



UniTube: Making media accessible for learning and teaching

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Sharing video and other media for teaching and learning in the University setting can be problematic. Negotiating the mix of in-house systems for hosting files, dealing with competing file formats, copyright and intellectual property rights, not to mention supporting the access and use of material by students can present significant challenges. This paper describes a new open source web application, called UniTube. UniTube is based on the YouTube concept, but is specifically tailored for use in a Higher Education setting. This short paper describes the rationale for developing UniTube, an overview of the system features, usage data to date, initial evaluation and plans for further development.

Keywords: video, media, file sharing, YouTube, multimedia instruction

Rationale for the development of UniTube

The popular video-sharing site YouTube was launched just 4 years ago. More than 65,000 videos are uploaded every day (Cha et al., 2007). A quick search of the YouTube website for clips tagged with the keywords university or college returns 81,000 videos (August, 2009). A search for videos connected to our own institution returns 1700 clips, many related to teaching and learning as well as to matters of direct interest to students. YouTube is responsible for generating around 10% of all traffic on the Internet (Cheng, Dale & Liu, 2007), and in its first year of operation the World's population spent more than 9,305 years watching videos on YouTube (Gomes, 2006). It is easy use. Anyone with a cell phone or a camera can upload a video they have created, and share it with the world without having to worry about technical details or traditional production values.

Nonetheless, while YouTube has rapidly gained broad acceptance as a way for both teachers and students to share video, it has a number of drawbacks:

- It only deals with video: sharing audio, powerpoint files, and other documents is not handled.
- There are issues around cost in terms of international downloads.
- There are security implications, particularly where video is used in a clinical teaching context.
- It is not easily customizable or extensible: what you have is all there is.

The development of UniTube was inspired by the YouTube model but extended to specifically address these drawbacks as well as to incorporate features which we felt may enhance its use in a range of learning and teaching contexts.

Our belief that a wider variety of media is beneficial for learning, underlies our desire to support media other than video. We wish to approach the issue of the influence of media on learning with “pragmatism” (Hung, 2002, p. 284) rather than to view different learning theories as being mutually exclusive. For example, the Clark-Kozma debate (*circa* 1983-1994) was a key debate in emphasising the different epistemologies between cognitivists (Clark) and constructivists (Kozma) (Jonassen *et al.*, 1994). Clark (1983) made the claim that media selection has no influence on the quality of learning; Kozma (1991) contended that different media do have an impact on the meanings that learners construct.

Cognitivists such as Mayer (2005) are still exploring ways of matching the design of multimedia messages with how the human mind processes information. Advocates of multimodal learning such as Kress *et al.* (2006) are investigating how learners produce different meanings with different media. Others are evaluating the use of video-based case studies, for example in dance education (Leijen *et al.*, 2009) and teacher education (Lee & Wu, 2006), concentrating on the social interaction around the media and the experience of recorded performance.

Many technologies have come about for reasons that have little to do directly with learning or education; they are, however, often appropriated for learning and are used by students and teachers in ways not necessarily anticipated by the designers. Gerhard Fischer writing in *First Monday* argues "...humans (not all of them, not at all times, not in all contexts) want to be and act as designers in personally meaningful activities" (Fischer, 2002)

Indeed, our sincere hope for UniTube is that by making the reception, creation and distribution of a wide range of media easily accessible to students and teachers, they will use these media in "personally meaningful" ways, in ways we have not necessarily anticipated, and in ways which are congruent with their particular approach to learning and teaching (cognitivist, constructivist etc).

System features

UniTube can be viewed online at <http://unitube.otago.ac.nz>. Most of the features described here can be accessed as a guest user.

A screenshot of the UniTube home page is shown in Figure 1. This demonstrates that a wide range of media and file formats can be uploaded to UniTube. These include many common video and audio file formats, MS Office and Open Office formats as well as image and animation formats. UniTube takes advantage of a number of open source libraries including those from ffmpeg and OpenOffice in order to achieve this. UniTube uses flowplayer (an open source media player) to play video and audio. Because of this we felt it was appropriate to release UniTube itself under an open source licence. Anyone interested in obtaining a copy of UniTube should contact the authors.

Once uploaded, a file can be shared publicly or restricted to a particular group through an unlisted link. The now commonplace practice of copying and pasting a link to the uploaded media within a website, blog or the University course management system (CMS) is also available, as well as the ability to describe and tag the media. UniTube also allows media to be "embedded" within a website, blog or CMS, allowing the media to be viewed in context. Finally, users can easily download media files for viewing offline. UniTube is integrated with a range of social bookmarking tools (e.g. Digg, del.icio.us, Twitter) allowing users to share media files. Users can also make their media available via an RSS feed or as a podcast. Users can organise their media into albums and share these with specific groups. One minor, but useful, feature is the ability to generate an MPEG format video, which is readily playable on desktop machines, and is easy to embed in PowerPoint presentations.

An experimental feature incorporates the use of Twitter which is utilised for user feedback and comments.

UniTube addresses the key disadvantages of external media sharing sites such as YouTube. First, as we have illustrated, it supports a wide range of file formats and media. Second, by hosting UniTube locally, all off-campus international network costs are virtually eliminated (the potential exception being those incurred by off-campus distance or international students). Finally, since source code is available it is possible to extend the system in response to requests from users. One of the planned enhancements is to add security to address the third issue. Building on the idea of extensibility, the user interface—inspired by the ever-expanding London tube—aims to reflect a growing community which continually expands its horizons.

Usage

UniTube was launched on March 25th, 2009 within our own institution (roughly 18,300 FTE students and 3700 FTE staff). Since that time there have been 158 media files uploaded by 24 individuals. So far, all individuals who have uploaded media are staff from either our own institution or from our close neighbour, the local polytechnic. UniTube users come from a diverse range of departments including

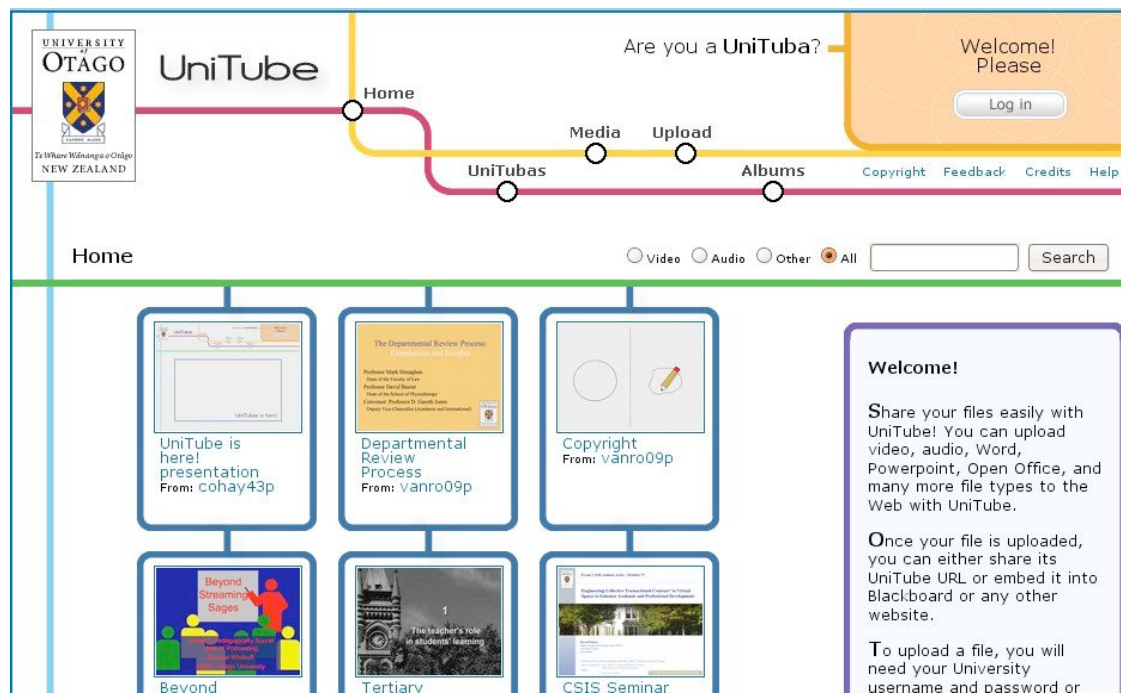


Figure 1. UniTube screenshot

maths and stats, through to film and media studies, science communication, design, biology and dentistry. A number of media of general university interest have been uploaded by the authors and these include one of the most viewed media which is a video on copyright.

More than 1800 users have visited UniTube since it was launched and of these more than 61% are return visitors. Most visitors come via a direct link and the majority of those finding the site via a search term are using the word 'unitube'. The majority of visits (64%) are coming from within our own institution. The highest number of visits (39) in a single day was recorded shortly after the launch of UniTube, but the average number of daily visits has remained steady at around 15 per day. It is worth noting that the UniTube launch was low-key, and that UniTube has not (yet) been heavily publicized within the university.

Recently early feedback has started to be posted using the twitter feature (<http://twitter.com/unitube>). Comments (which are anonymous) include “It's great and wonderful. I like it.”, “I think it's a cool idea. [Name of developer deleted] is very clever!”, and “Great idea. Difficult to work out the content of each item from the main page. Perhaps a subject or department based index would help”.

Comments received by email include:

UniTube is VERY easy to upload to. I will use it more now I've been prodded.
(from a senior academic)

Very excited about having a uni place that hosts. I linked to my facebook account, easy as pie. FANTASTIC! (from a student)

It is safe to conclude so far, that UniTube has yet to be adopted for mainstream teaching purposes but the steady use at this very early stage, coupled with the increasing number and variety of media being placed on UniTube suggests to us that there is still plenty of opportunity for UniTube to be adopted more widely, and on a regular basis for learning and teaching.

Initial evaluations

Initial evaluations have primarily focused on collecting usage data via our own website logs as well as through Google Analytics. Our view has always been that UniTube will stand or fall on the basis of real usage (McDonald, 2006).

A qualitative review of links to UniTube and/or to media hosted on UniTube highlights the following:

- A group of students in design and science communication are using UniTube to deliver audio content via their own blog (see sustainabledesignstudies.wordpress.com under “Course Sustainability Blogs”).
- Lecturers in several subjects are using UniTube to host material which supports their teaching.
- University staff are using UniTube in a range of ways, for example, technical “how-to” clips, recordings of forums, to support research and service commitments.
- Service units within the university are starting to use UniTube to disseminate information to University staff and students, this includes recordings of University events.
- Staff developers and teachers are starting to use UniTube to host recordings which support the discussion of, and reflection on, teaching practice.

Ongoing evaluation and development

Our plan is to formally evaluate the use of UniTube through seeking feedback from current users early next year. By this time, and on the basis of current usage trends, we should have a reasonable sample of established users to approach for their input into a formal evaluation through questionnaire and focus group studies. A key goal of our formal evaluation will be to investigate alignment of the range of uses of UniTube with individual approaches to teaching and learning, and see if this points us towards specific areas for further development.

At this stage, our plans for the further development of UniTube include the following, but we hope that as UniTube is used more, additional features will be driven by its users. Planned features to be added include: improved protection for private media; improved navigation for PowerPoint media; a “mini-mode” for small-screen devices (phones, PDAs); ability to select the thumbnail for media; the option to post a Twitter tweet when you upload a file; and limited ability to edit video along the lines of www.tubechop.com. Additionally, we are looking at using the video player’s API to allow users to bookmark and refer to segments of a video (or audio). This feature is important in using media to reflect on teaching or performance: a discussion may want to refer to what happens in a given section of the video.

Summary

UniTube is an open source media sharing software, based on the YouTube model. It supports a wide range of media and formats, reduces institutional Internet traffic costs and provides a readily customisable and extensible platform. Launched earlier this year, the slowly increasing use, and diversity of application in our own institution, leads us to be cautiously optimistic that UniTube is showing early promise as a powerful tool for students and teachers. Further evaluation studies are planned.

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Please cite as: Zeng, R., McDonald, J., Cohen, A., Loke, S.K., Vlugter, P., Cone, T. & Winikoff, M. (2009). UniTube: Making media accessible for learning and teaching. In *Same places, different spaces. Proceedings ascilite Auckland 2009*. <https://doi.org/10.14742/apubs.2009.2242>

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