# Virtual learning environments: the alternative to the box under the bed

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## 1. Introduction

Virtual Learning Environments (VLEs) describe those environments that use digital and electronic technology in order to facilitate learning and teaching. They can include not only learning resources on CD or on the web, or both, but more traditional, paper-based resources as well.[1] In this article, we shall present the results of a research project that set out to discover how students used a VLE structured around video lectures. As Baecker has pointed out, webcast video has generally be seen as a fairly uninteresting element of a learning environment, and 'typically viewed as an ephemeral one-way broadcast medium'.[2] We are interested in using 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. Our environment may at first seem similar to those such as Iolis or web-enabled CALI programs; but there are significant differences in emphases, structure and content. Our article presents some findings from a long-term research project based on the environment, which is still on-going, over the course of an academic year and beyond into traineeship. We shall also describe in brief how we developed it, and how it is changing the learning landscape within the postgraduate professional courses in the Glasgow Graduate School of Law.

## 2. Research project design

From our work over the past three years it has become clear to us that video lectures, when used in appropriate VLE environments, can do more than provide cheap lectures on the web or CD.[3] The relative ease with which video and text can now be spliced and re-used, the accessibility of information, and the environment within which knowledge can be

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[1] Terminology can be confusing here. The video lecture is sometimes known as a 'webcast' in the literature. Our VLE was made available over the web and on CD, and therefore when we refer to the video element, we shall call this the video lecture; and when we describe the environment as a whole we shall refer to this as the VLE.

[2] See Baecker, R.M., Moore, G., & Zijdemans, A. (2003). Reinventing the Lecture: Webcasting made Interactive, in *Proceedings of the HCI International 2003*, Lawrence Erlbaum Associates, Volume 1, 896-900, 896. See also Baecker, R. (2003) A principled design for scalable internet visual communications with rich media, interactivity, and structured archives, *Proceedings of the 2003 Conference of the Centre for Advanced Studies conference on Collaborative research*, IBM Press, Toronto, 16-29. See also Knowledge Media Design Institute at the University of Toronto, http://kmdi.utoronto.ca/?docID=Documents/2/2.html&db=kmdi and Baeker's home page at http://kmdi.utoronto.ca/rmb/

[3] Note that this paper is a shorter version of a much larger paper summarising our research data that can be found at: www.ggsl.strath.ac.uk/ltdu/research.

constructed by learners is significantly different from the experience, *la durée*, as Bergson has it, of paperworld study environments.[4]

A literature search revealed research on VLEs, but surprisingly little directly relelvant research into VLE design and usage in legal education. The most recent and relevant studies are those conducted into online lectures in medical education.[5] A review of the medical literature *post*-1979 conducted by Wofford *et al* 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.[6]

With the creation of two large-scale VLE projects in Civil and Criminal Procedure in the Diploma in Legal Practice the opportunity was presented to research the use made of the VLEs by students.[7] Lecturers planned the resources and functionality with the Learning Technologies Development Unit in the GGSL, and then filmed their video lectures as pieces-to-camera. The video was then encoded with text, learning activities and other resources using Macromedia authoring tools.[8] Space precludes analysis of both Criminal and Civil Procedure VLEs, and so the Civil VLE will be the focus of discussion in this article. The aims of the whole research project were to investigate the *variation* and *quality* of student learning on the two procedural courses that took place as a result of these changes. 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

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[4] As Garrison & Anderson 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.' Garrison, D.R., Anderson, T. (2004) *E-Learning in the 21st Century: A Framework for Research and Practice*, RoutledgeFalmer, London, 7

[5] For relevant studies in the legal domain, see Martin, P.W. (1999) Distance learning: the LII's experience and future plans, at http://www.law.cornell.edu/background/distance/liidistance.htm; Maggs, E. (2001) Creating law school review videos and slides and putting them on the internet, *Jurist*, http://jurist.law.pitt.edu/lessons/lessept01.htm . For proof that students can be supportive of the move from face-to-face lectures to virtual learning environments. See Tait, K. (1998) Replacing lectures with multimedia CBL: student attitudes and reactions, *Instructional Science*, 26, 409-38

[6] Wofford, M.M., Anderson, W., Spickard III, M.D., James, L., Wofford, M.D. (2001) The computer-based lecture, *Journal of General Internal Medicine*, 16, 464-467, 466. 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. See Williams, C., Aubin, S., Harkin, P., Cottrell, D. (2001) A randomised, controlled, single-blind trial of teaching provided by a computer-based multimedia package versus lecture, *Medical Education,* 35, 847-54. Spickard *et al* concluded that an online lecture is a 'feasible, efficient and effective method to teach students'. See Spickard III, A., Alrajeh, N., Cordray, D., Gigante, J. (2002) Learning about screening using an online or live lecture: does it matter? *Journal of General Internal Medicine* 17, 540-545. In a later trial Spickard *et al* confirmed the learning value of audio-feed with PowerPoint slides within an online lecture environment. Spickard III, A., Smithers, J., Dordray, D., Gigante, J., Wofford, J.L. (2004) A randomised trial of an online lecture with and without audio, *Medical Education*, 38, 787-90

[7] For more detail on the methodologies used in the project, see our longer paper at www.ggsl.strath.ac.uk/ltdu/research. In addition to providing much more analysis and feedback, this paper also contains in an appendix a list of all webcast projects carried out in the Glasgow Graduate School of Law to date.

[8] Filming was carried out by Learning Services, University of Strathclyde. All programming and design work was carried out by members of the Learning Technologies Development Unit in the Glasgow Graduate School of Law, in particular: Scott Walker, Learning Technologies Development Officer, David Sams and Emma Blake, Web and Graphic Designers.

- Students filled in and submitted weekly logs that detailed every occasion 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 (*n* = 162)

Qualitative responses gathered. Interviews (averaging 20-30 mins in length) were audiotaped and transcribed, then collated and coded into themes by two raters, with relatively high inter-rater reliability (70%).[9] Over one hundred pages of qualitative data were collected – too much to discuss in depth here. In this article we shall first give a brief overview of the design of the virtual learning environment; we shall consider student comment on the usefulness of the environment for their study and traineeships, and consider student comment on the quality of their learning.[10]

# 3. Design of virtual learning environment

## Design process

Both Criminal and Civil Court Practice modules in the Diploma in Legal Practice were taught in two parts – lectures covering the substantive procedural law, and 10 tutorials on Advocacy & Pleadings in each module, dealing with the practical application of the rules of procedure. The division is traditional within the Diploma: procedural knowledge was 'delivered' by lectures, skills were learned in tutorials. The courses were examined by coursework (written pleadings and advocacy in each) and a two-hour written, unseen and open-book examination consisting of objective questions and problem-questions. The form of the examination heavily influenced student preparation of course, and for this reason we embedded assessment information and practice within the VLE. Following Barnett, Eraut and many others who criticise the invidious separation of theory and practice at many levels in HE we decided to substantially re-design the modules in order to draw together conceptual and skills-based learning as much as possible.

It became clear, when we began to think of video lecture as supporting whole modules that the talking head simply would not suffice, even accompanied by handout materials. From the outset we planned extensive resources that would be available to students in a form that would be helpful to them on the course and later in their traineeship. In other words, we moved from a presenter-centred event to a user-centred event, where more control was

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[9] Strauss, A. Corbin, J. (1994) Grounded theory methodology: an overview, Denzin, N.K., Lincoln, Y.G. eds, *Handbook of Qualitative Research*, Sage, Thousand Oaks, CA

[10] Note that for our purposes here, the discussion of usefulness was one of the themes we identified as emerging from the student data, and a subset of variation in student learning.

given over to the user, and where the sophistication of the interface would match the conceptual complexity of a face-to-face module, as it built up over the course of time.

The design process therefore had to taken into account two 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 points 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.[11] The problem for us was to provide information structures that could do both.[12] 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 layers of information: at the core of the application was the video lecture, with succeeding layers of information, as represented in figure 1:[13]

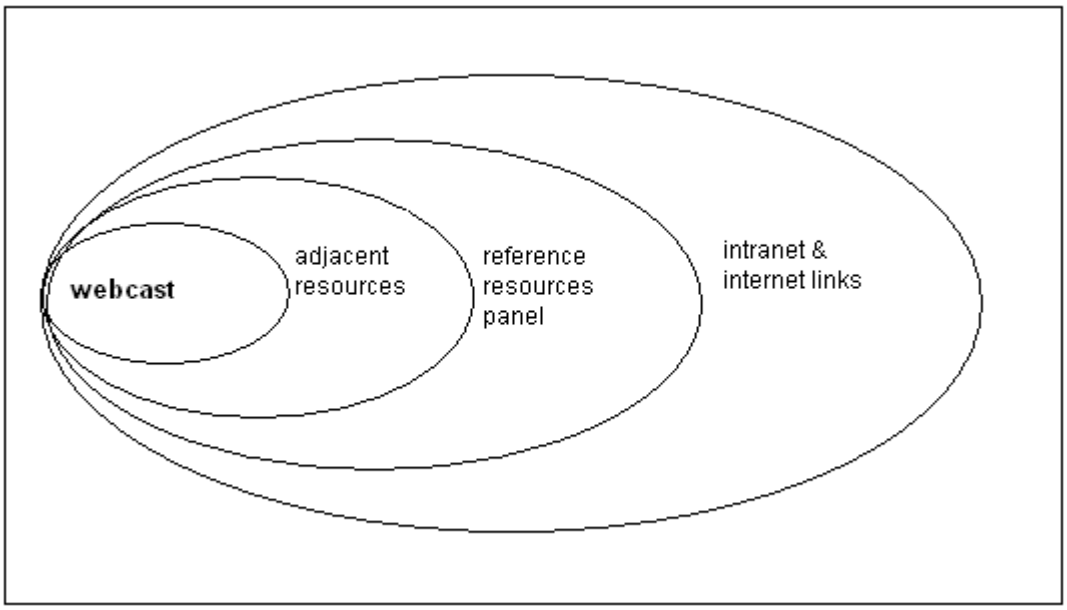


**Figure 1**

Within each layer or contour, information was clustered on adjacency principles: which information would a user be likely to reach for, and to what purpose. Such decisions

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[11] Tulving, E. (1972) Episodic and semantic memory. In Tulving, E. and Donaldson, W. (eds) *Organisation of Memory*, New York, Academic Press. Semantic knowledge is the function of long-term memory to store knowledge of facts and concepts as well as the meaning of words.

[12] A good analogy is provided by Clark, who describes graphically how the way we learn influences how we remember and process knowledge. She draws a comparison between the ease with which we can recite the months of the year, as opposed to the difficulty of the task of reciting them alphabetically. Clark, R.C. (1998) Authorware, multimedia, and instructional methods, http://www.macromedia.com/support/authorware/basics/instruct/

[13] For a discussion of layered, time-synchronised media in learning, see Whalley, P. (2004) Interacting with layered dynamic media – some educational aspects of MPEG-4, *British Journal of Educational Technology*, 35, 4,489- 95

inevitably involved us thinking about the tasks that users would undertake (bearing in mind their role-play learning and assessments in advocacy, their pleading-drafting examination and the examination of their conceptual understanding of civil procedure). This design task involved not so much planning navigation of resources (for, as Dillon and Vaughan point out, the navigation model 'sheds no light' on how students create a 'map of semantic space') as how to integrate information design with semantic knowledge.[14] The key to this is what Dillon & Vaughan call 'shape' – the development within the user of a sense of genre, a developing sense of schema.

The design process began around nine months before the start of the academic year in which the VLE would be used. The environment we subsequently created was available both on CD and online on GGSL computers. It completely replaced face-to-face lectures. Students were still required to attend ten weekly tutorials in groups of approximately 12-15 which focused on written pleadings and advocacy. The VLE was thus designed as part of a blended learning module.

## Civil Court Practice VLE content

When students open the CD or webpage to enter the VLE they are given a menu of options:

- *Video lectures*: including access to all documentation, cases statutes and external web resources
- *Handbook*: The students are given an online copy of the handbook they receive in paper copy form with the CD
- *Advocacy multimedia units*: These show 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 2 shows a typical video lecture page for Civil Procedure. The environment includes: the talking head, synchronised downloadable PowerPoint slides (which include text, images, diagrams and other imported materials), 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.

[14] Dillon, A., Vaughan, M. (1997) 'It's the journey and the destination': Shape and the emergent property of genre in evaluating digital documents, *New Review of Multimedia and Hypermedia*, 3, 91-106

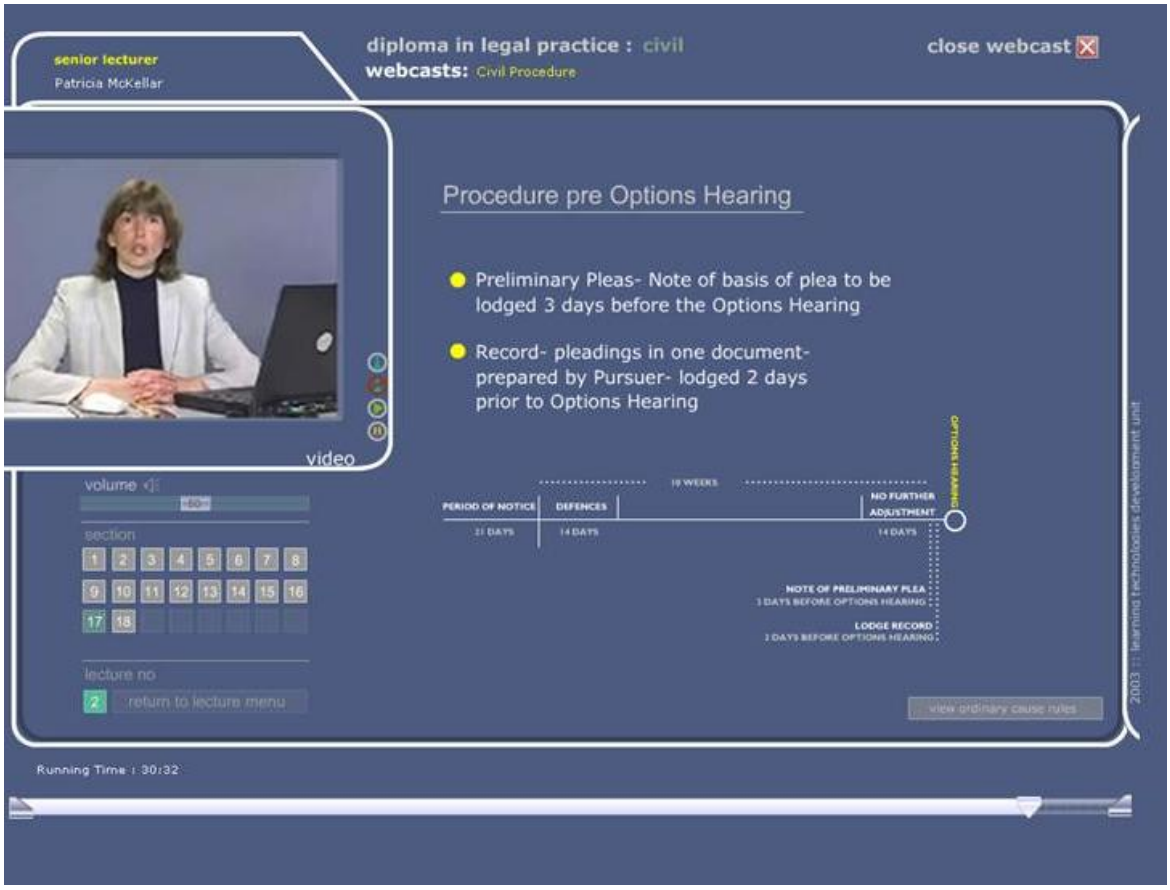


**Figure 2**

Students used the environment to prepare for tutorials and coursework, to understand civil procedure, and to revise civil procedure for the two-hour open-book examination. They could listen, read, pause and review a video lecture as often as they liked. Each video lecture was quite deliberately split up into appropriate section lengths according to topic. The VLE context for the video lecture allowed us to move away from the traditional 50 minute slot into sensible divisions: one lecture is only 20 minutes long while another stretches to 2 hours and is sub divided into 8 mini lectures (represented as numbered boxes). In Fig 2, for instance, users can search the 18 section categories (which have mouse rollover titles); and they can use the timeline at the bottom of the page, for scanning within a category.[15] They can thus access the video lectures systematically, or they can use the timeline as a form of speculative searching or 'bricolage'.[16]

[15] For the role of categories in searching, see 'Strategies for Categorising Categories', http://world.std.com/%7Euieweb/Articles/strategies_categories.htm. Timelines are obviously useful devices for webcasts, but they are also excellent textual designs. For an excellent general introduction to the field of data representation see *Milestones in the History of Thematic Cartography, Statistical Graphics and Data Representation*, *An Illustrated Chronology of Innovations,* Michael Friendly and Daniel J. Dennis, http://www.math.yorku.ca/SCS/Gallery/milestone/

[16] For the concept of bricolage generally, see Turkle, S. (1995) *Life on the Screen: Identity in the Age of the Internet*. New York, Simon & Schuster, 1995

Students are also able to access an external resources menu from the 'information' icon to the left of the video window. This will draw a page over the full screen which can be accessed while the speaker is talking or while the video is paused. The 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*: A quick link to 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*
- *BAILII*
- *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 used in legal practice, eg process folders, and a flowchart of civil procedure.[17]

## 4. Integration of resources

In order for any VLE to work effectively there must be a convergence of all resources – the sense of well-organised, seamless knowledge management that supports cognitive development. On analysis of the student feedback it became clear that not all resources were apparent to our students, and that while there were issues of placing resources that we shall review, there were more profound issues of how new knowledge was assimilated by students into prior structures that we shall take into account in our next iteration of the application.

For most of the students we tracked, though, the integration of tutorial, VLE and textbook worked well:

> *I think… the Civil webcasts 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 VLEs within the tutorials:

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[17] This description applies to the 2003-4 VLE. As with all our e-resources, we develop iteratively, based on student and tutor feedback. This year (2004/5), for instance, we are designing a .mp3 download of the lectures so that students can listen to them on mp3 players such as Ipods or in-car sound-systems.

> *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 webcasts 3, 4 and 5, for example.* […] *The system works if it's followed.*

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

> [Our] c*ivil 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 webcast instead of maybe explaining stuff a bit further that we were having difficulty with.*

The issue of integration was discussed with tutors at the end-of-course meeting. Solutions for next year include brief scenarios to be discussed between tutors and students on an asynchronous discussion forum before the relevant tutorial.

## 5. Portability and flexibility of use

The single most attractive feature of the VLE was its flexible nature and ease of accessibility.[18] 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: *'proper lectures would have been better but the webcast lectures were convenient'*. Most students preferred the ability to be able to use the VLE at home or in university in their own time and at their own pace rather than attending a traditional lecture course at fixed times and places.

> *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 VLE in their traineeships, some students considered the portability of the resource to be of significant benefit:

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[18] In the whole-year group evaluation, when asked to rate the flexibility of the resources. 22 students thought them excellent, 47 very good, 49 good, 31 reasonable, 2 not very good, 7 poor, and 4 gave no response (*n* = 162).

*It's great. When I start [my traineeship] 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 8 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.*

*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.*

## 6. Knowledge objects: VLEs and intensive study

In their classic phenomenographical study Entwistle and Marton interviewed 11 undergraduate science students about their methods of study leading up to their final examinations.[19] 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.[20]

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' (176).

We were interested to discover how the VLE affected students' experience of intensive study. Without exception it was clear from both the pre- and the post-exam interviews that students were giving careful consideration to the process of preparing for the skills-based assessments and procedural exams. What was surprising and delightful was the extensive range of objects created by students within the horizon of the VLE, in order to make

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[19] See Entwistle N. & Marton, F. (1994) Knowledge objects: understandings constituted through intensive academic study, *British Journal of Educational Psychology*, 64, 161-178. See also Entwistle N. and Entwistle, D. (2003) Preparing for examinations: the interplay of memorising and understanding, and the development of knowledge objects, *Higher Education Research and Development*, 22, 1, 19-41. In this latter article it is significant that the delineation between memorising and understanding is shown to be quite complex and where the linkage of forms of intention (deep, surface) to specific studying processes is equally complex. We would argue for a similar complexity in the studying techniques adopted by students in the webcast environments.

[20] *Ibid*, pp.174-5

comprehensible and memorable the subject of procedural law. These included visual and aural channels, graphics, text and other media.

At the start of the process of intensive study, most students found that reviewing the actual words of the presenter was a source of comfort. One compared it to the situation in a face-to-face lecture course, where she would have had only her own lecture notes as a record of the event:

> *Yes, the way the words on the page can become a miasma, and you kinda think 'Oh how do get back into this' but* [*when you are using the webcast*] *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.*

Some commented on the sense of social presence that the video image gave to the VLE:[21]

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 because I was writing 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].

Immersion is essential for intensive study, and for most students in our research group it seemed that the VLE encouraged immersion. Another student explained how in detail she constructed the knowledge objects through the process of revising the Criminal video lectures:

> *I would just put the webcast on and would be sitting watching it and as he 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.*

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[21] The classic early study on social presence was Short, J., Williams, E., and Christie, B. (1976) *The Social Psychology of Telecommunications*, Wiley, New York. Their work is based on the premise of one-to-one communications, but their work is important for video in VLEs to the extent that it emphasised the contribution of the visual image to social presence. For work on social presence in email, see Sproull, L. and Keisler, S. (1991) *Connections: New Ways of Working in the Networked Organization*. Cambridge, MA: MIT Press. For an update on Short *et al* in the field of teleconferencing, see Egido, C. (1990) Teleconferencing as a technology to support co-operative work: its possibilities and limitations. In Galegher, J. Kraut, R.E. and Edido, C., editors, *Intellectual Teamwork: Social and Technological Foundations of Co-operative Work* Hillsdale, NJ: Lawrence Erlbaum Associates. For a more recent review of research, see Williams, E. (1997) Experimental comparisons of face-to-face and mediated communication: a review, *Psychological Bulletin,* 84, 5, 963-76; and Tu, C. (2002). The Measurement of Social Presence in an Online Learning Environment. *International Journal on E-Learning 1*(2), 34-45;

> *Obviously because it was revision, you'd 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 with other 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* [the course textbook] *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.*

There were discernible patterns in VLE use. At the extremes were two students, one who used only paper and pen where possible, and who used e-learning as little as possible in his study, and on the other hand a student who used every possible form of available technology to help her learn. These, however, were pathologies of learning in the overall context of our project. What was interesting was how each of the 11 students came, in quite different ways, to an accommodation within the environment; and used it in unique ways to dovetail with their traditional forms of examination study.

## 7. Quality of learning

Did the VLE 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 context with that in another subject, module, programme, learning environment, etc. Such feedback can be useful, but we wanted to know whether the environment had helped or hindered students' study for their two-hour open-book examination in Civil Procedure. We did 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. Instead, we asked students about the quality of their learning while they used the VLE by asking them whether, in retrospect, the environment had helped or hindered their revision for exams. With only three exceptions in our small project group of 11 (one opposed to the concept of the environment, two neutral), all of them thought that the environment had enhanced their

processes of learning.[22] A student commented on the variety of ways of learning that the study environment 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.*

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

Interviewer: *Do you think the webcast environments 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.*[23]

Two students were neutral because they had used the VLE to take notes during the semester, and did not use the webcasts again in their revision for the examination, relying instead on their written notes. 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, her reply was revealing:

Student: *I probably should have planned for it* [*ie* VLE use] *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 webcast, it was just the one Criminal* [lecture]*, I*

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[22] This was reinforced by evaluation feedback from the whole group. When the larger body of 162 students who responded to the civil procedure questionnaire were asked what they thought of the VLE as a learning tool, 17 thought it excellent, 41 very good, 42 good, 37 reasonable, 9 not very good, 14 poor, with 2 giving no response

[23] 'fast speed' refers to an embedded video control whereby the speed of the video and audio can be speeded up or slowed down.

*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 statutes and know what they are talking about as opposed to the first time when you don't really know.*

Her words reveal the moment when she understands how a VLE can be used for previewing and reviewing information already learned, and her realisation (even though she remained neutral about the overall effect that e-learning had on her study patterns) that e-learning could be a significant enhancer of learning, and in surprising, unbidden ways. They are quite profound – an acknowledgement that e-learning could help her understand the law as much as traditional forms of learning. Taken together with the responses of other students in our project, they are evidence that such VLEs can significantly enhance student learning in law.