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Case study 5.

Enriching the curriculum with supplementary media



Summary

Enhancing student learning through the use of supplementary videos to demonstrate or illustrate concepts or ideas. Specific aspects of this case study include:

- Reviewing: enabling students to rewind, replay and review information as often as required
- Accessibility and flexibility of location: videos are able to be accessed by a large number of students wherever they are, creating equal opportunities to information
- Support learning through visualisation
- Alleviating pressure for 1:1 learning support by providing supplementary videos and other media to cover common concerns, skills and knowledge

Keywords

Blended learning; video; recorded lectures



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What worked?

This case profile describes two lecturers in the Law faculty and in the Library Learning Skills unit who constructed short videos to illustrate particular concepts as part of their course. The goals of the use of supplementary videos are twofold: to provide a greater level of visual learning opportunities to students, particularly where the content is better supported by a visual explanation; and to reduce the number of students requiring 1:1 support by using a format that enables students to review content multiple times. The nature of the video format means students can stop, rewind and review the information to ensure that they have grasped the concept correctly.

In the first phase of this project, the research team conducted a student survey across two Australian universities to identify and understand the types of technologies that are working in higher education and why. From over 2 000 respondents, ten themes that related to a technology were identified as being particularly valuable for student learning. Three of these themes speak directly to the use of supplementary media.

The most highly valued theme in the large scale survey was that of *flexibility of place and location* with 32.7 percent of students arguing that online content, including supplementary media, enables them to study at a time and location that suits them. While textbooks have always been available, the supplementary digital media, particularly video, facilitates learning through richer communication cues allowing more efficient explanation of ideas. Students do not have to wait for consultation times.

One second theme was that of *review, replay and revise*, in which 27.9 percent of students reported that they valued online lecture recordings. Students were able to catch up on missed material or review material to improve their understanding, in particular, students valued being able to “review [material] closer to an assessment task.” While many of the students were viewing the videos for the first time (for example, they were ill during the on-campus lecture), these students, as well as students who *had* attended the lecture also reported that they valued the videos as a supplement; to “re-listen” and “consolidate and clarify what I was taught.” The recordings not only supplemented their notes and memory of the class, but also freed them to concentrate more on the ideas during the class, rather than having to worry about note-taking: “Sometimes when you attend a pre or post lab talk you can't write it all down or absorb it all.”

The third theme was that of *seeing information in different ways* including through video, animation or annotation. This was cited by 11.4 percent of students as a benefit for their learning. While some of the students referred to lecturers annotating or drawing in class (see the Annotation case study for longer discussion) this theme also referred to lecturers using videos from *YouTube*, customised animations, and case studies. A student commented that videos “allow lecturers to really illustrate a point and get students to connect on a deeper level with the subject material rather than just theoretically.” Many respondents justified their appreciation of these use of media in terms of being “a very visual person” and “very much a visual learner”.

Another theme was that of *augmenting university learning materials* (14.6 percent of students cited this as a benefit to learning). This theme refers to the use of media, particularly video recordings that are not officially part of the subject content they are studying. These media are not referred to by the lecturer, but are nevertheless used by students to support their learning. They may include lecturer recordings made at other universities, explanations on *YouTube* and even text-based explanations such as on *Wikipedia*. This case study is focussed on the use of supplementary media that are part of the course content. However, the theme of augmenting university learning materials does highlight the potential for university courses to recognise, and use such media as part of its own supplementary media. It also suggests a need for courses to educate their students to be discerning when choosing media to help them learn.

Supplementary videos in the library learning skills unit

Jessica is a Learning Skills Advisor based in the Monash Library. A year ago she was approached by the lecturer of a 3rd year nursing unit to assist students in writing their final assignment. Many of the nursing students hadn't achieved well on the first assignment and there was significant pressure for them to pass the second assignment in order to be able to move onto graduate year.

The second assignment was crucial because if they don't pass the unit they don't go on grad year which means they can't work which means they have to wait a year before they can come back and repeat so it's really high stress, high pressure. So there were a lot of students wanting help and a lecturer running around going 'How do I help them, I don't know what to do but they need help! (Jessica)

Due to the limited time frame and the large number of students, it was impractical for Jessica to see each student individually; many of the students were also off-campus on placement. At the time, the Library was encouraging the use of iPads in the learning library setting and Jessica had recently discovered the app *Explain Everything* which is a program that enables a person to record audio over *PowerPoint* slides, add images and annotate the slides. With this technology Jessica was able to create two instructional videos on how to prepare the assignment, each with contextualised examples relevant to the nursing students. Jessica was well-informed from students and teachers regarding the points which the students were struggling with.

The goal of the use of this technology was to provide a clear, condensed set of instructions on essay writing with examples specific to the nursing students' context. The secondary goal was to reduce the total number of students requiring 1:1 assistance by providing access to frequently asked questions in a video format, thus enabling all students to access the information. In addition, it was hoped that the videos would help students to plan their approach to assignments, particularly in terms of time management, Jessica described the general structure of the videos in that she releases the videos at staggered intervals to

ensure that students have completed the necessary steps before beginning the next phase of their assignment,

...you need to do this before you try to write your assignment and then releasing the second one [video] a little bit later... (Jessica)

The set of instructions were targeted to the assignment itself and its specific requirements. Students across both university campuses had access to the same information, this was particularly important given that the information was regarding an assignment. Jessica produced two videos which were made available online to students and received a good response - from a total class population of 180 students each video received around 300 views.

Jessica noted that it was a process of trial and error in learning the best way to make and upload the videos. Initially the videos were hosted on *Google Drive* and then *Dropbox*, but these options were problematic as students needed to be authorised in order to access the links. Jessica then discovered that she could upload the videos straight to *YouTube* where students could access and watch them directly, the videos are now also stored within the university learning management system which means that students are able to easily locate and access them.

Jessica received positive feedback from students in the student satisfaction survey and anecdotally. There was also a significant increase in the number of students who passed the assignment. Students requested the slide handouts “to be able to interact with the slides and use its notes.” The information on the slides gave advice and techniques on how to approach the assignment in general, and then students were able to annotate on the slide handouts as to how the information provided would apply to their assignment. Students were able to watch the videos as often as needed, where ever they were located with a digital device. Jessica also noted that for those students requiring further assistance after watching the videos, their discussions were more focused on specific aspects of the assignment, often simply seeking further clarification rather than broad panic about the assignment in general.

In light of increased student numbers the videos have proved to be an alternative option in providing personal academic assistance to a large group of students. Due to an overall decrease in students seeking help, those still in need of it could be assisted in a timely manner.

The videos were able to alleviate many of the uncertainties that students face with open-ended writing assignments by providing an instructive process, which they could refer to as often as needed. In a focus group conducted by the research team as part of this project, a participant commented on the short length of supplementary videos in that they enable lecturers to focus on one particular aspect of the subject or concept in detail.

I think it's more precise, because it has to fit into a ten minute video. They limit themselves so rather than referencing all these things or just loosely teaching you whole things at once they laser-focus and say let's teach this one concept now and you can move onto the next one. (STEM focus group participant)

Based on the success of the supplementary videos, Jessica is planning to make another set of videos for the assignments this year. The videos may only need to be slightly adapted which decreases her workload significantly.

Supplementary videos in the Faculty of Law

Anna is a lecturer in the Faculty of Law. She had been looking for a way to make construction law more interesting and engaging for students and, inspired by several of her students who used a TV show model to present their work, she decided to make some animated videos to give students a foundational knowledge of certain topics in construction law and to serve as a way in which to generate classroom discussion,

I think people want to be engaged, they want to be entertained. I always – in the first week of class talk about this saying that if you're not laughing you're not learning. You know it's got to be fun if they're going to actually get anything out of it, just sit up there and talk in a dull monotonous voice, it's not going to achieve the learning outcomes. (Anna)

Originally Anna had planned to begin each lecture with a video that would introduce the topic to be covered and generate a discussion, for example she would have a video on mediation, another on arbitration. This remains a long-term goal because of the difficulties of obtaining funding to create the animated videos.

Anna applied for and received funding to produce two animated videos. The first video is entitled: *The ABC of DRBs* (District Review Boards). The second is titled: *What is construction law?* and is modelled on the *Who wants to be a millionaire?* TV show. Once the funding was secured and a concept developed, Anna worked with a team of people including an animator, musician and voice over artist to produce the videos. In making the animation, Anna noted that it was particularly important to have everything including the script finalised prior to starting production "...the animator will go to make that one change, to make his arm move over here instead of here, is about two hours work." The videos are available for students to access through *YouTube*.

Anna stated that by playing the video at the beginning of the class it ensures that the students have an understanding of the basic concept and the class can then begin a discussion on the topic. Anna noted that students found the concepts easier to remember because they were presented in an interesting way. She starts each class with a quiz based on the previous week's video (either one of her animated videos or a video from *YouTube* introducing the topic in question) which enables her to check that students are finding the videos' useful.

Anna noted that one of the values of the videos is in how transferable they are to different audiences.

I've used the DRB's one at conferences where most of the audience would be 60 years old probably, the old grey haired men. They more pick apart bits of it and go well that's not actually how it works in practice or whatever. I go yeah but we're just trying to get the concept out there, and just in a simple way. But I think...the idea is very much transferable. It's the same thing as a quiz, I mean if you start throwing chocolates out, whether you're 20 year olds or 60 year olds, they respond. It's just human nature... (Anna)

Anna had received positive feedback about the animated videos from her students. She stated that people connect to the animation aspect of the videos because they want to be entertained, and when they're enjoying themselves, they are engaged and learning.

In the future Anna is considering using the computer program, *Powtoon* to make some animated videos herself.

Why it worked

Enablers

There are a variety of enabling factors that have led to or established the conditions within which supplementary videos have been successfully used. This section highlights specific enabling factors that were evident in these specific case studies. These include:

Convenient and familiar: The videos present a convenient way for students to learn aspects of their course. They are able to refer to the videos whenever they need to and are also not limited by location. Watching and listening to media is now a familiar digital practice with technical issues including bandwidth, plug-ins for players, and conventions (for example, understanding functions like fast forward and scrolling across videos) all now being commonplace.

Support for large classes: The use of supplementary videos to cover important aspects of the course is an alternative option for lecturers and learning advisors who are struggling to provide 1:1 support to large classes of students.

Differentiation for student needs: Students can choose to review the videos as often or as little as they need in order to understand a concept or learn a skill. This also means that for students requiring 1:1 help, they are better able to articulate the problem which results in less remedial work required by staff.

Free or readily available, and easy to use video creation applications: Applications such as *Explain Everything* allow for the quick and spontaneous production of 'show and tell' supplementary learning materials. These applications allow lecturers to

create their own materials, which may lack in professional production quality, but are advantaged by the ability to be spontaneous, responsive to student needs as and when the demand is apparent, and unlimited by budget.

Video hosting services: Videos can be large files with implications for how they can be shared. It is only relatively recently that we can easily share videos through third party hosts (for example, *YouTube*) and Learning Management Systems.

Challenges

There are several challenges that can be noted in these cases for the use of supplementary videos. These include:

Initial investment in time: Both lecturers noted that producing the supplementary videos initially requires a reasonable amount of time. However, there is significant time saved subsequently when the videos can be reused for different classes over the years. Anna also uses hers for speaking engagements at other learning institutions or conferences.

Technical competency: Both lecturers described themselves as being reasonably comfortable with exploring different technological options. This meant that they were able to work through most technical issues themselves. Both lecturers noted that they relied on trial and error to work out most technical issues, for example, Jessica initially used high resolution video but that took a long time to upload and download. For lecturers who are keen to try out new technological options but are not as confident with using technology and troubleshooting themselves, this may be an issue.

Cost of professional video or animation production: Anna commented that the cost of animation production meant she was reliant on funding to produce the videos. However, she was interested in pursuing some of the free programs and applications that have been developed including *Powtoon*. In contrast, Jessica uses software and technologies available free to her at the university including the app *Explain Everything*.

What the research literature says

The use of video for learning has become widely employed by lecturers (see Giannakos, Chorianopoulos, Ronchetti, Szegedi, & Teasley, 2013; Hibbert, 2014; Ljubojevic, Vaskovic, Stankovic, & Vaskovic, 2014; Ramlogan, Raman, & Sweet, 2014). Students are consumers of videos that are available on open-source platforms such as *YouTube*, making videos familiar sources of information (Margaryan, Littlejohn, & Vojt, 2011). In consideration of student familiarity with videos, Ljubojevic et al. (2014) suggest that students would find videos easy tools to use for learning, and videos can be useful for engaging with their verbal (linguistic), visual (spatial), and musical (rhythmic) intelligences. Learning thus becomes multisensory

through videos which enable students to be engaged in learning (Guy, Byrne, & Rich, 2014). In this literature review the uses of supplementary videos for learning are presented in terms of: a) videos used for educational (for example, directly related to unit/course content) and/or for entertaining purposes (for example, uplifting mood among students, creating humour); b) short (for example, four minutes) or long (for example, thirty minutes to an hour) videos used to increase student attention and focus; and c) lecturer-generated video content relating to the course or purposefully selected videos used to further explain course content.

There are many types of supplementary videos including screen-captured *PowerPoint* presentations, instructor-focused content lectures, animated videos, short documentaries, and simulations (Hibbert, 2014). Supplementary videos can be used by the lecturer *educationally* to deliver course/unit content and/or for *entertaining* purposes (for example, uplifting the mood of students). In terms of educational uses, Hibbert's (2014) study found that videos containing information that were directly linked to the course content, course assignments or assessments promoted student viewing, as did videos that students needed to view for online forum discussions. Lecturers are able to use supplementary videos to "demonstrate course topics", and for students as "learning materials for self-study" (Giannakos, et al., 2013, p. 283). Students' participation in lectures were found to have increased in Ljubojevic et al.'s (2014) study, when educational supplementary videos were shown during lectures. In a separate study, students reported that the inclusion of relevant charts, graphs photographs and other visuals in videos enhanced the lecture content, as the visual presentation of shapes and facts helped them retain what they have just learnt (Hibbert, 2014). To better enhance learning Guy et al. (2014) also stressed that simplicity of video content is important, that videos should contain minimal text and the use of clear visual presentations to optimise explanations for students. In terms of entertaining uses, Ljubojevic et al. (2014) suggests that lecturers can also use videos to capture the attention and interest of the students at the beginning of a class, or to lighten up student moods prior to delivering the lecture content (Steffes & Duverger, 2012). Whilst supplementary videos can be used educationally and/or in an entertaining way, it is important to note that the video content is the most important factor in benefiting student learning (Bravo, Amante, Simo, Enache, & Fernandez, 2011; Steffes & Duverger, 2012).

Videos can also be used pre-, during, or post-lectures, with several studies in support of the use of videos pre-class (Arshad & Imran, 2013; Demetry, 2010; Long, Logan, & Waugh, 2014). Lecturers can implement supplementary videos in various ways which include "broadcasting lectures in real time, augmenting recordings of in-class lectures" and "delivering lecture recordings before class to flip the classroom" (Giannakos, et al., 2013, p. 283). Watching videos pre-class can motivate students to spend time learning out-of-class (Demetry, 2010), during this time they are able to clarify understanding, reinforce learning during class (Arshad & Imran, 2013), and facilitate better understanding through the use of illustrations of examples (Long, et al., 2014).

Studies have also shown that *shorter videos* such as segments of a video lecture that relate to the course content best engaged students' attention (Hibbert, 2014; Ljubojevic, et al.,

2014; Long, et al., 2014). The selection of relevant short videos can enhance learning by increasing student attention on the topic during lectures (Ljubojevic, et al., 2014), making it easier for students to process information (Mayer, 2002). A short duration (video length) for supplementary videos are ideal for engaging students' attention and focus, the ideal length seems to vary by studies, ranging from four minutes in length (Hibbert, 2014; Ljubojevic, et al., 2014), 15 minutes (Guy, et al., 2014) to between 20-30 minutes (Long, et al., 2014). Ljubojevic et al. (2014) found instead of long video lectures (for example, an hour), students appeared to be more focused and attentive when they were shown short videos relating to the lecture in between segments (for example, between PowerPoint slides). Guy et al. (2014) found well-designed video lectures (<15 minutes) consisting of "a title slide, short (1-2 min) introduction, a content section (2-9 min), and a final assessment/feedback section (1-3 min)", was optimal for student learning (p. 96). In another study students favoured 20- 30 minute videos over one-hour video lectures (Long, et al., 2014). Hsin and Cigas (2013) suggest that the use of short videos enhanced student satisfaction and motivation in class, resulting in an average grade increase across students in the course overall.

Videos generated by the lecturer are one of the most common types of video shown/provided to students in lectures/online courses. Video lectures used in Long et al.'s (2014) study were videos of the lecturer's own recorded lecture (for example, the lecturer giving lectures and slides presented to students for flipping the classroom). Of the various forms of videos, 43.1 percent of students from Long et al.'s (2014) study preferred *video lectures* produced by the lecturer (normally about 20-30 minutes with some up to an hour each) over movie lectures (31.4 percent), text format materials (11.8 percent) and webinars (7.8 percent); students found videos 'interesting, easy to follow and convenient', allowing them to follow the audio and lecturer's slides at the same time (p. 923). Hibbert (2014) states that lecturer presence in videos is important, and found that lecturers who are humorous and witty and provide examples from their professional experiences about the subject matter were reported by students as benefiting their learning. In another study, students reported that videos comprising of *PowerPoint* slides that contain text and graphics narrated by the lecturer served as "useful learning support for lectures", helping them to remember more of what has been learnt through visual aids (for example, *PowerPoint* slides) and auditory aids (for example, lecturer's narration) (Guy, et al., 2014, p. 97). The large scale survey conducted in the first phase of our OLT Project found that the availability of videos have supplemented student learning, with students reporting that videos allowed them to *see information in different ways*, (for example, accessing and downloading videos from *YouTube* and *Moodle*), and enabled them to view and/or download videos onto their desktops, smartphones and tablets for *reviewing, replaying and revising*. Students from other studies have also referred to the option to download video lectures as useful and helpful for reviewing and revisiting concepts (Guy, et al., 2014; Hibbert, 2014), and for repeating content for their own perusal (Ramlogan, et al., 2014).

Irrespective of the potential benefits associated with the use of supplementary videos in higher education, implications can emerge from the use and/or the provision of videos. Without considering the video content and other factors including lecturer presence, video duration, ways of using the various forms of videos (for example, as prompts or

introduction at the beginning or in between *PowerPoint* slides, or as recorded lectures), students are less likely to benefit from supplementary videos. Appropriate integration of videos during lectures, or the use of recorded videos as downloadable/accessible video lectures online, can better supplement course content. Most notably, supplementary videos can act as a tool for lecturers to continue to improvise their ways of delivering lecture content, and for enhancing student learning into the future.

Moving forwards

Participant advice

The respondents articulated several key ‘methods for success,’ which they noted as being simple and effective practices that were related to the success of supplementary videos in enhancing learning amongst their students.

Plan out the slides - but don’t use a script! It’s better to sound more natural. Recording the audio as you would present in an in-class lecture is best.

Make the information and examples in the videos contextualised to the subject.

Try to keep the video short - this is easier to digest and makes it easy for students to review as often as necessary.

Provide printouts of the slides - the students reported that they found it helpful to be able to annotate on the slides as they watch the video.

Don’t worry about trying to be perfect - students can find it more reassuring when it isn’t.

Institutions moving forward

- While there are a number of free applications available to create various kinds of video (for example, screen casting, animation, lecture) these applications need to be sought out from the hundreds available, and supported institutionally. However, lecturing staff are not necessarily going to be skilled in professional video production techniques or animation skills, which means that there may still be a need for funding for professional video production.
- Institutions should consider the convenience and efficiency of supplementary videos to reach and assist a large number of students when planning course and learning support systems, particularly in terms of sustainability.
- Institutions need to consider the media consumption practices of students. Students are used to consuming short videos, such as via *YouTube*, they are not used to lengthy videos. It should not be assumed that converting two hour lectures into a

two hour video will result in a better or even similar learning outcome. Guidance needs to be given to lecturers regarding the purpose of the video (for example, lecture recording, supplementary media to explain a concept, generate a discussion, remediate a skill) and its implications for the production of the video, such as in terms of length, voice, pace, visual, and supports (for example, introductions, explanations, hyperlinks to related materials, subtitles).

- Video hosting is a crucial issue for institutions. This relates to the need for sufficient storage space, but also speed of access (for example, bandwidth) as well as inter-device operability (for example, phones). In addition, functionality of video hosting needs to be considered. Not only should the video hosting be compatible with the learning management system (for example, functions to embed the video), but it should also offer the ability to 'scrub' (for example, fast forward and rewind). Students are used to engaging with social media video hosting platforms such as *YouTube* and as a consequence some thought should be given to the potential role of social media functions such as commenting and 'following'. Finally, the watching of digital artefacts such as the videos offers an opportunity for data to be collected to inform teaching staff about student engagement.
- Institutions need to consider the implications of copyright and control over content. Services such as *YouTube* offer a great deal of flexibility, inter-device operability, and social media options such as following and commenting. However, the use of third party hosting services may remove a degree of control such as who can access the media, and with potential consequences including Intellectual Property. In addition, if lecturers use their own accounts to upload the videos, then the university has no control or copy of the video content if the lecturer moves or even if they simply forget their password. The longer universities take to engage with the need for powerful video hosting services the more likely academics will increasingly turn to non-enterprise managed environments.

Resources for exploring

The following table outlines a range of available online polling technology. The list is not comprehensive; each system has been included because it has featured in the project data collection or in related literature or cases. In addition, the list does not mean to suggest endorsement. Each of the systems needs to be individually evaluated for the particular needs of the lecturers.

Explain Everything	An application for tablet computers that enables a user to create an animated slideshow. Users are able to record audio over PowerPoint slides, add images and annotate slides. URL: https://itunes.apple.com/au/app/explain-everything/id431493086?mt=8
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- Powtoon** A free program that enables users to make animated videos and presentations on their computer. A completed *Powtoon* can be exported to *YouTube* or downloaded to your computer.
URL: <http://www.powtoon.com>
- Adobe Presenter** A software that enables users to convert their PowerPoint presentations into interactive video presentations, the software enables users to capture their screen and camera at the same time and then interlay the captured video onto the PowerPoint presentation.
URL: <http://www.adobe.com/au/products/presenter/elearning.html>
- TinyTake** A free software that enables users to capture images and videos from their computer screen, annotate and share them. The software can capture up to 120 minutes of onscreen video.
URL: <http://tinytake.com>

Guides, Cases and Readings

- The website *Itali* is aimed at increasing lecturer's knowledge and understanding of the use of video in the classroom. The website, developed by the Institute for Teaching and Learning Innovation at the University of Queensland, is a comprehensive resource for lecturers interested in understanding the different ways in which video can be used for student learning. Resources include factsheets, exemplars, case studies, and discussion of more technical uses for video including 'flipped classroom' and 'MOOCs'.
URL: <http://uq.edu.au/tediteach/video-teach-learn/>

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