

Virtual learning environments: setting the scene

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The challenge of widening, deepening and broadening participation in education is substantial. These powerful strategic drivers, and a push to improve efficiency and services, are behind the rise and spread of virtual learning environments (VLEs) in schools, colleges and universities. For information professionals this strategic context provides challenges, many specifically related to the use of 'library' and/or 'published' content in VLEs. In this paper it is suggested that a key strategic challenge for information professionals is that many involved in shaping the future of e-learning do not see the relevance of our content and services to their endeavours. Rebranding is needed to transform 'library' and 'published' content into 'learning tools', and partnership between a broader array of stakeholders in the information chain essential for such large-scale transformation of the way content is delivered and perceived.



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The challenges facing universities are substantial: widening, deepening and broadening participation in education while often facing both financial challenges and increased global competition. Institutions are turning to technology to improve efficiency and services. E-learning technologies are especially important in this context¹, and herald a major paradigm shift in teaching and learning practices in the UK², Europe³, and beyond⁴.

These powerful strategic drivers are behind the rise and spread of virtual learning environments (VLEs) in schools, colleges, and universities. VLEs are software systems which enable distance learning and time shifting in classrooms by providing tools to support asynchronous yet collaborative learning experiences. There is no suggestion that 'traditional' forms of teaching and learning will disappear, but instead that there will be more 'blended' learning with both traditional and modern practices used as appropriate.

Funding is readily available to those institutions, now in the majority in the UK, who are actively working to embed e-learning in their educational programmes. The Higher Education Funding Council for England (HEFCE), for example, will inject £41 million, via the Higher Education Academy and the Joint Information Systems Committee (JISC), to help embed e-learning in universities in the next ten years⁵.

For information professionals this strategic context provides challenges, many specifically related to the use of 'library' and/or 'published' content in VLEs⁶. In this paper it is suggested that the key strategic challenge for information professionals is that many involved in shaping the future of e-learning do not see the relevance of our content and services to their endeavours. Rebranding is needed to transform 'library' and 'published' content into 'learning tools', and partnership between a broader array of stakeholders in the information chain essential for such large-scale transformation of the way content is delivered and perceived.

Method

Over the last three years it had become increasingly apparent that librarians, publishers and other information specialists were working on the same challenges as e-learning practitioners, but that somehow they did not speak the same language or quite join up. The sense that there is a disconnect between information specialists and e-learning specialists was the starting point for this paper.

For this exploration I returned to my roots as an anthropologist, and conducted loosely structured interviews with 20 librarians, publishers,

VLE vendors, e-learning practitioners, and policy makers. The interviews were equally balanced across these perspectives, but it is not possible for me to quantify how many of each type of professional was interviewed as most, but not all, of the interviewees self-identified in more than one of these categories. Most, but not all, interviewees were based in the UK.

The selection of interviewees was not random, but relied heavily on my recent experiences working for two policy organizations: the JISC (<http://www.jisc.ac.uk/>) and the Publishers Licensing Society (<http://www.pls.org.uk>). In each organization it has been my privilege to work with well-informed independent thinkers who serve as leaders in the transformation of learning, teaching and research. Although this was not the objective of the current exercise, it would be interesting and appropriate to validate my results with another project involving more systematic and structured sampling, and larger sample sizes.

Although it is not appropriate in this paper to go into all the strategic issues covered in the interviews, they did suggest a series of disconnections. These are broad, and potentially damaging, as they separate complementary professions from one another and weaken their influence on policy-making bodies.

The interviews covered the broadest possible range of educational content. However, this article for *Serials* is focused on published journals and books. Journals are included because they are of core concern to the readership of *Serials*, and books – textbooks in particular – because they offer so many interesting insights as the definitive learning support resource⁷.

Each interview began with three key questions:

1. What sort of content could /should be in virtual learning environments?
2. At what level of granularity?
3. How might the content get in there?

The first question generally sparked a free-ranging and interesting conversation, and the second and third questions were used primarily as prompts as the interviews progressed. Two additional questions were posed at the end of each interview:

1. What are the key challenges to including content in VLEs?
2. What three key recommendations would you make about content in VLEs?

The patterns that emerge from these interviews are documented here to indicate trends, key challenges and new opportunities in this fast-moving strategic area. In reporting the outcomes every effort has been made to weed out individual hobby horses and emphasize only recurrent messages and patterns.

Content: a definition

The word 'content' proved contentious in several interviews, and this itself was an important initial stimulus for analysis. The term content is used here very broadly indeed, and refers to any material that is relevant for a learner, teacher, or educational institution. The material needed in education is very broad indeed, and yet there are no current information services or systems that accommodate the full range of books, journals, images, maps, films, directories, human experts, images, models, etc. The same broad range of material is needed in VLEs and, in addition, user expectations that content will be evermore interactive, engaging and personalized are growing quickly in the online world.

There is plenty of interest in, and a market for, a wide range of educational material. A recent report⁸ forecasts that consumer online content revenues in Western Europe will increase to €3bn in 2005, reaching €16bn in 2008. The report highlights that although business content revenues are currently higher than consumer revenues, this is quickly changing. The main categories of content benefiting as a result will include published 'text and image-based content' and also new value-added services built over traditional content.

Discussion

There appear to be some fundamental disconnects between stakeholders involved in e-learning. Without bridges, these disconnects have the capacity to lead to a world in which little-structured, high-quality content – the kind of content librarians and publishers are so good at producing and looking after – is devalued or, worse, simply unavailable. What follows are some examples of these disconnects...

The value of having journal and book content in VLEs

A key tactic in encouraging the adoption of e-learning practices is to encourage/require teachers to get *any* content into a VLE and then to get the teachers using the VLE. Few institutions are yet worrying much about the quality, source, cost, legality, or sustainability of the content that they use. I was struck by the number of institutions training/supporting staff in adding their own resources to VLEs. Courses in using DreamWeaver, cascading style sheets, flash animation and video editing are increasingly common on campuses, as is specialist advice and support for producing high-quality learning materials.

Librarians and publishers seem certain that links to full text from books and journals is essential within VLEs, and most talked about the importance of images too. The librarians went on to name a broad array of additional content: databases, video, webcasts, lecture notes, directories. Several also emphasized the importance of having content accessible to students with disabilities.

Interestingly, e-learning practitioners and VLE vendors seemed equally certain that what they want and need to see in VLEs “isn’t being published right now” and “isn’t available in libraries”. To them, the words ‘book’ and ‘journal’ meant static images of text, or dull HTML pages with hyperlinks – nothing terribly interactive or engaging. They enthused about models, visualizations, search engines, glossaries, exercises, story problems with integrated solving tools, past exam papers, tutorials, study skill resources, web resources, and interactive content that let students play around and experiment. And after this list of exciting content, they acknowledged that they would sometimes need extracts from books and journals and other information resources too.

Whose job is it to ensure that journal and book content is in the VLE?

Most interviewees indicated that librarians are the professionals responsible for ensuring that journal and book content appears in VLEs. Textbook publishers were the one exception and instead appeared to focus on lecturers because of their influence over student textbook buying behaviour.

Librarians noted that they were ready, willing, and able to help get content into the VLE but ironically had poor or even no access to the courses on their institutional VLEs. VLE vendors were criticized by librarians for making the environments too secure and too closed to the students on a particular course. However, this is not a problem with VLE systems and instead is caused by specific implementation decisions and policies made within institutions about who ‘needs’ access. Librarians often felt disenfranchised from these decisions.

Where libraries were working actively to incorporate their collections within the VLE there was a range of opinions about how this is best done. Sometimes full text is imported to the VLE, but often technical problems prevent this from being an ideal solution, or even possible. It was more common to build links to the OPAC or direct to the publisher’s site. However, only publishers whose content is visible on the web without authentication barriers are easy to link to. This indicates that institutional policy makers, library system vendors and publishers might also need to do things to enable librarians to make content more accessible in VLEs.

Some librarians reported they would prefer it if links to the OPAC were the norm, with a message to direct students to their libraries if they needed access to print or electronic resources. But this attitude was disconnected from students’ expectations in the web age: immediate access to full content that they can play around with and figure out for themselves⁹. One librarian commented that links to the OPAC are one of the only ways to ensure that the copyright position of materials is made clear to users (see below). She welcomed any initiatives to clarify copyright issues, and welcomed the forthcoming launch of a collective scanning licence.¹⁰

Barriers to incorporating journal and book content into VLEs

There are many teething problems associated with the use of VLEs. All the interviews revealed challenges identified as important barriers, particularly to the incorporation of journal and book content into VLEs. I have grouped them here under seven headings: awareness, business models, copyright, formats, granularity, standards and timing.

Awareness

Teachers rely on librarians for advice and access to library materials but often have an old-fashioned concept of what is available from the library. Policy makers may also have inaccurate preconceptions and believe that both library materials and published content is woefully out of step with modern learning and teaching requirements.

Academic colleagues are likely to appreciate being able to rely on library colleagues to organize image collections, learning materials, webcasts, video, free web resources, and more. Efforts to include a wide array of content in OPACs are therefore especially useful, and many libraries are already doing this.

Librarians could helpfully organize resources more easily for retrieval by educators rather than generic users. For example, some interviewees spoke longingly of being able to search the OPAC using native language, rather than keywords, for things such as 'resources to use with a second-year biology course fieldtrip focusing on freshwater ecology'.

Business models

Pricing was not the focus of the interviews, but librarians did voice a great deal of concern about the cost of, and pricing models for, electronic journals and books. Publishers also voiced similar concern about the very real costs of producing electronic journals and books in new ways to support their use in rapidly evolving educational contexts. There is clearly a disconnect on this issue, and one it would be helpful for the two communities to explore realistically and in more harmony.

Textbook publishers seemed to be creating the types of value-added support materials that the e-learning practitioners were most enthusiastic about: resources on companion web sites, on CD ROMs, self-assessment materials, advice to teachers. Significant funding is injected into the system because students pay for textbooks.

If all learning resources are available in the VLE and students stop buying books, then this investment is unlikely to be replaced by central funds for content procurement or creation. One publisher commented that "to optimize a chemistry textbook involves a team of authors, years of in-house development by a publisher, years of testing on classes and obsessive design work. Is central funding really going to cover these costs?"

Furthermore, international investment in textbooks is essential to publishers as it helps them

attract the best authors and it also helps keep down the costs to any individual country. It is therefore important for publishers to understand better how it is intended that international e-learning initiatives will align, when, and how. Market signalling is especially important in changing times.

Few textbook publishers identified librarians as a primary marketing target, and instead focused on influencing educators to adopt key texts for classroom use. Many of the librarians interviewed were unaware of the large number of web resources accompanying adopted textbooks, and none indicated that this material was incorporated into their collections. It could have considerable value when embedded in VLEs, but how will this happen if academics think it is the role of librarians, and publishers do not tell librarians about it or make it easy for them to build links to it? Textbook publishers appear to have a further challenge as their value-added content is very marketable, but they are not necessarily charging for it at the minute: instead they are still charging for the books.

The key issue about business models is who will pay for e-learning materials, and what they will pay. Not all learning materials will be available online, or through VLEs, so how is this added complexity paid for? Without some careful preparation and planning – and engagement of the public sector with the commercial sector – the e-learning revolution puts complementary segments of the information profession at considerable risk.

Copyright

Librarians tend to be very aware of, and compliant with, copyright laws but academics are not so aware. Librarians understood this, and felt accountable without being empowered. Interestingly, the emphasis publishers place on copyright education (rather than enforcement through the courts as music companies have opted for) was greatly appreciated. Collaboration between librarians and publishers on copyright awareness and education would be welcome.

There is currently not enough information about where lecturers are sourcing all the materials and information that they incorporate into their 'home-grown' learning materials. The copyright position of free resources, in particular those from the web, is extremely unclear, and more clarity would be welcome.

Publishers were particularly concerned that their materials would be incorporated into VLEs

and then redistributed or republished in ways that damage their primary sales. Intriguingly, a similar concern from librarians and policy makers was voiced: what do institutions own and what can they keep when lecturers move on? Should students be able to copy and re-use resources they use in their university's VLE, especially as they may in future be lecturers at competing institutions. Funders and policy makers have commissioned work in this area¹¹, however this has not yet been adequately disseminated and incorporated into institutional policies.

There appear to be two fundamental copyright issues at present. The first is how to encourage greater understanding of copyright across a much wider spectrum of the education community (and greater clarity about copyright across a much wider spectrum of content). The second is control: who decides when and how copyright materials should be released from control – whoever it belongs to?

Formats

Many interviewees reported experimental work with VLE or other software vendors, and publishers, to make text files more interactive. Making these files more interactive raised concerns among publishers about control of their materials and especially concern about redistribution or republication.

Granularity

All levels of content granularity from courseware to single images or paragraphs will be required, but it is not yet clear how to predict what level of granularity is best in any particular situation. It all seems to depend on the teacher's preference and the institution's resources.

Concern was expressed by librarians and policy makers in higher education that the availability of courseware would "introduce a national curriculum through the back door". However, someone teaching first-year archaeological science might not wish to teach calculus to students without a mathematics A level, and might appreciate courseware for this module and no other.

Intriguingly, granularity was identified as a red herring by e-learning practitioners. The desirable thing, they told me, was to be able to 'opt out' of using a proportion of materials (e.g. a chapter of an e-book, or section three of a courseware module). Teachers want the freedom to select from a wide range of materials, and did not want libraries to buy 'only what is necessary'. In no instance,

however, did an e-learning practitioner raise with me the likely cost of producing, acquiring, and managing large collections of e-learning materials, at all levels of granularity, 'just in case' a lecturer might choose to use it.

Standards

Most institutions are struggling to integrate the VLE software into a broader managed learning environment (MLE)¹² and standards to support content integration are not at present a priority.

VLE vendors confirmed that content-related standards will appear high on the priority list when more institutions try to migrate between VLE platforms, and encounter problems in porting their learning materials across. McLean¹³ provides a useful overview of emerging standards in these areas. Technical fora for interoperability standards are available¹⁴ but little clear information for senior managers and policy makers is available. UK LOM Core was mentioned as helpful in several interviews but a policy framework for applying it has apparently yet to be agreed.¹⁵ The IMS Resource List Interoperability Specification¹⁶ was also described as useful. A great deal of information about interoperability standards in this area is available through the JISC web pages. Particularly helpful programmes are the PALS Metadata and Interoperability Programme¹⁷ and the Linking Digital Libraries with VLEs (DiVLE) Programme¹⁸.

The highest quality learning metadata is very resource intensive and costly as it combines cataloguing metadata from libraries with pedagogical metadata from lecturers and an array of the other types of metadata needed to manage and preserve complex digital objects. The standards in this area are immature, but already the cost implications and apparent lack of business models are of concern.

Timing

VLEs are similar to institutional repositories, and still at a very early stage in their development. Most interviewees with VLE experience lamented the fact that they still tend to be used for administrative purposes rather than for innovative teaching. There is some concern that VLEs will become grand car parks for lecture notes and reading lists rather than enabling technologies for transforming teaching and learning as they are meant to be. This presents a real challenge for both librarians and publishers as they need to provide content to

support traditional practices as well as support for innovative teaching and learning practices.

Recommendations

Recommendations for funders and policy makers

Imaginative e-learning materials require skill to produce and manage. Recognize and reward those who produce and manage these materials – academics, librarians, publishers, and technologists. In universities there is often clear recognition for specialist research skills and outputs, but not necessarily so for equally specialized pedagogic skills and their many outputs.

There appears to be little shared view about the range of expertise and costs in the current system for producing and disseminating printed learning materials. Funding for proper economic analysis, and also transition funding to help professionals innovate and transform their learning support practices, would be helpful. Funding to create fora where academics, librarians, publishers, and technologists can all come together to ensure that their objectives are aligned for the support of e-learning would also be extremely useful in breaking down traditional professional silos. If funders and policy makers remain neutral about business models, this input will leverage the greatest value for the academic sector from all.

Copyright can be complex to understand and manage, and it is not going to go away or become simple. There is no magic bullet. Educational institutions will need more automated tools for helping them to manage their own intellectual property, and to properly care for the intellectual property of others that is borrowed, licensed or purchased to support staff and students. Every university should have a copyright policy for its own and for third-party resources, and more needs to be done to disseminate the good information that already exists about copyright in a way that institutional administrators can understand and operationalize. Neutral guidelines to individual staff and students about what copyright is, how it can be assigned/licensed/sold, and the rights *and* responsibilities of both creators *and* users would be extremely helpful.

Recommendations for publishers

To support e-learning, book and journal content must be pedagogically appropriate and contextualized. Traditionally, teachers and textbooks are the two resources that supply context for students in the course of their learning. If journal and monograph publishers wish to tap into the e-learning market and see their content used in VLEs they will need to do the same or else rely on librarians to do so.

More powerfully, rather than libraries or publishers providing the context, groups of learners might provide it if they are enabled to use tools and services so that they can contextualize content for themselves. Two examples help to illustrate this:

- Students, rather than relying on a reading list, could instead be asked to identify what resources would be useful to them in designing a new water reservoir, and to explain why each resource is important. The students would be able to upload full-text content to the VLE and then collaboratively embed electronic comments in the margins to document their decision making processes.
- Teachers would recommend journal titles for purchase to their libraries not on the basis of impact factor, but after reviewing embedded annotations from other lecturers about how they have used the journal (or articles from it) with a class of students: what worked and what did not work?

Whoever does the contextualization, it can be an expensive and time-consuming business. Interestingly, however, this requirement is not restricted to the support of e-learning. It is also required in support of the e-science agenda (e.g. the links between publications, primary data, and visualization and analysis tools) and increasingly for e-business (e.g. for embedding in collaborative workspaces). Contextualization is a broad challenge to all information professionals in the digital age, and the key to tapping into many new markets.

Primary publishers could helpfully reflect on, and experiment with, their desired position in the e-learning landscape. There are many potential roles: distributor, learning pathway developer, catalogue provider, trusted brand, manager of others' IPR, owner or developer of VLEs, licensor of content to VLE developers, authoring tool developer, courseware publisher, or other service

provider. It would be extremely helpful if publishers could clarify whether they will repurpose their own scholarly content for e-learning, rely on trusted intermediaries to do this, empower academics to do this, or allow a mixture of these models? Decisions will differ across the publishing industry, and across brands and titles, and it will take time. However, a signal that the publishing industry is exploring options, and actively experimenting, would be timely and welcome in the academic community.

Academics are more likely to be recognized and rewarded for writing research articles and books than for creating imaginative e-learning materials. Many higher education institutions are, however, investing in authoring tools and so the university sector might be a net exporter of re-usable learning materials. There may be opportunities to change acquisition practices, and thus encourage more imaginative production of e-texts and other learning materials. This would also signal to university leaders that publishers are important partners in driving change and supporting the widening participation and other strategic agendas of importance to policy makers.

Recommendations for librarians

Librarians could helpfully reflect on, experiment with, and clarify why institutional investment is made in learning resources, whether purchased or produced in-house. Are some materials primarily to fuel research? Are other materials primarily to fuel learning? Are some investments made to encourage lecturers to develop their skills and begin using VLEs to transform their learning? Is it to enable the institution to compete to attract learners? Is it to provide more resources when student debt is on the rise?

This clarity could usefully inform strategies, funding decisions and partnerships. It would also improve signalling to commercial organizations about requirements, and improved signalling is critically important for leveraging maximum value out of suppliers and ensuring value for money.

For example, in order to promote uptake of VLEs, librarians might ask journal publishers to change their site licensing practices to enable widespread repurposing of content by academics using VLEs. However, librarians also need to consider whether they would be willing to renegotiate this

position in three years' time – in consultation with publishing partners – if the financial models look unsustainable, or if home-grown materials are of insufficient quality?

Librarians' role in advising on information literacy skills is respected, and could perhaps be developed into advising on structuring e-learning content and e-assessment techniques too. Is this a role that librarians would like to have?

Finally, there is a glaring need for non-technical information about key standards for integrating journal and book content into VLEs. Many of the people interviewed were extremely influential, and hazily aware that there 'are issues' about standards and interoperability. No one was clear about the nature of these issues or, more importantly, what, if anything, needed to be done about them. It would be strategic to agitate for appropriate, and similar, standards across digital library, e-learning and e-science systems. Librarians and publishers, working together and with library system developers and VLE system developers, have an opportunity to influence standards development in these areas but first, key people will want to understand what is needed and why.

Conclusion

Librarians and publishers, working together, have some hope of informing and influencing e-learning practitioners and policy makers. The perceived value of text – and the perceived value of the information professions – is at stake in the digital world. Working alone means that both groups' influence and chances for success will be diminished. Library and publishing directors can together provide access in innovative ways to an awe-inspiring array of useful learning materials and – more importantly – inform and deepen the debate about achieving strategic objectives through the greater use of high-quality materials to support e-learning.

There is real potential to transform the quality of learning experiences through the imaginative provision of high-quality materials. Deeper engagement with the learning agenda also has the potential to transform the information professions. I was inspired by this description of a learning community:

“The defining quality of a learning community is that there is a culture of learning,

in which everyone is involved in a collective effort of understanding. There are four characteristics that such a culture must have: (1) diversity of expertise among its members, who are valued for their contributions and given support to develop, (2) a shared objective of continually advancing the collective knowledge and skills, (3) an emphasis on learning how to learn, and (4) mechanisms for sharing what is learned. If a learning community is presented with a problem, then the learning community can bring its collective knowledge to bear on the problem. It is not necessary that each member assimilate everything that the community knows, but each should know who within the community has relevant expertise to address any problem."¹⁹

Can a learning community of librarians, publishers, and others in the information supply chain who face digital content challenges together be forged?

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