Strategic Learning Environment Configurations in the Higher Education Sector in the U.K. and the U.S.

This report discusses emerging trends in the use of strategic learning environments at higher education institutions. It includes a summary of the trends in usage of various virtual learning environments, as well as discussions of the ways in which institutions are using new technologies such as Web 2.0 tools and personal learning environments.
Introduction

Over the last decade, the use of virtual learning environments and similar systems has grown dramatically, and many institutions of higher education now rely on these systems to help manage academic materials and student information. In fact, usage has grown so much that the Universities and Colleges Information Systems Association (UCISA), which conducts periodic surveys of higher education institutions in the United Kingdom, did not even include a question on their latest survey asking whether institutions use a VLE, after their 2005 survey revealed that 95 percent of all institutions and 98 percent of pre-92 universities used some form of virtual learning environment.\(^1\)

This report examines emerging trends in the use of virtual learning environments and other related technologies at institutions of higher education in the United Kingdom and the United States. It is divided into 4 main sections:

- **Virtual Learning Environment (VLE) Overviews** provides a brief description of each of the major VLEs in use today, noting major distinguishing features and major recent developments such as mergers with competing systems.
- **Types of VLE in Use** examines the relative popularity of various VLE systems over time, relying on surveys of UK and US institutions. This section includes discussion of the relative popularity of proprietary and open source systems in both countries.
- **Web 2.0 Tools** explores the ways in which some institutions are using Web 2.0 technologies such as wikis and social networks to enhance the learning process.
- **Personal Learning Environments and e-Portfolios** discusses the emerging use of these related technologies in higher education.

**Terminology**

There are a wide variety of technical terms used to describe the software used for managing the learning process at institutions of higher education. Some types of systems are called by different names in the United States and the United Kingdom. The most prominent example of this occurs with virtual learning environments (VLEs), which are generally referred to in the United States as learning management systems (LMSs). This report generally uses the terms “virtual learning environment” and “VLE,” even when referring to the US market. Adding to the possibility for confusion, the term “learning management system” is also commonly used to refer to

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systems used by corporations to manage the training of employees. These systems are not discussed in this report.

Personal learning environments (PLEs) give learners greater freedom in the tools they use to access academic information than the more centralized VLEs do. They are closely related to the idea of an e-portfolio containing electronic records of learners’ educational careers. Both of these terms appear to be more common in the UK than in the US, and there does not yet appear to be an equivalent term as is the case with VLEs and LMSs.
Virtual Learning Environment (VLE) Overviews

Proprietary

Blackboard

Blackboard is the leading corporate provider of LMSs/VLEs to higher education institutions in both the UK and the US markets. In the last few years, it has purchased two of its major competitors, WebCT and Angel, and initiated patent lawsuits against a third, Desire2Learn.

WebCT

WebCT was formerly one of Blackboard’s largest competitors, even exceeding their market share in some surveys in the early part of the decade. The company was bought by Blackboard in 2005, however, and its product line is being merged with Blackboard’s and its brand names retired. Since its purchase by Blackboard, its market share has declined sharply, especially among smaller American colleges, as many former users have shifted either to Blackboard or to competing systems.

Angel

Angel Learning was another major competitor to Blackboard. Its products were more popular with American than British universities, and grew in popularity after WebCT was purchased by Blackboard. On May 6, 2009, Angel and Blackboard announced a definitive agreement for Blackboard to buy Angel for $80 million in cash and $15 million in stock. Blackboard’s president and CEO announced that development on Angel’s software would continue at least until the release of the next new version, but that in the long-term, its best features would likely be merged into existing Blackboard software. It remains to be seen what will happen to Angel’s market share as a result of this acquisition, but given the declines seen by WebCT after their merger with Blackboard, it seems unlikely that use of Angel will expand.

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2 Tom Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK (Universities and Colleges Information Systems Association), http://www.ucisa.ac.uk/publications/~/media/groups/tlig/vle_surveys/TEL%20survey%202008%20pdf.ashx.


5 Ibid.
Desire2Learn

Desire2Learn is another of Blackboard’s competitors, and one of the few major vendors that has not been purchased by them. Their market share in both the UK and the US is fairly small, and they are notable largely because Blackboard has sued them for infringing a number of US patents on e-learning systems. The lawsuits may not be harming Desire2Learn, though; Gartner Research Director Marti Harris reported in an interview that his company’s surveys had revealed that the lawsuits had actually raised Desire2Learn’s profile and generated more requests for information, and that Blackboard was viewed by many in the higher education sector as something of a bully because of the lawsuits. The legal process has also not gone well for Blackboard so far. The US Patent and Trademark Office has invalidated all of the claims in its patents, though this decision could still be overruled in court. Blackboard also has a pending patent infringement suit against Desire2Learn in Canada.

Open Source

In addition to the VLEs offered by corporations such as Blackboard, there are several open source projects that have produced similar software. These systems are not produced by a single corporation; instead, they are maintained by a community of users. The source code of the software is freely available, and no licensing fees need to be paid in order to use the system. These systems have attracted some attention because of their absence of license fees and their ease of customization and expansion, a side effect of the open nature of their development. The absence of a single corporate entity that can be counted on to provide support and upgrades is a major disadvantage of these systems, though support contracts are often available through third parties. Moodle, for example, maintains a list of partners that offer commercial services such as installation and support of the software. It is still an open question as to whether these open source systems actually save money. A representative of Gartner, in an interview discussing their e-learning survey, said:

We’ve yet to really know how much cheaper these open source apps are. We haven’t been doing this long enough to really know the total price tag on migration, for one thing, and then the ongoing total cost of ownership.

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He noted that they would need to observe more migrations from commercial systems to open source ones before it would be possible to make accurate comparisons of cost.\textsuperscript{9}

\textit{Moodle}

Moodle is the most prominent open source LMS/VLE currently in existence. While the first version was officially released in 2002, its market share has only recently begun to show strong growth. It appears to be especially popular in the UK as a supplement to other systems. One survey indicates very strong growth since 2005.\textsuperscript{10} Surveys in the United States suggest slower growth, possibly because of competition with Angel for non-Blackboard institutions in that market.\textsuperscript{11,12,13,14} Moodle is the only open source VLE with a significant presence in either of these surveys. No other open source system was named by more than 5 percent of respondents in either set of surveys.

\textsuperscript{9} Briggs, “Gartner: E-learning Market Pushing Toward Open Source.”
\textsuperscript{10} Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK
\textsuperscript{11} Second Annual Survey on Distance Education: Results (Instructional Technology Council, February 11, 2006), http://www.chabotcollege.edu/DECSC/resources/ITCAnnualSurveyFeb2006Results.pdf
\textsuperscript{12} Fred Lokken and Lynda Womer, 2006 Distance Education Survey Results: Tracking the Impact of e-learning in Higher Education (Instructional Technology Council, April 2007), http://cos.edu/ImageUpload_Links/Trends\%20in\%20E-Learning.pdf
\textsuperscript{13} Fred Lokken, Lynda Womer, and Christine Mullins, 2007 Distance Education Survey Results: Tracking the Impact of eLearning at Community Colleges (Instructional Technology Council, April 2008), http://www.immagic.com/eLibrary/ARCHIVES/GENERAL/AACC_US/1080318L.pdf
\textsuperscript{14} Lokken, 2008 Distance Education Survey Results: Tracking the Impact of eLearning at Community Colleges.
Types of VLE in Use

United Kingdom

In the United Kingdom, the Universities and Colleges Information Systems Association (UCISA) has conducted four surveys since 2001 that focused on institutions’ use of technology to enhance the learning process. These surveys repeated many of the same questions each year, allowing for some analysis in the trends in the use of VLEs and other systems over time. The survey focus has changed somewhat; while the initial surveys had a greater focus on determining how widespread the use of VLEs and similar systems was, the more recent surveys have focused more on the details of implementations, as these systems are now in use at almost all higher education institutions in the UK. The 2005 survey found that 95 percent of all UK higher education institutions, and 98 percent of pre-1992 universities, used some form of virtual learning environment.

These UCISA surveys asked respondents for information on the specific types of virtual learning environment they used. The respondents could choose more than one VLE if more than one was in use. In fact, the 2003 and 2005 surveys specifically asked how many VLEs were in use, and the responses revealed that 58 and 61 percent of respondents in the respective years used more than one VLE. The chart below shows the trends in usage at all higher education institutions that responded to the survey. VLEs with very low usage rates (less than 10 percent in every year) are omitted from the chart for clarity. Some VLEs, such as Moodle, were not included in all of the surveys, so a few data points are missing.

At the time of the first survey, in 2001, Blackboard and WebCT were the top VLEs, with FirstClass also in use at many institutions. WebCT and FirstClass both saw their market share decrease significantly in later surveys, while Blackboard’s share increased slightly. In-house systems increased in popularity until 2005, then decreased slightly between the 2005 and 2008 surveys. Perhaps the most dramatic trend revealed by the survey was the growth in the number of institutions using Moodle. The first two surveys did not even ask about Moodle. When it was first asked about in 2005, less than 10 percent of institutions used it, but by 2008, over half of the responding institutions were using it in some way, making it the most commonly-used VLE.

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15 Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK.
17 Ibid.
Top VLEs in Use at All UK HE Institutions

For each survey except the 2001 survey, UCIS also broke down responses by university type. The chart below shows patterns in usage for pre-1992 universities. These trends are fairly similar to those observed for all higher education institutions.

Top VLEs in Use at Pre-92 Universities
In 2008, another question was added to the survey that asked institutions which VLE was the main VLE used at an enterprise rather than departmental level. The chart below shows the responses from pre-1992 universities. The division here is a bit different than in the charts above. These results suggest that when Blackboard is used by an institution, it is almost always the main VLE (41 percent reported using it, and 39 percent said it was their main VLE). WebCT users showed a similar pattern, with 33 percent of respondents using it and 26 percent naming it as their main VLE. Moodle, by contrast, appears to be used as a secondary or departmental system in many cases. Over half of respondents use it, but only 18 percent said it was their main VLE. Together, these three systems account for the vast majority of main VLEs in use; very few institutions use home-grown or other systems as their main VLE.

**Main VLE in Use at Pre-92 Universities, 2008**

![Pie chart showing the distribution of main VLEs used at Pre-92 universities in 2008. The chart indicates that Blackboard is used by 39% of respondents, WebCT by 26%, and Moodle by 18%. No VLE is used by 8%, and 3% use other systems, including Sakai and in-house solutions.]

Source: Tom Browne et al., 2008 *Survey of Technology Enhanced Learning for higher education in the UK*
United States

Surveys have also been conducted in the United States to assess the types of VLE (usually referred to as a learning management system, or LMS, in the US) in use at higher education institutions. Unfortunately, most of these surveys do not include the detailed breakdown of the exact system type that UCIS includes in their surveys.

The publically available reports on Gartner’s 2007 Higher Education E-Learning Survey do not include a detailed breakdown of the VLE usage by system, but they do discuss trends in proprietary versus open source deployments. The survey revealed that open source systems were seeing significant growth. Gartner found that 26 percent of systems were open source in 2007, and projected that this figure would grow to 35 percent by the end of 2008. Moodle, rather than other systems such as Sakai, accounted for almost all of these open source installations. Gartner also found that roughly ten percent of institutions were using a home-grown system, which is not too far from the figures UCIS found for UK institutions. They noted that most of these home-grown systems were not built from scratch, but were instead based on some other software, often Microsoft SharePoint.18

One of the few surveys of American institutions that does include data on the precise systems in use is the e-learning survey conducted by the American Association of Community Colleges’ Instructional Technology Council. Unfortunately, this survey included only community colleges and not universities. The results still reveal some interesting differences between the American and British markets. The chart below shows the trends in use of the top four learning management systems included on the survey. No other system accounted for more than five percent of responses in any year. While it appears that the survey allowed multiple choices, very few institutions named more than one VLE. As a result, it may be more meaningful to compare these results to the UCIS question about the main VLE in use at an institution rather than the questions asking them to name all VLEs in use. It is also possible that American community colleges are simply much more likely than British institutions to use only a single system.

One of the most notable differences between these results and UCISA’s results for UK institutions is the prevalence of Angel VLEs at American community colleges. These are the third most common type of VLE in this market, but are entirely absent from the UK market. In the US, Angel appears to have benefitted from Blackboard’s purchase of WebCT, as it saw its market share increase significantly after the 2006 merger, while WebCT’s market share dropped. It did not appear that Blackboard was able to capture any of the market share of WebCT; its market share remained more or less constant after the merger. Moodle has much lower adoption rates among US community colleges than among UK institutions. It appears that Blackboard and

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18 Briggs, “Gartner: E-learning Market Pushing Toward Open Source.”
WebCT combined have roughly the same market share in both markets, with the remainder of the market divided among other competitors. In the US, Moodle and Angel split this remainder, while in the UK, where there are few if any Angel installations, Moodle controls the largest portion of this remainder.

**LMS Usage at US Community Colleges**

It remains to be seen what the effects of Blackboard’s recent purchase of Angel will be. If the market responds to this merger in the same way it responded to the Blackboard/WebCT merger, Angel may see its market share gains erased in the next few years. If this happens, it is not entirely clear which competitors would benefit. Desire2Learn is the next largest commercial competitor, but its market share has never topped five percent in this survey, and it is engaged in a patent dispute with Blackboard. It is possible that the purchase of Angel will instead drive adoption of the open-source Moodle platform among US institutions.
Web 2.0 Tools

Many higher education institutions have begun to use Web 2.0 tools such as blogs, wikis, and social networking software to enhance the teaching process. The 2008 UCISA survey asked UK institutions about these sorts of tools. The survey asked whether each tool was used, and whether it was centrally supported or not. The chart below shows the responses for pre-1992 universities.19

Blogs, podcasts, and wikis were all used in a centrally supported manner by over half of the institutions surveyed, and were used in a decentralized manner by at least a quarter of institutions. Social bookmarking tools were less likely to be centrally supported, but were still used by a significant fraction of the universities that responded to the survey.20

![Web 2.0 Tools Used by Students at Pre-92 Universities, 2008](chart.png)

Source: Tom Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK

A 2008 study prepared for the Joint Information Systems Committee (JISC) by Dr. Shailey Minocha of the Open University, UK collected 26 case studies that examined the ways in which UK institutions of higher education had used social software, including a number of Web 2.0 tools, to enhance the learning process.21 The following subsections each address a single Web 2.0 tool, drawing heavily on the case

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20 Ibid.
studies prepared by Dr. Minocha and supplemented with statistics compiled from the UCISA surveys showing the specific tools being used at responding institutions.

Social Networking Tools

A major concern that arose in the use of social networking tools at some institutions was the decision between in-house and public systems. Some case studies used public systems like Facebook and Flickr, while others used internal systems. Internal systems were often used because institutions were concerned over the lack of control provided by public sites like Facebook. With a public service like Facebook, features could be removed partway through the class, it might be difficult to modify the software to better suit class needs, and there was no administrative control. One institution cited a case of a student’s Facebook account being deactivated, causing the loss of academic work. Some students also had concerns about publishing their work on public sites, and others did not want to connect existing accounts (especially Facebook) with their academic work, viewing these as social rather than academic spaces. On the other hand, introducing new tools meant training students to use them, whereas many students were already familiar with publically available systems and used them on a regular basis.22

Blogs

A number of the institutions profiled in Minocha’s case studies used blogs as part of their efforts to integrate technology into the learning process. The uses of blogs can be broadly divided into two categories: cases where blogs are used by the administration or faculty to disseminate information to students, and cases where students are required or encouraged to write blogs of their own as part of the learning process.

Blogs run by faculty and administration often focus on providing updates about new services (in the case of administrative departments) or updates on news related to the class. The library staff at Coleg Llandrillo Cymru, in North Wales, for example, maintained a blog providing updates on new services at the library. Readers could comment on the posts, allowing the librarians to receive feedback, and many posts were based on questions that had been asked at the library’s inquiry desk. The blog therefore provided a convenient way to answer frequently asked questions in a central, easy to edit area that allowed for feedback from readers. The blog has also facilitated communication with librarians at other universities, including some in the US and Canada, as they read and respond to posts.23

22 Minocha, A Study on the Effective Use of Social Software by Further and Higher Education in the UK to Support Student Learning and Engagement
Initiatives that involved requiring students, rather than faculty or staff, to blog often focused on improving communications between students and encouraging them to learn from one another. A project at Nottingham Trent University created a closed blog, accessible only to students, to help teacher trainees communicate with one another. In this program, most of the trainees did not know each other ahead of time and spent little time together at the university before beginning practical training in a classroom, often far from all of their peers. The hope was that creating this blog would provide a way for these students to interact with one another, reducing feelings of isolation and reducing dropout rates, which had been a problem in the past. The university used LiveJournal to set up the blog. The project was a success; all of the students contributed to the blog, and most had very positive feedback. There was some anecdotal evidence that the blog had directly prevented at least one dropout by allowing problems to be dealt with immediately.24

The UCISA survey revealed that many institutions used blogging software associated with one of the major VLEs. Twenty percent used Blackboard’s blogging software, another 17 percent used WebCT, and 13 percent used Moodle. A significant number also used blogging software from Learning Objects,25 which provides social software that is designed to easily integrate with Blackboard.26 These tools tended to be centrally supported when they were used. Other software that was used by some institutions included Wordress, Blogger, and other systems that were developed in-house. Unlike the blogging systems integrated with VLEs, these systems were often not centrally supported. 27

24 Ibid., 49-53
25 Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK, 34-41
27 Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK, 34-41
Blogging Tools in Use at Pre-92 Universities, 2008

<table>
<thead>
<tr>
<th>Tool</th>
<th>Centrally Supported</th>
<th>Not Centrally Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td>Learning objects</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td>Wordpress</td>
<td>13%</td>
<td>10%</td>
</tr>
<tr>
<td>Moodle</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td>WebCT</td>
<td>17%</td>
<td>13%</td>
</tr>
<tr>
<td>In house developed</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td>Blogger</td>
<td>8%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Source: Tom Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK

Wikis

A number of institutions have used wikis in conjunction with classes or as a way of disseminating administrative information. There are two major approaches to implementing a wiki: institutions can install wiki software on their own servers and handle the administration themselves, or they can use externally hosted wiki software such as that provided by PB Wiki. Institutions taking the first approach often use the wiki software associated with their VLE. The Open University, for example, used Moodle's wiki software to support collaborative work in several engineering classes. Institutions taking the first approach often use the wiki software associated with their VLE. The Open University, for example, used Moodle's wiki software to support collaborative work in several engineering classes. There are also free-standing open source wikis that can be installed on university servers. The University of Leeds, for example, based its LeedsWiki system on the MediaWiki software that was originally developed to run Wikipedia. All of the profiled institutions that took the second approach used PBWiki.

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28 Minocha, Effective Use of Social Software in UK Further and Higher Education: Case Studies, 59-63.
29 Ibid., 86-89
The UCISA survey grouped wiki tools using slightly different divisions than the ones discussed above. Centrally supported wiki software fell into two categories: software linked to major VLEs, such as Blackboard and Moodle (including Learning Objects software designed to integrate with Blackboard); and other open source or hosted wiki software such as PB Wiki, PM Wiki, and MediaWiki, which were grouped under a single option on the survey. It is therefore difficult to tell how many institutions relied on externally hosted wikis, as they cannot be separated from locally installed software such as MediaWiki. The systems linked to VLEs were always centrally supported when they were used; other systems, including in-house systems, were sometimes not centrally supported.30

Social Bookmarking

Social bookmarking tools were often used to allow students to share online resources related to classes with one another. In most of the published case studies, these tools were used in conjunction with a single class on the initiative of the faculty responsible for that particular class. Most of the case studies used Delicious or another publically

30 Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK, 34-41.
available, externally hosted service such as BibSonomy, and appeared to require little central support from the institution.31

The UCISA survey gave a slightly different picture of the sorts of social bookmarking tools being used. It suggested that there were many universities using centrally supported social bookmarking tools associated with their VLEs. Blackboard was the most commonly used social bookmarking tool among pre-92 universities, with WebCT also attracting a reasonable number of users. The only tool not associated with a major VLE that received central support from any institutions was Delicious. A small number of institutions used Facebook and Furl, but did not provide central support for them.32

Social Bookmarking Tools in Use at Pre-92 Universities, 2008

Podcasting

Only two of the case studies examined in the Open University report involved the use of podcasts, and in both of these cases, the podcasts were a limited part of a single class. In one case, a physiotherapy class required students working in groups to create a podcast giving advice on managing back pain to a hypothetical patient.

31 Minocha, Effective Use of Social Software in UK Further and Higher Education: Case Studies
32 Browne et al., 2008 Survey of Technology Enhanced Learning for higher education in the UK, 34-41.
The exercise was designed to prepare students for interactions with patients. At the University of Manchester, the faculty and staff of the dentistry department created a publically available podcast that presented “interviews, news, and updates” in “a friendly and entertaining way.”

As with many of the other social software tools, the most popular centrally supported tools were those developed by Learning Objects and Blackboard. Other systems were much less popular, and there were very few respondents to the UCISA survey who reported using any sort of podcasting tool that was not centrally supported.

### Centrally Supported Podcasting Tools in Use at Pre-92 Universities, 2008

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use (2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Objects</td>
<td>31%</td>
</tr>
<tr>
<td>Blackboard</td>
<td>15%</td>
</tr>
<tr>
<td>ELGG</td>
<td>4%</td>
</tr>
<tr>
<td>In house developed</td>
<td>4%</td>
</tr>
<tr>
<td>Wordpress</td>
<td>4%</td>
</tr>
</tbody>
</table>

Source: Tom Browne et al., *2008 Survey of Technology Enhanced Learning for higher education in the UK*

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34 Ibid., 90-94
Personal Learning Environments and e-Portfolios

Personal Learning Environments (PLEs)

As an alternative to the virtual learning environment model, some in the education sector have proposed personal learning environments (PLEs). The central idea behind these proposals involves giving students more control over their own learning environment. These systems would allow students to choose what tools they use to access the academic information published by the institution. These tools might take the form of desktop applications or third-party portals. Because of the inherently decentralized nature of these systems, they do not lend themselves to simple black-box implementations of the sort seen with VLE systems. Since the focus is on allowing learners to structure their environment in the way that works best for them, no single tool can be used.

There does not yet appear to be clear agreement on exactly what components make up a PLE, or on what steps a university can take to implement one. Some of the discussion connects PLEs closely with e-portfolios, viewing the ability to keep a record of learning experiences as a central part of the PLE. PebblePad, for example, describes itself as a “Personal Learning System,” claiming that it “has been designed with the learner at the centre of the system.”

Some of the projects to more fully describe and develop PLEs have produced little public news recently. The University of Leicester, for example, constructed a wiki to collect resources and information for its PLE project, but there have been no updates to the site since September of 2008, and there is no evidence that the project ever progressed beyond the information gathering stage.

e-Portfolios

The 2008 UCISA survey revealed that 73 percent of pre-92 universities used some sort of e-portfolio tool, and that 67 percent centrally supported this tool. The chart below shows the percentage of respondents using each e-portfolio tool. These survey responses further reinforce the idea that institutions that use Blackboard tend to use its products wherever they are available; 31 percent used Blackboard’s e-portfolio tool, compared with 39 percent who used it as their primary VLE. WebCT’s e-portfolio tool was also used by a significant number of institutions. The only other commercially developed e-portfolio tool to be named by a significant

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37 “PebblePad,” http://www.pebblepad.co.uk/
number of institutions was PebblePAD. Twelve percent of the respondents used in-house e-portfolio systems.\(^{39}\)

### Centrally Supported e-Portfolio Tools Used by Students at Pre-92 Universities

<table>
<thead>
<tr>
<th>Tool</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard</td>
<td>31%</td>
</tr>
<tr>
<td>PebblePAD</td>
<td>19%</td>
</tr>
<tr>
<td>In house developed</td>
<td>12%</td>
</tr>
<tr>
<td>WebCT</td>
<td>19%</td>
</tr>
</tbody>
</table>


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Note

This brief was written to fulfill the specific request of an individual member of The Hanover Research Council. As such, it may not satisfy the needs of all members. We encourage any and all members who have additional questions about this topic – or any other – to contact us.

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