

Transitioning from face-to-face to 'video teaching'; supporting lecturers in developing their video teaching skills

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ABSTRACT

The research examined the support needs of a group of higher education lecturers (Tourism Team, Inholland University, Amsterdam/Diemen) to develop their 'video teaching' skills. A needs analysis was conducted including 23 interviews with staff (from director to lecturers) to establish criteria for a prototype 'video teaching' workshop. Workshop participants view micro web lectures in advance as preparation. Expert and participant feedback has been incorporated into subsequent workshop iterations. As the number of team members who had followed the workshop increased, momentum gained within the team; lecturers took initiative to develop and pre-record their own lecture content for informational and flipped classroom use. The availability of the workshop (offered from within the team), resulted in a relatively high take up rate for this voluntary activity. The team is now moving from 'video teaching' early adopters to the stage of the early majority on the technology adoption curve.

INTRODUCTION

There is a rapid and significant increase in the use of teaching through video in Higher Education (Bates, 2015; Bichsel, 2013; Hansch et al., 2015; Johnson et al., 2016; van den Brink et al., 2014). Recent research into the impact of video in Higher Education has examined the didactic effectiveness of 'video teaching' and the impact on student lecture attendance (Filius & Lam, 2010), student use of recorded lectures (Gorissen, 2013), the different viewing behaviour of students (De Boer, 2013), possible cost savings and improved study results (Martyn, 2009), the teacher experience of making web lectures (Preston et al., 2010), the optimum length of educational video clips (Guo, Kim, & Rubin, 2014) best practices for

recording lectures (Day, 2008) and effectiveness, teaching methods, design and reflection of video based learning (Yousef, Chatti, & Schroeder, 2014).

The research discussed in this paper focuses on 'video teaching' which is defined as teaching via video in which the teacher plays an active role, is visible and audible, is recorded, and where the screen presence of the teacher is an important element in the didactic process. Traditionally, teaching has been based on face-to-face contact between the teacher and students in a classroom setting and teachers have been trained to teach within this context. Once the relationship transitions from face to face contact, to contact via a digital medium, a new set of teaching skills and didactic approaches are required and this fundamentally challenges the traditional and established role of the lecturer and their relationship to their students. Many of today's lecturers, who completed their training ten or twenty years ago, have received only limited training on video teaching (Johnson et al., 2014). There are many different types of video formats that exist, each with different features and affordances. Efforts to define and categorise these formats into a logical schema are ongoing (Hansch et al., 2015; Koumi, 2014; Woolfitt, 2015).

PROBLEM DOMAIN

According to Siemens, Gašević, & Dawson (2015) 'Education technology has gone through three distinct generations of development and now a fourth is emerging'. This fourth generation includes 'distributed and digitally shaped technologies: adaptive learning, distributed infrastructures and competency models'. Greater emphasis will be placed on 'the process of 'stitching' together distributed interactions' with learners who control their preferred toolsets (p. 206). Video in education is one element of those 'distributed interactions' and is playing a role within the changing educational landscape.

This paper focuses on the challenges facing traditional lecturers in higher education as they encounter the ever increasing possibilities that technology offers them, the impact this has on their teaching and didactic approach, and how they can meet the increasing expectations of today's technology savvy students. Each development in technology has the potential to impact pedagogical practice and the importance of addressing the lack of adequate technology training combined with the impact of technology is considered an important and current subject of recent academic research (Alsofyani, Aris, & Eynon, 2013; Guo et al., 2014; Schols, 2009; Stover & Veres, 2013). Within a group there are factors that affect the adoption of new technologies, with some adopting it early, and others waiting until technology is used in the mainstream before adopting it (Rogers, 2003).

Videotaping teaching as an exercise in itself does not automatically result in better student performance. Further steps are needed to incorporate this format effectively

into the structure of the course. The concept of ‘flipping the classroom’ (Bishop & Verleger, 2013), which provides lesson content in advance of the class, can result in the lecturer finding that the ‘normal’ content of their class has already been delivered in video form in advance, leaving the lecturer with contact time that needs to be filled. Understanding the consequences of pre-recording lesson content, and the opportunities and challenges this presents, creates possibilities for interactive classroom activities and exercises to engage the students. The current research contributes to this subject by helping lecturers understand the process of video teaching, the subsequent consequences from a didactic perspective, and providing a form of support that will assist them in developing their video teaching.

Research context

The research was conducted within the tourism team at Inholland University of Applied Sciences, located in Diemen in The Netherlands. The 25 lecturers on the team have academic and teaching backgrounds combined with experience in the tourism industry. After some initial web lectures were recorded by the team in 2010, there was very limited further uptake of this technology. The goal of the research was to gain insight into the support needs of lecturers in the tourism team in order to construct an adequate form of support that will help them develop their video teaching skills.

THEORETICAL FRAMEWORK

The development of video use within higher education was examined through the lens of several didactic theories and models. A search was made for existing examples of material that support lecturers in developing video teaching skills. This search focused on websites of a selection of Research Universities and Universities of Applied Sciences in The Netherlands and abroad. Data was collected from a variety of contemporary academic, professional, industry and non-academic sources with a focus on peer reviewed articles.

The use of video within Higher Education can be examined from within the constructivist theory, which argues that learning occurs when the student is actively involved in the process of constructing relevant knowledge, and the more active the involvement, the more potential there is for learning at a more complex level. ‘The contemporary view of learning is that people construct new knowledge and understandings based on what they already know and believe’ (Bransford, Brown, & Cocking, 2000, p.10). Within this context, education can be seen as a form of dialogue at different levels between educator and student (Fransen, 2006; Laurillard, 2002) and the challenge is to find ways to use video in ways that encourage students to be actively involved in the learning process. Any media format, including video, needs to be deployed by lecturers effectively and can be used to support the effectiveness of their teaching. Biggs & Tang (2011) examine the effectiveness of teaching in the theory of constructive alignment, placing the

active construction of knowledge within the perspective of constructivist theory, that emphasises alignment to establish correlation between what is taught and what is to be learned and assessed. Hattie (2009) did not find significant increase in effectiveness of teaching through audio/visual methods (television, film, video or slides). However, using interactive video methods could have positive effects on student achievement, but many other environmental variables had to be taken into consideration. Any teaching via video needs to understand, benefit from, and encourage the 'interactive' nature of video (Laurillard, 2002).

Traditionally, technology (and the associated knowledge) has been taught as a separate 'silo' of information than those of 'pedagogy' and 'content'. The (TPACK) Technological, Pedagogical and Content Knowledge model (Mishra & Koehler, 2006) integrates the separate domains of content and pedagogical knowledge, with that of technological knowledge. By integrating these subjects in teacher training, and during teaching, a much deeper, more complex, and enriched understanding of the types of knowledge emerges. Using technology on its own is not necessarily the answer to better learning results and effective teaching. As Kereluik et al. (2013, p. 133) state, in order to have effective teaching, 'knowing the technology is important, but knowing when and why to use it is more important' and the TPACK model can help guide this process.

There is only so much information that a student can process at a given time and a clear understanding of this is important in order to match the learning capacity to the individual (Colvin Clark & Mayer, 2011). Understanding human cognitive architecture is essential when designing education which incorporates technology and the importance of guidance during student instruction has been outlined. Cognitive load is of specific relevance in the use of video in education. Mayer & Moreno (2003) propose a theory of multimedia learning and suggest nine ways in which cognitive overload can be reduced when teaching through multimedia, in order to 'use words and pictures to foster meaningful learning' (P. 43). Colvin Clark & Mayer (2011) recommend that E-learning (which includes video formats) include both words and graphics and provide evidence to support the importance of delivering information in the correct audio and visual mix, in order to create balance in the visual and audio channels of the student

Video in context

With the advent of streaming video the lesson has become 'disconnected' from a set place (De Boer, 2013). Video can be watched by multiple viewers, from

different locations, at different times. The rise of the Khan Academy¹ illustrates how 'homemade' instructional videos can fill a specific teaching need. This content files can be instantly uploaded to YouTube, Dropbox, Skydrive or other cloud servers. Increased access to efficient and inexpensive technology has made recording a video no more complex than pressing a button and pointing. Whether we like it or not, we have entered a new stage in the 'video age' in which everything can be instantly filmed including students recording their own classes (Reece, 2013; Winterbottom, 2007).

This increased use of video as a teaching medium is encroaching onto traditional face-to-face teaching in Higher Education; 'teaching with technology is inherently different from learning with it' (Johnson et al., 2016). This affects lecturers, students, Universities and Colleges and there is a need to bridge the gap in digital competencies between lecturers and students (Jacobs, 2013). Many lecturers lack adequate knowledge, support, guidance and training to integrate video technology into their teaching, either at a practical, technical level, or at a didactic, teaching level (Stover & Veres, 2013). They may also not be convinced of potential benefits, may be afraid of this new technology, or see no need to change (Reece, 2013). The possibilities offered by new technology can appear overwhelming, challenging and unsettling to traditional lecturers. There is often limited structured support offered for lecturers to develop in this context, it mostly happens on an informal, ad-hoc manner and without an adequate theoretical foundation (Mishra & Koehler, 2006). The trend of increased video in teaching is particularly noticeable in Higher Education, where many students arrive at class with one or more mobile devices linked to the Wi-Fi of their learning institution (Johnson et al., 2016).

A gap exists between knowledge and understanding for experienced lecturers who are used to teaching in a face-to-face format (e.g. traditional lectures, workshops, coaching, tutorials) and the quickly developing new technologies which seem to offer endless possibilities, but are not easy to adapt to because they require re-imagining the teaching process (Guo et al., 2014). Due to the complexity of the situation, academic resources, time available, underlying fear of change and uncertainty, there is sometimes limited momentum to change established and accepted practice. For many reasons, some individuals are not comfortable being videoed, are camera shy, or don't enjoy seeing themselves played back on camera. Within this context, traditional 'frontal' lectures (because of convenience, cost and accepted tradition) continue to remain a significant part of the delivery of learning (Gorissen, 2013) even as their effectiveness is called into question.

The low digital fluency of faculty is considered a challenge that is understood and can be solved (Jacobs, 2013; Johnson et al., 2014). Many lecturers in Higher Education do not come from a technological background and there is sometimes a

¹ http://www.ted.com/talks/salman_khan_let_s_use_video_to_reinvent_education

generational gap between the technological capability of the lecturer and that of their students (Tapscott, 2009). Lecturers may have inadequate or inappropriate technological experience, and learning how to use new technology can be complicated and time consuming (Bichsel, 2013; Stover & Veres, 2013). When a lecturer starts using video to capture their teaching (whether live lecture capture, web lectures or screencasts), they teach into a camera which requires different teaching skills and techniques than face to face contact. Filius & Lam (2010) found that a majority of lecturers they researched wanted didactic support when implementing video teaching; firstly, by seeing examples made by colleagues and secondly, from ICT support.

RESEARCH QUESTION

The research question asked: What are the characteristics of support that assists lecturers in the tourism team Inholland Diemen in developing 'video teaching'? The construct 'support' was deliberately left open in the question, with the goal of defining it during the research process. The term 'video teaching' was chosen as a broad and general term to be defined during the course of the research. This main question leads to the formulation of the following sub questions based on the three phases of design research:

Pre research – development specifications

1. What are the qualities of 'video teaching' as described by the literature?
2. What different functions can 'video teaching' have within the didactic process?
3. What is the current level of experience of 'video teaching' in the tourism team?
4. What support does the tourism team need to develop their 'video teaching' skills?
5. What opportunities are there in the current tourism course to introduce 'video teaching'?

Prototype phase

6. What are the characteristics of a support prototype that assists the tourism team to develop video teaching?

Prototype evaluation phase

7. What is the expected practicality of the prototype?
8. What is the expected effectiveness of the prototype?

METHODOLOGY

A design research approach was used in which design specifications were established, a prototype was built, tested and adjusted based on certain quality criteria (Nieveen, 2007). Design research has its origins in technical science to solve a practical problem and to add knowledge about possible solutions (van den Akker, 1999) and can be used as a tool for innovating strategy within education. The design research approach dictates that sub questions are arranged by pre-

research phase and prototype phase (van den Akker, 1999). Nieveen (in Van den Akker et al., 2010) provides an overview of formative evaluation methods to use, based upon which quality criterion and at which stage of the research. Based on these guidelines, appropriate formative assessment formats were used to evaluate the different criterion of the intervention.

A survey (open and closed questions) was held within the tourism team to establish the base level of video use within the team. A group interview and a focus group were held with colleagues within the team. A card sorting exercise allowed lecturers to visualise their preferences for support, by arranging a set of cards with suggestions on the table. 13 of those interviewed were members of the tourism team which is equivalent to a 59% participation rate in the qualitative research.

Table 1 – Stakeholder overview

Level	Code	Stakeholder Description
Meso	A	Member of Inholland Board of Directors (CVB) (1)
Meso	B	E-learning researcher Inholland, Web Lecture Expert (1)
Meso	C	Video Recording Technician, Inholland web lecture department (1)
Micro	D	Tourism Programme Manager, Inholland TM/HTRO (1)
Micro	E	Tourism Programme Curriculum Committee, Inholland TM/HTRO (3)
Micro	F	Education and Didactic Expert, Inholland (1)
Micro	G	Tourism Management lecturers, Inholland TM/HTRO team (15)
Micro	H	Video Teaching Practitioners, Inholland lecturers (not tourism) (2)
Nano	I	Student Web Lecture Researcher, Inholland student (not tourism) (1)

Table 2 Overview of research questions, methodology and stakeholders

Research phase	Question number	Research question (sub questions)	Research Methodology					
			Literature review	Questionnaire	In-depth interview	Focus group	Screening	Expert appraisal
Pre research phase development specifications	Main Question	What are the characteristics of support that assists lecturers in the tourism team Inholland Diemen in developing video teaching?	X	D, G	A-I	E, G	D, G	B, C, D, F, G, H

	1	What are the qualities of 'video teaching' as described by the literature?	X					
	2	What different functions can 'video teaching' have within the didactic process?	X					
	3	What is the current level of experience of 'video teaching' in the tourism team?		D, G	D, G	G		
	4	What support does the tourism team need to develop their 'video teaching' skills?	X	D, G	A-I	G		
	5	What opportunities are there in the current tourism course to introduce video teaching?			D, F, G	E, G		
Prototype phase	6	What are the characteristics of a support prototype that assists the tourism team to develop video teaching?			A-I	E, G		
Evaluation phase	7	What is the expected practicality of the prototype?					D, G	B, C, D, F, G, H
	8	What is the expected effectiveness of the prototype?					D, G	

Results from the interviews with the tourism team indicated a clear need for support in video teaching skills. This needed to be developed further which lead to establishing a set of criteria for a workshop. In the second stage of the research, design guidelines were outlined and through a series of formative evaluations, the prototype was evaluated based on its specific attributes (van den Akker et al., 2010). For the screening, expert appraisal and focus group, the interviews were recorded and then transcribed. Analysis involved highlighting quotations that answered the specific questions and contained feedback on the prototype. This feedback was then grouped into key feedback suggestions. The suggestions were then examined and incorporated into the second version of the prototype. The criteria for the prototype were compiled by carefully re-reading through the key points identified in the literature review, the interview transcripts, and reading through the codes and themes and selecting key returning issues. These subjects were then compiled into a list of criteria at two levels, those for the format of the support, and those for the content of the support. The criteria were listed by most important first.

Screening involved members of the design team checking the prototype against a checklist of important characteristics or components. The prototype was built directly from the set of design criteria as emerged from the interviews and

literature research. Feedback on the draft prototype regarding expected practicality was received from nine individuals; three web lecture experts (technician, didactic expert and member of the Research Centre for eLearning), the tourism team manager, and five members of the tourism team. Three experts were asked to comment on the expected effectiveness of the prototype. In addition, five members of the tourism team and the team manager were interviewed individually to comment on this. Data collected during the expert appraisal was incorporated into the next version of the criteria and the prototype.

Once the interviews were transcribed and member checked, the entire text was placed into one 'master document' of approximately 65,000 words. The processing of the qualitative data followed the guidelines outlined in Seidman (2006), avoiding any in-depth analysis of the interviews until they had all been transcribed. The text was read through to get a general outline of the meaning, with six questions adapted from Boeije (2012): What is happening here? What is it about? What is the problem? What is the person trying to make clear? What terms can be applied here? What other additional meanings can this have? During the analysis, key themes emerged and key phrases and relevant quotations were collected (Rabiee, 2004). These points were used as guidelines during the open coding process.

Based on Boeije (2012), sections of text in the 'master document' that were interesting or seemed relevant were colour coded and collected by axial coding into separate documents. More than 200 codes emerged from the open coding process. To ensure validity, two transcribed interviews were checked for coding by an individual not related to the research process and their analysis concurred to a high extent with that of the researcher. Each code was given a number and name, and the TPACK model was used to support the development of a coding paradigm. Each theme was linked to one of the eight knowledge categories in the TPACK model (Technological, Pedagogical, Content, TP, PC, TC, TPC, and finally Organisational/Context). These codes were initially axially coded into 21 themes, or central phenomena. In the case that there were opposites (different aspects of one theme), the codes were split into pair 1 and pair 2. The text of each theme was then compiled into 21 separate word clouds² which highlighted the 50 most frequently occurring words per theme. This enabled the large amount of text to be sorted, distilled and presented in a visual manner to assist with coding and interpretation. Based on the word cloud and feedback from the two individuals, the set of themes and codes were re-examined and selectively coded (combining, simplifying and rearranging the categories and finding connections between them) which reduced the number of themes from 21 to 7. Each of these themes was then

² www.wordle.net

described with a proposition, a short explanation of the key elements of the theme and supported by illustrative respondent quotations.

RESULTS

The following seven themes emerged from the qualitative data analysis. A supporting quotation is added per category to provide context:

1. *The transition point between old and new teaching*: ‘I think [the new form of teaching] does affect [teachers]. In a way I can’t quite grasp yet. So, if as a teacher, you start thinking whether web lectures is a good idea. You need to focus on what it adds, or what it enhances, or what it replaces.’
2. *Changing interactions between lecturers and students*: ‘However, what I am a little bit afraid of is missing the interaction with the students.’
3. *Web lectures and teaching approaches*: ‘We are not actors, you know.’
4. *Opportunities for lecturers to improve*: ‘But when the teacher sees their recording, they want to improve themselves. Because of this process, teachers reflect on their own teaching.’
5. *Content selection for video lectures*: ‘And if you make web lectures, they need to be sort of general. Because if your project or your assignments change every year again.’
6. *Technology and its impact on the teaching process*: ‘It is not like it is a very easy thing to record a web lecture. And it should be made more accessible, easier. Also from a technological point of view.’
7. *The educational organisation, resources and support*: ‘If you have this static information at some point, then you need less contact time for lectures. So there is your money.’

Lecturers indicated a preference for different types of support to learn video teaching. The group prioritised workshops, training and viewing pre-recorded web lectures, handbooks, scenarios and instructional video. Peer feedback, coaching sessions, and facilitating opportunities to make web lectures were considered less important. The lecturers saw many opportunities for video teaching in the tourism curriculum. Before committing time to video teaching, it was considered important to check what video content already exists, other previously recorded web lectures or on-line clips. Staff expressed openness to trying out video teaching, though a couple of lecturers made it clear this was not something they wanted to embark on.

Criteria for the first prototype

The themes and lecturer preferences for support resulted in a set of design criteria for a series of small-scale workshops, with a series of supporting web lectures to be prepared in advance, that would address the concerns and questions raised under the seven key themes above. Feedback on the first set of criteria and expected

practicality of Prototype 1 was collected from a total of nine lecturers and experts. The concept of Prototype 1 was positively received:

‘So I think that is great. A workshop with the team, practice a bit with video, maybe a flip. Get some tips, do’s and don’ts how to make it interactive. Also good for yourself, a boost, wow I did it. If you do get a workshop, then [team manager] will say everyone has to make one video. I think it really works for your own didactic. Also feedback. [...] I think it is the right format.’ (participant D)

However, three workshops were considered too complex which resulted in an adjusted Prototype 2. This outlined one workshop of two hours. The workshop was supported by five web lectures to be viewed in advance by participants, as preparation for the workshop. Each of these web lectures was designed based on criteria outlined in multimedia theory (Colvin Clark & Mayer, 2011). The web lectures (length in minutes) addressed the following subjects:

- 1-Introduction to workshops (07:20): Explanation of learning goals and structure
- 2-The truth about web lectures (09:24): Some misconceptions are addressed
- 3-Making friends with technology (06:35): Feeling comfortable with technology
- 4-Making your Power Point (10:02): practical guidelines on multimedia theory
- 5-Web lecture interface (10:56): Technical issues and options for the web lecture.

In the workshop format, a maximum of four lecturers would each record a five minute practice web lecture, while being watched by the other lecturers. All recordings would then be viewed back, the lecturer could reflect on their own recording and receive additional feedback from their colleagues. As of January 2016, seven workshops have been run for staff in the team and just over half the team had participated in the workshop. After each workshop, participants completed an evaluation and this feedback was integrated into the next iteration.

DISCUSSION

The research presented in this paper examined at a micro level, the needs of a specific group of lecturers, within a specific context, regarding their preferred format of support to develop their video teaching skills and to take the first steps into teaching with and through video. The workshop has gone through various iterations and has generated a rich and intimate learning environment with opportunities for critical self-reflection and professional development.

Since the research began in 2013, the general level of acceptance of this subject within this team has changed significantly. Initially there was considerable fear regarding the unknown elements of the new technology and the uncertain impact it might have on the lecturer and their relationship with their students. By participating in the video teaching workshops, the idea of recording a web lecture

no longer seems strange. The discussion in the team has moved from ‘how do you make a web lecture?’ to ‘We need to make a web lecture for that subject’. A group of established lecturers have come into contact with a teaching approach that uses technology and video recordings to create new didactic opportunities within the teaching environment.

In 2015, Inholland began a pilot to assess a version of the video recording software in which lecturers could record their own web lectures, from their own computer, without the assistance of a technician or needing to book studio space. This research has focused on the transition from face-to-face, to video teaching. Areas that can be explored further include creating didactic strategies to embed the video teaching effectively into the course structure and evaluating both the student response to these formats, and examining learning effects.

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