Multimedia and the docuverse of law: learning and the representation of knowledge

The docuverse is but one slice through this virtual reality, on the axis of media, at the point marked "text." Here lies the dream of the universal library--every word ever recorded knit together in a mosaic of knowledge, just waiting for the holy command to bring it forth. This is the ultimate manifestation of a primal will to closure. The move to cyberspace reifies, as Benedikt has noted, the age-old desire for the Heavenly City, "its radiance like a most rare jewel" (*Revelation* 21:9). After coming so far, we still find ourselves looking for an Eden, a Xanadu, no less fervently than before.
(Keep, McLaughlin and Parmer, 2000)

Introduction

The last two chapters have described, *inter alia,* how ICT can facilitate transactional learning in legal education across an entire curriculum. Such learning depends, as we have seen, not just upon doing transactions, but on the quality and depth of support from staff, and the student collaborative environment built around the transaction. It also depends upon the placing of digital resources around a transaction so that students can use materials to guide their learning within a transaction. This chapter explores the design, implementation and use of such digital resources to support transactional learning. It involved the creation of resources that would not merely enable students to understand law conceptually, but would enable them effectively to transfer that learning to practical, transactional activities. Transfer of learning is always difficult for students, as well as problematic for curriculum designers; but it is essential if a transformational curriculum is to be achieved.

This is particularly true of areas where students have no or very little substantive knowledge. There are some areas of the Diploma curriculum where students have no almost no basic existing legal knowledge to draw upon, and where resources such as small-scale web pages cannot encompass the extent of the information that students need to negotiate. Two key subjects where this is the case are Criminal Court Practice and Civil Court Practice. In Scotland, many students do not study procedural or adjectival law in their undergraduate LLB, and therefore modules in both procedural knowledge and relevant advocacy and plea-drafting skills are mandated by the Law Society of Scotland as part of the Diploma curriculum.[1]

In the past both classes had been organised around traditional curriculum lines, with sets of formal lectures on criminal and civil procedure, seminars based largely on skills acquisition, and end-of-year examinations on procedural knowledge. Following Barnett, Eraut and many others who rightly criticise the invidious separation of theory and practice, we decided to redesign the modules to merge conceptual, skills-based and attitudinal learning as much as possible. In Civil Court Practice, therefore, we carried out a three-year plan that is gradually transforming the subject. In the first year (2003/4) we created a set of online and CD resources that replaced entirely both the Criminal and Civil face-to-face lecture series. These resources included texts, graphics and multimedia units on plea drafting and advocacy structured around video lectures. In the second and

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[1] See http://www.lawscot.org.uk/training/Diploma.aspx

third years (2004-6), in a two-stage implementation, we created within Civil Court Practice the transactional Civil Court Action (CCA), the background to which has been partly described in the last two chapters.[2] This chapter will focus on the resource base that largely replaced the Criminal and Civil lecture series, namely the set of online and CD resources. I shall describe the Civil Court Practice resources, especially the video lectures, explore some of the theoretical context, the implementation of the video lectures, some of the responses from students to our innovation, and sketch out the development of such tools in the next five years or so.

It may seem perverse to take as an item for analysis something that is often seen as a cheap substitute for a highly traditional form of teaching (Friere, 1972 p.45-6).[3] But if video lectures were only talking heads they would be tedious, and would be perceived by students as poor substitutes (however accessible) for lectures. From our work over the past three years it has become clear to us, though, that video lectures, when used in appropriate virtual learning environments, can do more than provide cheap lectures on the web. The profoundly different medium of the web transforms the student experience of learning. Such claims are not new, of course: the media of radio, TV and video were in their turns going to do something similar when first introduced, but have had, in the UK at least, relatively little impact on learning in HE. Learning with e-resources, however, is different in a number of respects.[4] Put simply, the relative ease with which audio, video and text can be spliced, the accessibility of information, and the environment within which knowledge can be constructed is significantly different from the experience, *la durée*, as Bergson has it, of paperworld study environments.

Our interest in video lectures goes back over four years.[5] Since then, we have completed over 30 separate projects, spanning both undergraduate and postgraduate legal education and ranging from one-off lectures to entire

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[2] The CCA was written by Karen Barton and Patricia McKellar. Technical design and implementation was carried out by Scott Walker and Michael Hughes of the Learning Technologies Development Unit, within the GGSL.

[3] At first glance video lectures seem to be the digital equivalent of Paulo Freire's famous banking analogy:

> Narration (with the teacher as narrator) leads the students to memorise mechanically the narrated content. Worse still, it turns them into 'containers', into receptables to be filled by the teacher. The more completely he fills the receptacles, the better a teacher he is. […] Education thus becomes an act of depositing, in which the students are depositories and the teacher the depositor. Instead of communication, the teacher issues communiqués and 'makes deposits' which the students patiently receive, memorise and repeat. This is the 'banking' concept of education, in which the scope of action allowed to the students extends only as far as receiving, filing, and storing the deposits (Friere, 1972).

However as we shall see, the reality of student use was quite different.

[4] As Garrison and Anderson (2004) put it, 'electronic communications technologies, with their multiple media text, visual, voice and their capacity to extend interaction over time and distance, are transforming teaching and learning'.

[5] As we saw in chapter 5, the graphical tradition in legal learning is an ancient one. In the US, Alfred Reed's report on law schools (cited in Stevens, 110, n.79) contains an entertaining description of early AV in US legal education:

> Unhampered by scholastic tradition, [Mr X] has devised a new method of legal instruction, rendered possible by his ingenious discovery that legal definitions can be printed on pieces of celluloid with an ordinary typewriter. Throwing these definitions on a screen by the aid of a magic lantern, he supplemented these exhibitions, held two evenings a week, by running comment, and so appealed to eye and ear at once. Strangers, in the town of M. [California], making a round of the moving picture houses, took in his show along with the rest, thus establishing the value of this pedagogic innovation. At intervals, typed sheets, containing such questions as 'Define the difference between a nuncupative and an oleographic (sic) will' were distributed as tests to the students.

(Reed, 1928, p.73, n.2)

modules.[6]   Video elements were already being experimented with in different learning projects – in our intranet, and in the virtual firms that we used in the virtual town of Ardcalloch. We had already begun the process of working with video in our Foundation Course multimedia CD, and we had learned how to use videotape excerpts to enhance student learning in combination with on-screen text over a variety of professional legal skills. We knew from extensive student feedback on this course as well as the literature that the combination of on-screen text and video was a powerful learning tool in the acquisition of professional legal skills.[7] But could the environment be adapted to enhance the acquisition of more conceptual and rule-based knowledge, and facilitate its transfer to transactional projects?

The first video lectures were single interventions, simple video windows containing talking heads which were synchronised to static PowerPoint slides. It soon became clear that we needed to rethink the environment which could become crowded and confusing. We were also aware that we needed to redesign the complex interface between video and resources, for the early video lectures were highly monologic, with meagre resources surrounding them. In other words, we were gradually moving from a presenter-centred event to a user-centred event, where more control was given over to the user, and where the sophistication of the interface matched the complexity of other learning events in the module, eg seminars or the transactional project, as these built up over the course of the syllabus. We learned many valuable lessons from the early video lectures, but we were aware that there was still a lot to learn. This was particularly true because while there is a rich and growing literature on the development of multimedia, there is little in the way of substantial research on the use of video lectures. As Baecker has pointed out, video lectures have generally been seen as a fairly uninteresting element of the learning environment, and 'typically viewed as an ephemeral one-way broadcast medium' (Baecker *et al,* 2003, p.896; see also Baecker, 2003).[8] We were interested in investigating the use of video lectures as part of an integrated study tool, where images and text are used to provide what we hope is a flexible and powerful environment for study. With the initiation of two large-scale video lecture projects in Civil and Criminal Procedure in the Diploma in Legal Practice the opportunity was presented us to research the use made of the video lectures by students.[9]

Research literature and design

A literature search revealed research on video lectures, but surprisingly little directly relevant research into video lecture design and usage in legal education.[10] Video lectures have been used, but there has been little commentary on its design or on the effects it has had on learning and teaching, or on assessment results. That such research is required is beyond question: the video lecture is

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[6] In addition the LTDU also act as consultants to others wishing to use this technology. For example our code and consultancy based upon it was the basis for the development of the College of Law's i-tutorial initiative on their LPC.

[7] See Maharg (2001).

[8] See also Knowledge Media Design Unit at the University of Toronto, and his homepage at http://kmdi.utoronto.ca/rmb/ (accessed ????)

[9] For more detail on the methodologies used in the project, see our longer paper at www.ggsl.strath.ac.uk/ltdu/research. This paper also provides much more analysis and feedback on issues such as accessibility and management of resources, forms of learning adopted by students and the like. It also contains in an appendix a list of all video lecture projects then carried out with the Glasgow Graduate School of Law (the list has since extended considerably).

[10] Searches were conducted using ERIC (1990 – 2004); the Multimedia Research Bibliography at University of Sydney (http://www.iml.uts.edu.au/learnteach/resources/pubs/mmpubs.html) (accessed????)

not, as some have termed it, a talking head on the web. It is a completely different communicational environment, where perception, language, meaning and memory are affected by many different factors (Baggaley, 1980).[11]

Even more important is the general issue as to whether there is any evidence that specific forms of hypermedia or multimedia can improve student learning. The evidence appears to be conflicting, not just because the question of 'improvement' is a complex one, but because the conditions under which multimedia applications are developed and used, and the comparators against which they are rated by researchers, are different in each study. The meta-analysis of research findings by Dillon and Gabbard concluded that benefits from using multimedia are limited, though they did note that the power of multimedia to scaffold knowledge and cue it for the less able student is a strong advantage (Dillon and Gabbard, 1998).[12] The meta-analysis by Liao presented conflicting evidence, with a majority of studies proving that multimedia can be more effective than traditional instruction (Liao, 1999). However a sizeable minority of the studies (ten out of 35) showed the opposite. Mousavi, Lowe & Sweller (1995), for instance, claim that the presentation of difficult concepts to learners in both auditory and visual modes can enhance learning more than if the information is presented in one mode only.[13] A year later, a further and more detailed meta-analysis by Liao, this time of 46 studies, confirmed his earlier conclusion but cautioned that the form of multimedia and the form of traditional instruction being compared is critical to any evaluation of learning gain.

The most recent studies relevant to video lectures stemmed from medical education (Martin 1999; Maggs 2001). A review of the medical literature *post*-1979 conducted by Wofford *et al,* (2001) concluded that a computer-based lecture 'should be no less effective than a traditional lecture', while acknowledging the difficulty of randomised controlled trials and true comparison groups in testing that effectiveness (466).[14]

Our research project took account of these studies; but comparisons with what might be termed more 'traditional' forms of instruction were not the aim of the project. Instead, we aimed to investigate the
1. *variation* in student learning
2. *quality* of student learning on the two procedural courses

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[11] Baggaley, for instance, has shown that small differences in camera angles (horizontal and vertical) and shot can have quite significant effects on our perception of the speaker and what is said by him or her.

[12] They highlighted three conclusions:
1. hypermedia is useful where users have specific tasks that require searching through lengthy or multiple information sources
2. increased learner control over access and use is differentially helpful to learners according to their abilities and learning styles
3. the interaction of learner style and hypermedia environment could account for the confusing results in studies. What seemed to be important was that the explicit cueing that could be built into hypermedia aided passive learners, while deep processing learners benefited from exploring and using the extensive resources available in such applications (349).

[13] This was confirmed by Mayer, but only for a small group of users with little prior knowledge of the content to be learned and high visual abilities. Nevertheless it points to interesting findings regarding the place of dual channel presentation of information. Note that their propositions are one set amongst a number of design theories useful in the design and implementation of any multimedia learning environment.

[14] This finding was confirmed by other studies. Williams *et al* (2001) found no difference in knowledge acquisition after testing two groups of students, one learning from a structured lecture and the other from a computer-based learning application. Spickard *et al* (2002) concluded that an online lecture is a 'feasible, efficient and effective method to teach students'. In a later trial Spickard *et al* (2004) confirmed the learning value of audio-feed with PowerPoint slides within an online lecture environment.

The aims were of course influenced by the project methodology, which was phenomenographic in nature. We tracked variation and quality in learning using the following instruments:
- Selection of 11 students to track closely throughout the year
- Students filled in and submitted weekly logs when they used the resources
- Focus group discussion late in semester one
- Individual interviews in early/mid semester two and post-examination
- Questionnaire issued to the group of students
- End-of-year evaluation data derived from whole-year cohort

Qualitative responses were coded into themes by two raters, with relatively high inter-rater reliability (70%). Over one hundred pages of qualitative data were collected – too much to discuss in depth here. Instead, I shall highlight a number of the themes that arose, and comment on them. Before this, however, a brief description of the learning environment and its design process is necessary.

Design of the video learning environment

There is, of course, a substantial body of research into multimedia design and the basic assumptions and principles of best practice.[15] Three widely-accepted assumptions underpinned our work: first, the dual channel assumption (that there are two separate information processing channels – visual/pictorial and auditory/verbal); second, our limited capacity for cognition through each channel; and third, that learning is an active process in which the learner processes information, integrates it with prior knowledge and experience, and uses it to form expectations about future information.[16] Following on from these are a number of design principles to enable more effective learning:

1. *Multimedia*: use of multiple representations of information, eg pictures as well as text
2. *Contiguity*: information sources should be close to each other on the page or screen, both in space and time
3. *Redundancy*: information that is repeated unnecessarily tends to inhibit learning
4. *Modality*: pictorial cues + spoken narrations tend to increase learning than pictorial cues + on-screen texts
5. *Signalling*: coherent structuring of information, containing clear signals to the user
6. *Interactivity*: students can interact with and control the resources to be learned
7. *Personalisation*: users learn more effectively in a conversational milieu than in a more formal learning event
8. *Pre-training*: users should be given brief training in the use of the application
9. *Adaptivity*: user traits should be considered in the design of multimedia resources, including such factors as prior knowledge and working memory.[17]

These principles are standard and accepted across the industry, but many aspects of them are still the focus of fundamental research, as we shall see. They are useful guides to basic practice, but where justified, we have departed from them in our larger aim of supporting the learning that students require to carry out if

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[15] For some of the principles arising from this research, see Paivio (1986); Chandler (1991); Sweller,(1988); Sweller *et al* (2001). For cognitive load theory, see Sweller (1988 and 1994). For multimedia theory, see Mayer, (1997); Mayer and Moreno (2000). Moreno and Mayer (2000).
[16] See for example Mayer and Moreno (2003).
[17] For references to most of them in practice, see Mayer (2001); Clark and Feldon (2005); Bodemer *et al* (2004)

they are to understand civil procedure as a set of interlocking concepts, rules and events, and therefore the procedure involved in the transactional project.

More specifically, our environment had to take into account two key requirements. First the substantive complexity of civil procedure had to be presented coherently. Second, the environment needed to provide students with different ways of accessing, understanding and memorising the materials to be learned. As Tulving pointed out, retrieval cues need to be provided along with the information that is being learned (here, semantic knowledge), if learning resources are to be effective (Tulving, 1972).[18] The problem for us was to provide information structures that could do both (Clark, 1998). In the first phase of the design process we aimed to support learning in tutorials, and to enable students to gain a basic understanding of forms of civil procedures in the Sheriff Court in Scotland. We planned out 'levels' of information: at the core of the application was the video lecture, with succeeding layers of information (see Figure XXX). Within each layer, information was clustered on the contiguity and adaptivity principles mentioned above: which information would a user be likely to reach for, and to what purpose. Such decisions inevitably involved us thinking about the tasks that users would undertake (bearing in mind their role-play assessments in advocacy, their pleading-drafting examination and examination in conceptual understanding of civil procedure).[19] The design followed best practice in human-computer interface design; but we were also concerned that the interface should be elegant and pleasing to the eye as well as usable.[20] The process began around nine months before the start of the academic year in which the video lectures would be used. The environment we subsequently created was available both on CD and online on GGSL computers. Students were still required to attend a series of ten weekly seminars in groups of approximately 12-15.

Civil Court Practice video lecture environment

When students open the CD or webpage to enter the video lecture learning environment they are given a menu of options:
- *Video lectures*: This includes not only the video lecture lectures but also the external resources
- *Handbook*: The students are given an online copy of the handbook they receive in paper copy form with the CD
- *Advocacy multimedia unit*: This unit shows the student how to approach court hearings through role play and short activities.
- *Drafting multimedia unit*: This unit takes the students through the process of drafting the initiating document in a civil court action and gives the students the opportunity to practice the skills themselves.
- *Assessment*: This section gives students information on the assessment for the module together with interactive objective questions for formative assessment.

Figure XXX shows a typical video lecture page for Civil Procedure. The environment includes: the talking head, synchronised downloadable power point slides (which include text, images, diagrams and other imported materials)

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[18] Semantic knowledge is the function of long-term memory to store knowledge of facts and concepts as well as the meaning of words.

[19] Note that at this stage, the CCA transaction had not yet been implemented. The transaction was planned and implemented in the following 18 months.

[20] This process included consideration of artistic elements such as relationship between background & foreground, fonts, colour, shape, overall look and feel, and much else. Students would be spending a fair amount of their time looking at the screen, and we wanted the interface to be restful, inviting, cool. See Thalheimer (2004) and ERIC Digest

volume control, section headings which are linked with the speaker and slides, lecture number and the ability to return to the complete lecture contents menu, the length of time the lecture will take and a timeline which allows the students to scroll through the lecture to particular points

Students can listen, pause and review a video lecture as often as they like. Each video lecture was quite deliberately split up into appropriate section lengths according to topic. Video lectures allowed us to move away from the traditional 50 minute slot into divisions based upon topic and sub-topic hierarchies: one lecture is only 20 minutes long while another stretches to 2 hours and is sub divided into 8 mini lectures. In Fig XXX, for instance, users can search the section categories; and they can use the timeline at the bottom of the page, for scanning within a category.[21] They can thus access the video lectures systematically, or they can use the timeline as a form of speculative searching or 'bricolage' (Turkle, 1995).

Students are also able to access an external resources menu from the 'information' icon to the right of the video window. This will draw a panel over the full screen which can be accessed while the speaker is talking or while the video is paused. This page's menu includes:

- *Web links*: This takes students to the web page for the course which contains a list of relevant web sites which can be constantly updated by the technical support staff. There is a discussion forum for the course on the web page.
- *Statutes*: A full list of the statutes referred to in the course as web links or pdf files.
- *Ordinary Cause Rules*: Full text of the main statutory rules
- *Bullet-point slides*: These are downloadable
- *Cases*: A list of all the cases referred to in the lectures and many others
- *Westlaw*: A link to the authentication page
- *BAILII*: (British and Irish Legal Information Institute)
- *Documentation*: The documentation is subdivided into the different court procedures covered and includes the statutory templates together with examples of style documents. There are also photographs of items not readily reproduced in digital format, and a flowchart.

So far we have outlined the general background to the video lecture initiatives. We shall now consider some of the data we received from the research project participants under a number of the themes that arose from their data.

Integration of resources

The literature has shown convincingly that dual-encoding of information (for example by video and text) can enable more effective learning than single-channel encoding, eg text. But in order for any video lecture environment to work effectively there must be a convergence of all resources – the sense of well-organised, seamless knowledge management that supports cognitive development. The theme itself is an ancient one, as we have seen in chapter five, where integration of image and text was important to the act of reading and understanding. The integration need not only be of text and image but of other

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[21] For the role of categories in searching, see 'Strategies for Categorising Categories'. Available online at: http://world.std.com/%7Euieweb/Articles/strategies_categories.htm. Timelines are obviously useful devices for video lectures, but they are also excellent textual designs. For an excellent general introduction to the field of data representation see Friendly and Dennis (accessed needs to be entered into endnote????). For detailed exposition of the medieval background (outlined in Friendly & Dennis) see also Carruthers, (1998).

genres and channels as well.[22] And however grandiose the Wagnerian analogy might be, there is about well-designed multimedia a sense of complex and interweaving *leitmotif* in visual design, placing of graphics, organisation of text, control of textual register, interweaving of sound and video, and much else.

Matching task to environment is critical, and we had to take account of user purpose as well.[23] As we struggled with this, it became clear that there were deeper issues involved. The design task circled around not just navigational principles, but informational and indeed epistemological issues. As Dillon & Vaughan point out, the typical navigation metaphor of multimedia design actually 'sheds no light' on how students create a 'map of semantic space'; nor does it clarify the real heart of the issue, namely how to help users integrate information design with semantic knowledge (Dillon & Vaughan, 1997). In order to do so, users need to develop what they do almost without thinking when they read texts – namely, construct a sense of the informational structure of the environment. The key to this is what Dillon & Vaughan call 'shape' – the development within the user of a sense of genre, a developing sense of informational schema that is part knowing the types of information present, and part knowing where the information is, and how it links up. The rhetorical structure of the information thus needs to offer cues for retrieval of information, as Tulving pointed out. Indeed, we can take Tulving's conclusions a step further, and say that students needed cues to find and retrieve information in the environment, as well as retrieving items from memory.

Genre is a good metaphor for design principles of the textual resources within the environment, but it does not quite address the problems presented by a video lecture. Unlike a book, a video lecture is performative, and dynamic in the sense that it moves through time. As a result, there are aspects of it that are simply not defined by genre-modelling. Instead, it is more fruitful to think of at least the video lecture elements as a film-script. Our narrative was civil procedure – a conceptual narrative, based on the chronology of the trial process. It was both a cinematographic representation of knowledge, and a textual display. The problem, as with all filmic narratives, is the decision regarding how much information needs to be available to the viewer or user. It is as impossible to show all information to the user at once as it is to shoot a scene in a film without some objects being occluded by others within view. Such occlusion is a necessary part of our perception of reality, and a necessary part of learning knowledge for the learner, so as to focus on what is to be learned.

We tried to find a balance where resources were easily accessible but not intrusive. If the screen becomes too busy, the relative proportions of any single knowledge object become confused amidst the mass of information. Resources should be present without being invasive, and their positioning became an important issue for us. Certain aspects of this gave us more problems than others. For example students welcomed visual aids and prompts which gave them an overall picture of the procedure – a form of aerial perspective shot:

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[22] See for example Richard Wagner's early essay, 'The Artwork of the Future' (1849), where he discusses his concept of the Gesamtkunstwerk 'Total Artwork' that combines song, orchestral music, poetry, visual art and dance into one experience. For him, opera was the form most suitable for this type of experience. For F.T. Marinetti writing his Futurist Manifesto in 1916, it was cinema that held the promise of integrating all arts into one form. In the early seventies, for Alan Kay working at Xerox PARC (Palo Alto Research Center), the first PC, called the Dynabook, would provide text, animation, images, sound – hypermedia. See the interesting exhibition of Jordan & Packer (2000) (though rather bizarrely the exhibits start at Cro Magnon cave paintings and leap to Wagner, missing out all intervening cultural episodes…)

[23] The variables involved in this design activity are quite complex; and to accommodate them we adopted an evolutionary approach to the environment. We have built as best we can for particular user purposes, and the following year's integration takes account of the previous year's project data. For a discussion of evolutionary approaches, see Spool, (accessed????).

'what would be most useful to me is a map of how these procedures actually work. I still can't see, I can't absolutely visualise the situation in which you would go to a proof before answer as compared to a debate. That's not absolutely clear to me yet. I think I just need to see that written down'[24]

What was interesting about this and other comments was that there was already in the resources section a comprehensive flow chart of civil procedure. Some students – like the one quoted above – never found it. Other students became aware of the flow chart through other routes:

'I took [the flow chart] to tutorials actually and quite a lot of people noted and [said] "Where did you get that?"'

Clearly, we needed to re-think the integration of this particular resource. In analysis of the feedback it became clear that there were also more profound issues of how new knowledge was assimilated into prior structures – a point we shall address later in the chapter.

For most of the students we tracked, though, the integration of seminar, video lectures and textbook worked well:

'I think… the Civil video lectures are linked well to the tutorials and I feel they also link well to [the core textbook] because …there's a lot to grasp with procedure especially if you are not used to it and you do need it reinforced …what is good is that I feel that they do link up'

Some of the civil tutors made good use of the video lectures within the tutorials:

'every week [the tutor] pulled out the small manual and said you have to watch 3, 4 and 5 so we knew exactly for next week he was going to be discussing video lectures 3, 4 and 5, for example. […] The system works if it's followed.'

Some tutors, though, were not as diligent in this respect:

'[Our] civil tutor was completely unaware of what we doing. At the start of every class we had to tell him what we had covered. There was a lot of repetition, like he was going over a lot of what we had already covered in the video lecture instead of maybe explaining stuff a bit further that we were having difficulty with.'

'I would have liked my Civil tutor to have had more contact with the lecturer or my Civil tutor to have watched the video lecture and Criminal as well. A kind of lack of "joined-up-ness"'

The issue was a serious one, for it was clear from student feedback that transfer of learning from video lecture to transaction was easier if tutors were able to point up the links. This issue of integration was discussed with tutors at the end-of-course meeting. One solution considered was a set of online Q&As, with feedback linking directly to specific video lectures – a resource which we have since designed and implemented. Another one was a set of short questions to be available for tutors to discuss with students at the start of tutorials. Tutors also suggested that in order to assist students see the link between lectures and tutorials a short time could be set aside at various points to review procedure examination questions. Not only would these activities assist in integrating the video environment with the face-to-face seminars but would also serve as a prompt for students to watch the video lectures.

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[24] All student comments quoted with permission.

Flexibility and portability of use

The single most attractive feature of the video lectures was their flexible nature and ease of access. In our project group of 11, even the single student who would have preferred face-to-face lectures accepted that video lectures had this advantage. As one student put it,

> 'I find it a hassle coming in [to the GGSL] to study. Apart from
> train times which are pretty unreliable from where I stay it's
> just I study a lot better at home. I can get up early and study
> all day and go to my work and come back and study so I used it
> at home.'

When asked to think about whether they might use the video lecture environment in their traineeships, most students considered the portability of the resource to be of significant benefit:

> 'It's great. When I start work in September I can take the CD with me and
> if there is anything they ask me that I am not sure about then I know where
> to check and that's super cos, you know, when you look at you own lecture
> notes eight months later *I* don't even know what [they say] never mind
> what it is supposed to mean. So it's great to have that as a tool I can use
> for coming years. I never expected anything like that.'

> 'Video lectures are excellent because you can go back to them
> oh my goodness what was the procedure for the options
> hearing? Of course there are books you can do that but [the
> environment] is a very student friendly environment and doesn't
> assume a particularly high level of knowledge'

> 'You know, after the summer holidays I kinda wonder how much
> of this I'm going to remember. It could be a year down the line
> before I'm ever doing any Civil Court work and a lot of that will
> be forgotten. And it will be good to have that to go back to and
> be reminded, just again, even from just a confidence point of
> view, of the sort of way the court cases are carried out, even if
> it is just that. Then again video lectures are excellent because
> you can go back to them …"What was the procedure for the
> Options Hearing?".'

> 'When I go on and do my traineeship you've got those materials
> there and it is not a case of finding the box under the bed where
> your lecture notes were stored 6 months previously… I have got
> something I can take into work with me and use on the
> computer. So it has been more than just a set of lectures it is a
> whole resource I can use for other things.'

Students recognised the problem of updating but still saw the CD as an excellent resource:

> 'if you had a feature on the C that linked up to the Internet that would be
> great because if I am watching that in a year's time there might be
> changes that have happened.'

Presence and absence

Social presence and image

There is a considerable literature on the subject of social presence in electronic teaching learning, but the great majority of it focuses on the social factors in techniques such as tele- or video-conferencing, discussion forums and largely in the context online distance-education.[25] A number of researchers have developed tools to measure social presence.[26] The concept is still a contested one, though, and it would therefore be useful to define what precisely we mean when we talk about social presence within a video lecture. Rourke *et al,* (2001) considered the subject, starting with Mehrabian's concept of 'immediacy', which he defined as 'those communication behaviours that enhance closeness to and nonverbal interaction with another'. Note that Mehrabian defines enhancement of communication by means of two factors – 'closeness' and 'nonverbal interaction'. We shall see that even in a pre-recorded video lecture, where there are no synchronous or asynchronous modes of communication associated with the video lecture, these two elements were important, and had an effect on student attitude to the two environments.

Nonverbal interaction: the conversation with the camera

Even within the highly restricted context of the video lecture talking head – and perhaps because of it –nonverbal elements of the speaker's behaviour are heightened. Camera angles – horizontal and vertical – affect viewer perception. A low angle (looking up at the subject from below) tends to make the subject look powerful or dominating. When combined with a full-frontal presentation of the subject's face, and steady gaze, the effect can be intimidating, even though the subject does not intend this (McCain, Chilberg and Wakshlag, 1977).[27] Camera angle can even have an effect on a viewer's memory for pictorial events (Kraft, 1987).[28] We discovered much of this for ourselves when we experimented with the early video lectures prior to the full-course video lecture environments.

In addition to camera angle, eye-gaze, tone of voice, diction, relative speed of delivery, attitude of head and shoulders to the camera, dress – all these have an effect upon the viewer, as students pointed out. When asked what it was they liked about the presentation style of the civil procedure presenter (Patricia McKellar), they often drew attention not just to her style of talking but her way of structuring knowledge in her manner of delivery. They thought her delivery 'natural', and equated it with conversational ease:
>	'Patricia's [presentation] felt more real, obviously not reading from notes.
>	[…] [it] was a lot easier because there was a lot more fill-in words and so
>	it was much easier to follow.'

She achieved this because her presentation technique appeared unscripted, she frequently used second-person address, she varied facial expression depending on the content of the point she was making, and her gaze wandered discreetly from the camera and returned to it, as can happen in real-life conversation, and

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[25] The classic early study on social presence was Short *et al* (1976). Their work is based on the premise of one-to-one communications, but their work is important for video lectures to the extent that it emphasised the contribution of the visual image to social presence. For work on social presence in email, see Sproull & Keisler (1991); Gunawardena & Zittle (1997). For an update on Short *et al* in the field of teleconferencing, see Egido (1990). For a more recent review of research, see Williams (1997)

[26] See for example Tu (2002).

[27] See also Mandell and Shaw, (1973). For a general survey of the research, see Messaris, (1997). For an interesting application of rhetorical reading of images, see Kress and van Leeuwen, (1996).

[28] Kraft, (1987) note that this study focused on memory for pictorial events, rather than for textual events.

rarely occurs when, for instance, newsreaders read the news.[29] In other words her presence humanises not only the subject-matter, but also the medium.[30]

Closeness

Was there an 'affective response' by the students to the video lecture presenters? The phrase is used by Rourke *et al* (2001) to describe qualities such as 'warmth, affiliation, attraction, openness'. Rourke *et al* point out that according to filtered-cues theorists these qualities are reduced in text-based environments, but attain a higher profile when they are embodied within expressive images of people.[31] At least half of the students were affected by the images of the video lecture presenters they had in front of them. One student put it thus:

> '… it's always there and it's not just a text or a book that you have got because it is someone else sitting there talking to you. It's kind of comforting in a way as well, because they know what they are talking about, you can't misread it. '

One student referred in particular to the aural quality of presence:

> 'I think that intonation as well was really important to me. Just reading something, you can read it, but the intonation I found really helpful. That was why I did go back over not just my own notes [for the exam] but actually watch it again because there is emphasis in important places and that is so important. Also you don't want to end up completely isolated with no… I know video lectures are not very interactive anyway but they are much more interactive than reading a script.'

The personal effect of lecturers and tutors on students can be a powerful determinant of learning. Such 'closeness' had an interesting effect on methods of study and what might be termed the affective context of study. Another student referred to a lecturer in another subject, and how she associated the materials for that subject with the lecturer:

> '… his voice was ringing through my ears and every time I'm studying I'm thinking about him. It is a good thing that you can see the face on the screen [in the procedure video lectures] because when I am reading my notes and things like that you can hear them in my head and the way they say things and stuff like that.'

A student commented on the variety of ways of learning that the civil video lecture could give rise to:

> 'It's like a different way of learning, like if you hear it and then you write it down and then you read it back. Then you learn something in three different ways.'

When asked about watching and listening, this student replied as follows:

> Interviewer: Would it have made any difference to you if you hadn't actually seen the person and you had only heard what they were saying […]?
>
> Student: Strange, but I probably hardly looked at it [the video lecture image] because I was writing

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[29] Take for instance the start of the third video lecture:
> Hello, welcome to lecture three in the Civil Procedure lecture series. Today we're going to be looking at the Options Hearing but let's look first at how we got here. You'll remember that we drafted up our Initial Writ, you'll remember that the Initial Writ had a principal copy and a service copy… [etc]

Pronouns such as 'we', 'you' are used in a conversational style that actually discusses a fairly abstract list of documents and procedures.

[30] For further evidence of this, see Bancroft, (1995).

[31] See for example, Christenson and Menzel, (1998).

> notes anyway… But I don't know… it just seems
> quite nice having a person there.

When asked about social presence, the student acknowledged its importance to her:

> 'Yes, but it seems a bit strange because there is no real reason
> for it when you are not really looking that much [at the video
> window].'

It is indeed strange, but it is nevertheless clear that for a number of students, social presence as represented by the video window did matter to them when they were studying.[32]

Memory and knowledge objects: intensive study for examinations

Curriculum context and knowledge objects

If social presence matters, then curriculum context matters even more. The video environment was designed to be viewed and used in a study context, within a structure of seminars, assessment requirements (both transactional and skills assessment as well as examination), and other subjects within the Diploma. As such, we were interested in how students moved from isolated memory of individual video lectures to a more structured conceptual understanding of legal procedure, and how the video lecture environment had affected that process. As research on learning points out, students need to undergo this process in traditional lecture series if they are to arrive at a coherent and structured sense of the materials to be learned.

There is a considerable body of work on the relation of memory to consciousness, and how memory, learning and understanding can be best facilitated. However much of the early work was conducted with a laboratory setting, and it is difficult to relate much of this research to real-world learning by students within university settings. So much depends on the integration of different factors within situations: the experience of a tutor, the way teaching is implemented, how resources are used, and so on. These factors can often skew statistically-calibrated lab research results.[33]

Nevertheless, within the field of cognitive psychology there are directions in research that are useful indicators as to how students understand and memorise information. In chapter two (pp.XXX) I described briefly the work of Tulving (1972; 1985) and Conway *et al* (1997), and how certain forms of learning could facilitate the 'remember-to-know' shift. Their findings were substantiated by Herbert & Burt (2004) who used Biggs' SOLO taxonomy (structure of observed learning outcome) to assess the content and structure of student knowledge.[34] In

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[32] Social presence as linked to video image is still a controversial issue. Our conclusions here contradict some of the literature, and support other findings. In one study while there was no perceived advantage to social presence across a number of different applications (video-based, audio-based and textual), nevertheless there were a number of interesting findings regarding social presence:

> [t]he higher the degree of social presence perceived by the student, the higher the level of satisfaction with the computer-based instruction; the higher the degree of social presence perceived by the student the higher the level of motivation toward the computer-based instruction.

Steffey (2001).
[33] See for example McKeachie (1990).
[34] See Biggs and Collis (1982). The taxonomy can be used to differentiate between memory and knowledge in student understanding.

their experiment, they hypothesised that '[t]he greater the amount of remembering experienced early in learning, the more likely it is that the shift to knowing will occur'. Their results confirmed that how students experience resources affects long-term retention of conceptual knowledge (Herbert & Burt, 2004; see also Herbert & Burt, 2001; 2003).

For Herbert & Burt there were clear indicators arising from the research as to design principles for the design of teaching materials that would facilitate the shift to knowing. It was also clear that those students who set out from the start of their study to remember more from lectures tended to create better schemes of structured knowledge later in their learning: they shifted successfully from episodic memory to semantic memory of information. In an earlier study Herbert and Burt (1999) paralleled their findings with those of the literature on deep and surface learning, aligning the successful students' remember-to-know with deep learning, and surface learning with an incomplete or poorly executed shift. As we shall see below, this is supported, quite independently, in the phenomenographical literature.

Knowledge objects

In their classic phenomenographical study entitled 'Knowledge objects: understandings constituted through intensive study', Entwistle and Marton interviewed eleven undergraduate science students about their methods of study leading up to their final examinations (1994).[35] The metaphor of a knowledge object is, they suggest, a way of 'describing aspects of memory processes and understanding which is not reductionist': '[t]he structure of a knowledge object is not a way of acting appropriately in a familiar situation, it is a way of making sense of personal experiences of learning and studying' (Entwistle and Marton, 1994, pp.174-5).[36] As Entwistle and Marton describe it, a knowledge object for students is a form of understanding legitimated within a particular disciplinary community, 'a tightly integrated "bundle" of ideas and related information and experience', in which

> the nature of the knowledge object formed will depend crucially on the range of material incorporated, the effort put into thinking about that material, and the frameworks within which the knowledge object is developed. (Entwistle and Marton, 1994, pp.174-5)

There are four characteristics of knowledge objects:
1. the student's awareness of a closely-integrated body of knowledge
2. the quasi-sensory representation (often visual) of this corpus
3. a movement from unfocused and episodic remembering to much more detailed and coherent knowing
4. structure of the knowledge object itself.[37]

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[35] See also Entwistle and Entwistle, (2003). In this latter article the linkage of forms of intention (deep, surface) to specific studying processes is made overtly. I would argue for a similar complexity in the studying techniques adopted by students in the video lecture environments. It is interesting to note that Dewey expressed a similar notion in his concept of 'idea artefacts' – *LW*, 16, 326-7; 330).
[36] This concept parallels different approaches to learning and the structure of knowledge. Berardi-Coletta *et al,*(1995) for instance, conducted studies on the role of metacognition in problem-solving, and concluded that 'process-oriented [ie metacognitive] participants consistently form[ed] more sophisticated problem representations and develop[ed] more complex strategies' (1995, p.207). For them, the process of verbalisation was not the source of better problem-solving so much as the metacognitive processing involved in the effort to produce explanations. Curiously enough, there are a number of parallels between the phenomenographical approach to knowledge objects and Sherry Turkle's concept of 'evocative objects' we think with.
[37] In a similar study that confirmed the earlier findings, Entwistle & Enstwistle warned against a too easy identification of rote learning with shallow learning. As he put it,
> The analysis showed that the distinction between 'understanding' and 'memorising' is not easy to delineate, with 'committing to memory' and 'rote learning of details' both contributing

However, a knowledge object is not merely the product of cognitive processes. There are also experiential entities and qualities that are brought into being within an ever-shifting social and a disciplinary horizon. Entwistle and Marton describe this phenomenological awareness well, quoting Donaldson:

> 'We may know in a variety of ways characterised by differing degrees of awareness. Some kinds of knowledge are in the light of full awareness. Others are in the shadows, on the edge of the bright circle. Knowledge on the fringe of consciousness … is always ready to move to the centre. It is accessible to us, even if we don't attend to it.'[38]

Did the video lecture environment facilitate the remember-to-know shift? Did it enable students to construct knowledge objects? These were key issues for us; for if the environment could not help students in these processes, it would not be able to facilitate transfer of learning to the CCA transaction. The format of the examination, of course, influenced student study patterns. The CD and web environment were not going to be available to students in the open-book examinations, and only certain annotated texts were allowed into the examinations. Students were given notice of this, and asked to prepare notes from the CD or online video lectures in any form that they wanted. One of our concerns was that students would be uncertain how to do this, and that this would affect the process of intensive study, and the formation of knowledge objects. Within this context, what we discovered was the surprising and delightful range of objects created by students within the horizon of the video lecture environment, in order to make comprehensible and memorable the subject of procedural law. These included use of visual and aural channels, graphics, text and other media.

At the start of the process of intensive study, most students found that having the actual words of the lecture that they could review a source of comfort. One compared it to the situation in a face-to-face lecture where she would have had only her own lecture notes:

> 'Yes the way the words on the page can become a miasma and you can think 'Oh how do I get back into this' but [when using the video lecture] you can just sit and you can hear and – that is what I was trying to say about not taking notes. Sometimes you can just sit and you can listen to what they are trying to describe.'

Immersion was essential to at least half the students in our study, and it seemed that the video lecture environment encouraged them to immerse themselves in it according to their preferred approaches to learning.

> 'I would come in, in the morning and watch a load of them in one day. I would just sort of hammer my way through lots and lots of them. I just found that much easier to do rather than – I think I just learn things much better if I immerse in them. I am not very good at kind of incremental learning where I build upon it and go – 'Oh yes that rings a bell from last week.' So I did the whole Civil and Criminal video lectures in two days'.

Another student explained how she constructed her knowledge objects through the process of revising over time according to subject:

> 'I did Civil and Criminal a wee bit differently. Criminal, I just sat down and hammered through them all at once. I sat with my statute books, marking all the relevant points and annotating them as I went along and that was basically all I did. I didn't look at any other materials it was just me and the CD ROM. For Civil, I sat going through them one at a time and then

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to the production of a knowledge object. The findings warn against too ready a linkage of intention to any specific process in student learning: a deep intention can involve rote memorisation, while a surface approach at university level will include understanding, even if it is reproduced from lecture notes. Entwistle and Entwistle, (2003)

[38] *Ibid*, p.175, quoting Donaldson (1992).

would go on and read the relevant chapters in the Hennessy book and sort of annotate, not at the same time but at a different point and sort of try and let it soak in a bit more. Because I think Civil is a bit more complicated it is more than just marking a book up, you are trying to remember the stuff a bit more. Obviously you are trying to remember stuff for Criminal but [in civil procedure] everything is more complex.'

Annotation formed a key part of knowledge object construction. One student noted how the process of reviewing the video lectures made annotation and memorising easier:

'I would say, for Criminal, I would just put the video lecture on and would be sitting watching it and as [the presenter] went along and was mentioning sections I would be sitting with my statute book annotating the parts and highlight them and then he would mention cases to do with it and I would mark them in. I don't think it was anything more complex than that. Obviously because it was revision, you had watched them before. You didn't feel you needed the same level of concentration as you would when you watched them first time round. You were able to sit there marking away and listening to him. I felt that I was doing something else, that the information was still going in, and I was learning it as I was going along. It was much better than sitting with a set of lecture notes and trying to revise that way. I have often found going back to the lecture notes and I can't remember what I meant when I wrote something down and I think, 'What was the lecturer's point?' and can't remember, and you end up going to back to books and that sort of thing.'

Another student spoke about how she used the video lectures alongside other resources, annotating the resources:

'I would probably try and do two lectures at a time, just to have a target. I always do that. Then I would sit with the Civil, I would just go through it and mark off the Ordinary Cause Rules. Anything that wasn't in the rules that I thought I needed to know I would just scribble at the side and then sit and write things down. I would write it down until I knew it straight off my head. If there was something about preparation that we spoke about in the lectures that wasn't in the Statute Book I would go to Charles Hennessy's book and read it there. I didn't expect to have to use it in the exam but just that I knew it was there -- you know, the things you had to take into the proof and things like that**.'**

Another commented on the usefulness of the focused set of resources within the video lecture environment:

'Before, [ie on the undergraduate LLB course] I felt that the resources were scattered everywhere. You would have so many books you had to refer to lecture notes, handouts you had been given. You spent a lot of time trying to pull all your resources into one set of notes that you could refer to so that you weren't constantly reading that chapter, that set of notes and trying to put it all together. [In the video lecture environment] [a]ll your information was together. Obviously for Civil you would have Hennessy's book to look at as well but you had your video lecture and your book and that was it more or less. Again Hennessy's book was only adding to it or going over material that you had already done on the video lecture. It encompassed everything that you needed you know I felt. Maybe you should

> have been doing a lot wider reading but I felt that was enough
> for me.'

Within procedural law, most students felt the need to be able to reproduce overview and detail. Students realised how the video lectures could help in this regard:

> 'I just watched them the day before to re-orientate myself
> within the whole thing and the structure of it and certainly
> that helped me and the exam picked up what I had learned
> from the video lecture.'

Video lecture note-taking was always going to be very different from taking notes at lectures. The procedures that students adopted varied considerably Some felt safer creating sets of what were akin to traditional lecture notes:

> 'I think I am happier doing it pen and paper. I guess, I have
> written shorthand, rather than typed shorthand, so I think I
> would rather write and I can write quicker. But not everyone
> will be the same as that.'

> 'When I did the first few I was writing absolutely everything
> out and I hadn't really - because quite a lot of people were
> looking at the screen and were writing down what was on the
> screen and working their notes around that. I wasn't doing
> that I was writing everything out and that took ages. So it was
> like well I'll just write down what's on the screen and then
> write my own notes.'

Some took notes on the computer, using MS Word When asked about the writing styles they adopted, students revealed that they used a variety of methods:

> 'Bullet points and headings, just kind of try and base it around
> the headings you've got and then expand like make my own
> notes from what the lecturers are saying.'

The Powerpoint style of bulleted information points did not suit all students:

> 'Maybe it is just me, but I found it quite hard to work from the
> PowerPoint slide presentation that was on the lecture slides. It
> highlights what [the presenter was] saying - so it is quite
> difficult then to think back and think what context was it in or
> what was the first part of that sentence or what was the last few
> words of the sentence. There was one point where I thought I
> can't remember if that flows on from the thing above so I
> started to draw arrows on to it to make sure that I knew the
> sentence was one and it flowed rather than thinking of things as
> distinct parts as bullet points.'

This points to ways in which we can improve the environment. But the issue has deeper resonances. These responses show that formation of knowledge-objects is a deeply personal moment, and occurs best when a student is using it rather as one might gaze through a window at a scene beyond it. There is a degree of transparency associated with object of gaze, but also a degree of awareness that one is focusing at the object through the glass. The use of technology is never as simple a matter as complete immersion or complete transparency. The balance is a fine one, and if there needs to be too much attention given to the technology of communication (the window itself) then the construction of knowledge objects is interrupted.

As will be clear from the above interview data, students were using the video lecture environments in quite different ways. Examples included use of *two* computers by some students, different time planning; different forms of reading

and listening, and the use of the video lecture as a mnemonic. Was there any discernable pattern to the approaches they took to their study? As we reflected on the themes of the interviews and other project data, it became clear that there were amongst the project students what one might regard as two polar attitudes towards the video lectures – we call them paperworld student and e-world student.

Paperworld student

The first was characterised by student A. He did not like using the video lectures, and would have preferred face-to-face lectures. He did not use any of the learning tools in the environment, and engaged as little as possible with the resources on the CD and online. Where possible, he used books instead of electronic resources, for example paper-based case and statute collections. He took verbatim notes from the video lectures so that he had a set of notes that most closely resembled what he regarded as a good set of lecture-notes, and did not listen to them again. He then worked on these notes in the way that he had always worked with his lecture notes, by reducing them to more easily comprehensible and memorisable structures on paper. He used WestLaw, but only to get a set of leading cases on paper. He viewed the multimedia units and found them helpful. The biggest improvement in his eyes would be a transcript of the video lectures that he could print out, and thus avoid listening to the video lectures themselves (this was later provided for all students).

E-world student

This pole was characterised by student B. She was very happy using the environments, and made full using of the learning tools, and used online information where she could, including all the information resources. She used a word processor to type up her notes, or printed out the information in the resource panel to the right of the video lecture, and added written notes to these. She studied for the examination by viewing and reviewing the video lectures and using printed out word-processed notes. She used the 'speak-fast' button, and many of the navigational aids.[39] She viewed the multimedia and liked it. Her suggested improvements included sorting one of the bugs she had detected in the software, and adding more functionality, eg a .mp3 download of the lectures, and addition of functionality to the flowchart of civil actions so that students could obtain more information from it.

These two polar positions, though useful in characterising different approaches to the electronic environment, should probably be seen as pathologies of study techniques within the environment. The great majority of students ranged in the spectrum between A and B, more often towards e-world student than paperworld student. When one student was asked if she typed out information from the video lectures, she replied:

> 'No, I like writing – I have seen people sitting typing but I don't know how I could do that because I have done it [ie taken written notes] for four years – just sat writing. I can't study from type either. I like studying from my own handwriting as well so I just knew that would make it much easier.'

This sounds like a paperworld student; but the same student used the video lectures extensively for revision and felt happy using the environment. Another student, asked about the effects that the video lecture environments had upon her learning, described this mid-spectrum position in a way that summarised other students' positions well:

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[39] An embedded function in the Windows Media Player, whereby one can speed up or slow down the rate at which video-data is presented.

> 'If you look at it as being a different study technique of sitting in front of a computer then yes [ie it was a different study technique that was being adopted when using the environment]. But, it was basically the same processes that you were going through but it was more condensed because to you didn't have this really big pooling exercise going on of trying to get all your information together. I mean the information is together so you were just sitting and working through the information the same as I would have done with anything else. I would have sat and annotated a statute book before but it would have been a longer process to trying to get all the information together to see what points needed to be annotated.'

What was interesting was how each of the students came, in quite different ways, to an accommodation within the environment. They used it in unique ways to dovetail with their traditional forms of examination study – or, to look at it from the other side, they extended their study repertoire into the electronic domain. The quality of attention to such a space was vital, as students made clear. Without exception it was clear from both the pre- and the post-exam interviews that they were giving careful consideration to the process of preparing for the procedure exams, the forms of attention needed at each stage and for different knowledge objects. In fact, it might be said that students themselves, when aware of the type of examination they would sit, used the environment in quite different ways that suited their modes of study. Nor should we be surprised at this. At a fairly deep level of theory, it could be said, as constructivists do, that learning rarely happens in individuals alone, but in the complex interaction between individuals and previous knowledge and the distributed tools within their learning environment. Jean Lave, for example, has, in her studies of Liberian tailor apprenticeships and other subjects, drawn upon the phenomenological concept that human thinking and action in the world are so inextricably bound up with each other that what we understand by the concept 'mind' can only be understood within the context of social organisation. But cognition is not only in the 'situated contexts' analysed by Lave & Wenger, (1991).[40] It is also distributed around us in the form of real objects and teleological concepts with which we understand the world and its real and conceptual structures. Indeed, it is a general observation of cognitive psychology that most productive learning happens when the material distribution of resources within any context closely supports a student's learning structures without dictating how a knowledge object should be learned.

Quality of learning

Quality of the learning experience is crucial: the critical question for us, after all, was did the video lecture environment help students to learn procedural law effectively? Quality of learning is almost inevitably a comparative process, not an absolute. Students compare their way of learning in one environment with that in another subject, module, programme, learning environment, etc. Such feedback can be useful, but we wanted to know if, at the subjective level, students could tell us whether the environment had helped or hindered their study for the examinations. We were aware, of course of the skewing effect of affordance – namely, the notion that if students have poor resources in one channel or media, they will compensate by learning what they need to learn from another. We did

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[40] See Lave and Wenger, (1991) and Wenger,(1998).

not ask students whether in their opinion they *would* have studied more effectively with face-to-face lectures than with the VLE, since this would be asking them to compare their actual experience with an unknown variable (the face-to-face lectures they did not have) in an area of law that was entirely unknown to them. Such a triangulation would give us relatively meaningless information. Instead, we asked students about the quality of their learning while they used the video lecture environment by asking them whether, in retrospect, the video lectures had helped or hindered their revision for exams. With only two exceptions, all of them thought that the environment had enhanced their processes of learning.[41] One student described it thus:

> Interviewer: Did you think the video lecture environment helped or hindered your study for the exams?
> Student: It definitely helped.

Another was quite emphatic about the effect that the environment had had on the quality of her learning:

> Interviewer: Do you think the video lecture environment helped or hindered your study for the exams?
> Student: Definitely helped. It was very, very positive. I know some people have complained that they found it hard to work and all the rest of it. But I just thought in comparison – I have sat four years of exams before I came here, I am an expert as far as exams are concerned, and this has really, was two of the easiest exams I have sat, in terms of revision for them. I felt that I came in well prepared – maybe my results will show that this was not the case! I definitely felt that I was really learning the material. I understood it better.

Another revealed in her language how familiar she had become with the environment, and how much the VLE had become a part of her study environment:

> 'Helped, definitely helped, being able to flick around. Just right before the exam I actually went back and watched one particular lecture on fast speed again for half an hour and was lucky one of the things came up. It was all there and I just sort of blasted through it one more time because I thought I am not absolutely sure.'

Two students were neutral because they had used the video lectures to take notes during the semester, and did not use the video lectures again in their revision for the examination. One of these students had no computer at home. She lived on the outskirts of Glasgow, and did not want to travel in to the GGSL to study, preferring to study at home. She explicitly planned her semester time so that she could revise from paper-based notes. When asked if she found that this had disadvantaged her, she replied

> Student: I probably should have planned for it more because I would have liked to have done that, but that was my own fault, so… I mean, the day I came in and watched the video lecture, it was just the one Criminal [lecture], I was thinking, 'Gosh, this is good', because as soon as you hear something it is not going to go out of your head.
> Interviewer: When you say it was good, what do you mean?
> Student: It's just like I knew what he was going to be saying … It makes more sense when you are doing it for another time. You kind of understood it because you had looked at the

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[41] The simple statistics from our questionnaire amply confirmed this. For example, when the larger body of students who responded to the Civil Procedure class questionnaire was asked what they thought of the video learning environment as a learning tool, 17 thought it excellent, 41 very good, 42 good, 37 reasonable, 9 not very good, 14 poor, with two giving no response (N=162).

> Interviewer: [...] Your advice to students who are coming next year would be...?
>
> Student: View the video lectures twice and especially during your study session. But the thing is, it is time-consuming and some people just don't have that amount of time to do it.

Quality of learning and available time are always issues for students, and it was for this student, who had no home computer, and for whom two hours' round trip travel to the GGSL was not perceived at the time to be a useful option. She had planned her study time in detail but had, almost by chance, discovered that the video lecture environment could have been more useful in intensive study than she reckoned. Nevertheless, she had come to a realisation that e-learning could be a significant enhancer of learning, and in surprising, unbidden ways. Her words are quite profound: they indicate an openness to experience on her part, and a willingness to acknowledge that e-learning could help her understand the law as much as traditional forms of learning.

Next steps

The use of resources such as these and on this scale is not unique, but is still relatively unusual in legal education. With the use of blogs, podcasts and other forms of social software described in chapter six, together with the introduction of personalized learning systems, the practice will become more common in legal education in the future. For us in the GGSL, it became clear on reviewing the data and the emerging themes from student feedback that the process of knowledge construction and review carried out by students was highly complex, in which students made many subtle alterations to their normal study practice in order to accommodate the new learning environment, its richness and constraints. The context of information and its retrieval, and the situativity created by tasks, heavily influence the process and product of knowledge generation. It was clear to us that learning could be improved by the development of more task-specific tools. Learners working from paper resources often switch between affordances so as to create for themselves the granularity of knowledge required for a task or an assessment. Lecture notes, for example, may give an overview of a topic, but a published text will give more detail; a practitioner text yet more, and students will switch between these resources to achieve the detail they feel might be necessary.

In the next two years my colleagues Karen Barton and Patricia McKellar created the CCA transaction, which was dependent in many ways upon the resources around it such as the video lectures discussed here, and the multimedia units on advocacy and plea-drafting. It became clear to us then that the digital domain was successful because in addition to being an information-rich environment, it was focused upon the needs of students at a particular stage in the development of professional knowledge and skill. If the concept were to be extended to other users such as trainees or practitioners, however, would we need to create another set of resources for these audiences, with all the work that this would entail?

Once again, the digital domain provided a solution. We could give learners *multiple views* of information, which would be appropriate to the needs of specific categories of learners – Diploma students encountering civil procedure for the first time, and needing to be aware of it in a transaction and learn it for open-book examinations; trainees requiring to review it to understand the contents of litigation files while they were in a civil litigation seat; practitioners wishing to

review specific forms of procedure for pleadings drafting or court appearances. Information, in other words, could be structured around the type of tasks that learners are required to perform.

We therefore drew up three different knowledge views: presentational, structural and transactional, which include navigational and content management tools. Note that, from an educational perspective, this is not a taxonomy. What we are describing are different, equally valid, overlapping views of knowledge and learning. Use of the views depends on the user purpose and task in hand, and extent of prior knowledge and confidence in handling the resources. The first view already exists as the current video lecture environment. The second and third are still in the process of construction. The three views are set out in more detail below (see Figure XXX for a summary)[42].

1.   Presentational view
Basically the functionality of the video lectures as discussed here. A number of different presentation events linked closely to a set of resources. Students come to an understanding of the concepts by moving chronologically, as if through all the issues of a general court action, and in a fashion determined by the presentation and the course designer, even though they may move freely within the presentation and its rich resource base. Flexibility of use will always be bounded, but in this view learning is guided from one presentation to the next, so that the user comes to a conceptual understanding of what the elements of civil procedure actually are, and how they fit together into larger forms of court process. The series of presentations fit the design of the curriculum.

2.   Structural view
Where conceptual knowledge in the presentational view is represented by the linear presentations of the video lectures, in the structural view students will be able to select for themselves and access specific elements of the presentation that deal in detail with a particular concept. The view will be represented by a flow chart with nodes representing particular application of knowledge to specific circumstances in the flow of a case. If a user clicks on an 'Options Hearing' node for instance, the structure of the flow chart will alter so that, in an animation, a number of other resources will be drawn down to the node. Moving towards it will be the video lectures associated with it, any multimedia units demonstrating court performance, the set of court forms and documents associated with the action, and any drafting tools that may aid the drafting of written pleadings. This view is more student-centred, allowing construction of knowledge: students building and amending their own structures or schemata from direct interaction with the model or schema provided.

3.   Transactional view
As we saw in chapter eight, transactions are not just sequenced events: they also contain nested elements that can be transacted linearly or in parallel. In order to make this view accessible within transactions, knowledge components will be embedded within an actual legal transaction represented either by a workflow of documents or by a multimedia unit if there is any court or tribunal advocacy to be presented. The relevant components could be available chronologically as the specific transaction progresses, and will support learners' understanding of the

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[42] Extracted from a GGSL Internal Working Paper authored by Barton, McKellar, Maharg, and on file with the author.

pleadings, advocacy, and general significance of the court process that they are viewing. In addition, since this is essentially a practitioner tool, we would investigate the creation of a personalised learning tool which would allow users to capture relevant cases or procedural notes, and to share these – effectively social software for legal practitioners, where users would be able to share legal information as one might share photographs, for instance, in an application such as Flickr.[43]

Note that with the addition of the transactional column, the use of multimedia and video becomes much more social. It becomes, indeed, the fully-operational model of cognitive presence, teacher presence and social presence envisaged by Garrison, Anderson and Archer (2000, pp.87-105) and which, as they freely admit, is derived from Dewey's practical inquiry model. Thus does transactional learning come full circle, returning to its conceptual source.

It would be tempting to see this revised application as a workflow, where we tell students to view in Presentation mode, then understand the flowchart, then do the transaction, as if there is neat staircase of simple > complex that we want students to tread. But this would be to mistake one of the central themes that emerged from student responses in our research, which is that context powerfully mediates knowledge at all levels. There is no staircase: like the celebrated instance of Dale's Cone of Experience, this is a plausible but misleading fiction.[44] There is knowledge learned purposefully, and the closer the alignment of knowledge-learning tools to purpose and prior knowledge, the easier it is for learners to transform information into knowledge.[45] It was clear from our research that students used a variety of methods to transform knowledge in this way, and that these were not the result of uncertainty in a relatively new medium and context, but were the product of choices, aligned to purpose. They were attentive to many different cues, and this enabled them to navigate the tasks of knowledge generation.[46]

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[43] The trans-media use of information in this way has always been experimented with. Pictures, as Carruthers reminds us, were an integral part of the page for a medieval audience, for whom mnemonic reading was crucial, as we saw in chapter 5. In the modern era, Benjamin made a similar point:

> Couldn't an exciting film be made from the map of Paris? From the unfolding of its various aspects in temporal succession? From the compression of a centuries-long movement of streets, boulevards, arcades and squares into the space of half an hour? (Benjamin, 1999)

 Benjamin was right, and reality is catching up with his early twentieth century vision – see for instance the work of the MASA group on this project, at http:www.masa-sci.com

[44] For information on Dale's Cone of Experience, see Molinda, (2003, pp.472-3).

[45] See, for example, the statements of students above who wanted to use the flowchart quite early in the process of knowledge formation. Another instance of this is the comment by e-world student who observed that she would have liked to have been able to download the video lecture to her iPod. In future iterations of the video lecture environment we shall enable this. It has already been incorporated into video lecture environments in other modules, eg Evidence.

[46] As Suchman points out, the 'situation of action is … an inexhaustibly rich resource', and our research by no means exhausts the richness of the situation students were in. Further research on many aspects of their study patterns is required.