we hope to begin the process of uploading this wealth of video material, thereby making it available to our entire user community.

Office of Technology Systems

The Office Technology Systems (OTS) played a major role in the NJVID pilot. OTS was the project lead and was responsible for the administration of the portal, which involved setting up the interface and account creation. In addition, OTS leveraged NJVID for training tutorials related to technology topics. These tutorials also utilized NJVID's closed caption functionality. Finally, OTS provided end user support and training to the individuals who participated in the pilot.

The administration of the NJVID was relatively simple. Minor challenges associated with assigning permissions needed to be addressed. In addition, end user support was minimal as the individuals were self-sufficient, found the tool relatively simple to use, and relied on documentation provided to function.

Survey Results

A survey was distributed to 25 users, encompassing faculty, IT administrators, and students, with a response rate of 19 participants, including 3 faculty, 11 staff, and 5 students. 72% of these users had experience with posting video content in the past using other services, such as YouTube, Google, and Blackboard. Overwhelmingly, 100% of survey participants found the use of a video repository solution useful, with 66% finding NJVID either extremely or very useful. Over 92% of the users found NJVID easy to use.

In addition to surveying overall usage, specific features of the NJVID video repository were also surveyed. The ability to manage video collections seemed to be the most popular, with 65% of the users finding this feature very useful. The ability to create playlists and clips, as well as the ability to upload captions, was also found to be useful. Uploading captions and accessibility on mobile devices received favorable reviews. Finally, when asked whether NJVID

should be recommended to others, 33.33% of the participants were extremely likely to recommend it to others, 44.44% very likely, and 22.22% moderately likely. These results were consistent with the satisfaction of the users experience using NJVID, where over 80% of the participants were quite satisfied.

Anecdotal survey results were also favorable, including such comments as “ease of use,” “easy to upload content,” “user friendly,” and “excellent service,” just to name a few. Responses to the question, “What changes would you make to improve NJVID?” included such comments as “make it easier to caption clips,” “difficulty uploading supplementary content to the video,” and the ability to have automatic closed captioning of content.

Next Steps

Based on the positive results from the pilot and the need to have a video repository solution, CSI will be expanding the pilot during the fall semester to include additional faculty and students. Many faculty from a variety of disciplines have already requested accounts and training for their fall semester classes. For example, the Modern Languages Media Center is planning to implement to facilitate access for students to video tutorials about the technologies in use in foreign language courses. The video tutorials are currently available through YouTube and the center's website, and they illustrate step-by-step processes and demonstrate sample projects.

The implementation of NJVID into foreign languages courses will enable access to foreign films through the NJVID commercially-licensed video collections and the CSI domain. Currently, the media center hosts the physical film collection of the Department of World Languages and Literatures. Faculty are required to pick up and return the desired DVD or VHS at the media center during opening hours. Students can only access the resources within the media center and its hours. The purchase of films is subject to budget availability, which often

limits the number of films that can be purchased. Access to the NJVID online collections will enhance the ability to integrate authentic cultural content in the language activities in and outside the classroom, and will increase the number of titles accessible to language faculty and students.

Additionally, the NJVID online video portal could be beneficial for implementation into American Sign Language courses, where students are required to submit video assignments, or for all oral language courses that require exit interviews and oral final presentations. The ability for students to review, on-demand, their own videos will allow them and their professors to monitor their progress throughout the language sequence and create language proficiency portfolios.

In conjunction with expanding the use of NJVID with faculty and administration, CSI is working with CUNY to integrate the technology with the Blackboard (Bb) Learning Management System, as well as implementing a single sign on solution that will authenticate using Active Directory credentials. Currently, videos are either embedded in a course or accessed by clicking on a link. However, functionality allows for a seamless integration that will allow for videos to be directly uploaded from Bb. Finally, we will continue to expand the use of NJVID's closed captioning tool by working closely with the Center for Student Accessibility.

Summary

The ability to leverage technology by creating opportunities to engage students and provide interactive activities that effectively enhance the learning environment is paramount to the success of education (Sherer & Shea, 2011; Oud, 2009; Frydenberg, 2008). Despite the fact that a video repository solution supports this objective, institutions of higher education struggle to find an appropriate solution this affordable and scalable.

A plethora of video repository solutions are available; however, some of these solutions may not be ideal because of challenges associated with security and storage costs. Alternative solutions such as NJVID need to be explored in order to meet the pedagogical and administrative demands faced by institutions.

The collaborative approach CSI used to explore and pilot a solution is one that can be duplicated at other institutions. It is important that all users have a voice in order to select the optimal solution that meets the needs of the institution as a whole. In addition, clear objectives and selection criteria need to be outlined in order to streamline the selection process. Finally, training, documentation, and support is key to any successful pilot.

The continued expansion of this video repository and streaming service solution will provide opportunities to engage students and enhance the learning process. Currently, different CSI departments and tutoring centers implement different platforms to publish and distribute to students their discipline-related materials. The integration of a unified system will enable the College to combine the resources provided by the various divisions into one portal, and to create an online environment that students can refer to for on-demand technical assistance in the varied software implemented campus-wide, creating a one-stop shopping environment that eliminates the need to use multiple sites for assistance.

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