

Usage And Uptake Of Virtual Learning Environments In Ireland: Findings From A Multi Institutional Study^{*}

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Abstract

In early 2008 five Irish tertiary institutions conducted an online survey of their students' usage of Virtual Learning Environments (VLEs) in their respective institutions. In 2009, the survey was run again with an expanded set of institutions and supplemented by a staff survey and detailed institutional case histories. The survey instruments used a common set of questions, and on condition of anonymity, the institutions pooled their results to allow us to compare and contrast the results. While many institutions routinely conduct in-house surveys or studies from time to time, this study is relatively unique in that it draws on data from multiple institutions, across multiple years, and diverse VLE platforms. The institutions who participated represented a diversity of organizational histories and VLE systems. The study identifies some of the key drivers and barriers to uptake and usage of an institutional VLE and identified that it is organizational factors, such as system maturity, rather than technical ones around system choice, that are the most significant factors in the uptake, usage and utility of the VLE systems. The paper also notes issues around the conduct of the survey, confidentiality and data sharing, and lessons from the experience.

Keywords: Virtual Learning Environment, learning management system, technology assisted learning, technology enhanced learning, e-learning.

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1. Introduction to the Study

Virtual Learning Environments (VLEs), also referred as “Learning Management Systems” or “Collaborative Learning Environments”, offer a variety of useful tools including discussions, blogs, chat, assessment and assignment features, that offer a one-stop-shop for teaching and learning needs. Over the past two decades academics and institutes of higher education in Ireland have been diversifying their delivery of instruction through Internet media (Boylan 2000) and almost all of the Irish higher education institutions support a VLE as a means to enable e-learning within their institutions, ranging from commercial proprietary solutions to the new open source choices. However, until the 2006 Strategic-Innovation Fund call, inter-institutional innovations and research into the eLearning have been limited. Institution-bound national research has indicated that the VLE provides a content repository but, in many cases, limited active learner participation (Blin & Munro 2008; Donnelly & O'Rourke 2007). These authors note that there is a qualitative difference between ‘teaching online’ and merely ‘putting a course online’; and online pedagogies are frequently valued by academic staff only in proportion to how well they seem to reproduce or simulate an equivalent face-to-face experience. While numerous unanswered questions arise, the primary questions that the survey sought to ask were: how are these systems being used in Ireland? And what do Irish students actually do in the VLEs, and how are they perceived? The task of painting a cross-national picture is still unfinished, so the study presented here is unique in the Irish context as it draws on data from multiple institutions, across multiple years, with diverse VLE platforms and crucially, from the learner’s perspective.

2. Method

The survey was initially designed for University of Cork (UCC) however, after an open invitation to many Irish tertiary institutions through ILTA (Irish Learning Technologies Association), six institutions ran the survey in 2008 as a project under the umbrella of the NAIRTL (National Academy of the Integration of Research, Teaching and Learning). Five institutions agreed to pool the data at row level, and a common set of rules was agreed amongst the five institutions to ensure findings could not be used for marketing or advertising. First and foremost institutions would not be identifiable from the results and presentations and publications were to be approved by all members. Data protection issues were addressed by stripping all individual identifiers out before pooling the data and ensuring the students were aware of what the data was being used for. The call was repeated in 2009 when five new institutions agreed to conduct the common survey and pool their data, and three of the institutions that participated in 2008 repeated their data collection. All results were combined in a common data set presented here, where each institution is identified by a letter.

Each institution used their own method of distributing the survey online, but it was agreed that the survey would be sent to students outside of the institutional VLE to ensure that all registered students would have an opportunity to take part. While a common question set was agreed, there was some variance in implementation. Where this occurred, data was excluded,

thus for some questions, for some institutions, there are data gaps. In total, 8,777 student responses have been collected. Institutions represent a diverse cross section of the Irish tertiary education sector, with regard to their size, history, and approaches to eLearning strategy (ranging from blended to fully remote/distance learning models). [Table 1](#) represents the proportion of teaching assisted learning (TAL) staff per 1,000 students of the participating institutions.

Code	TAL per 1000 students	System Age	Institution Size
I 2009	0.3	2	3000
F 2009	0.5	2	2000
D 2009	0.8	3	1850
G 2009	0.5	3	3750
D 2008	0.8	3	1850
B 2008	0.2	8	17000
A 2008	0.5	4	7500
A 2009	0.5	4	7500
H 2009	0.3		4500
E 2009	0.2	4	15492
C 2008	0.2	3	13000
E 2008	0.2	4	15492
J 2009	0.4	6	8500

Table 1: Participating institutions per size, teaching assisted learning staff and number of years of VLE

[Figure 1](#) shows the response rate for all the administrations (3 of the institutions collected data both in 2008 and 2009). While response rates for institutions I, F and D are over 15% of the student population, institutions C and E obtained less than 4% response rates. This indicates that findings for all institutions may be subject to responder bias to a greater or lesser extent, which should be noted.

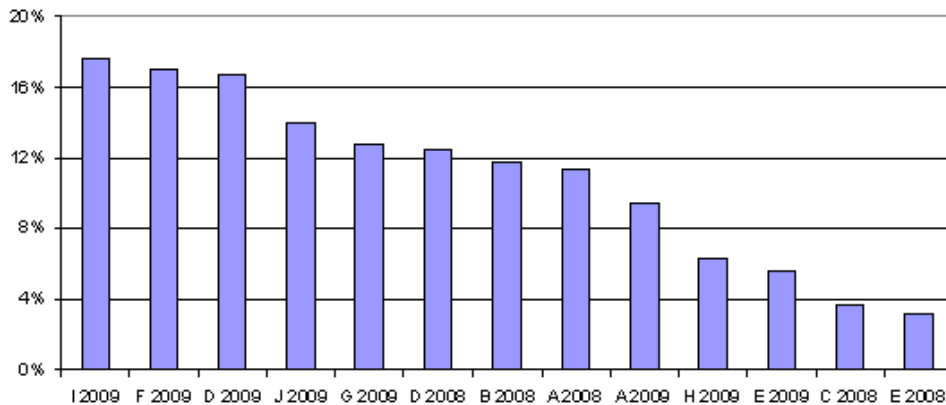


Figure 1: Response rate of participating institutions

3. Key Findings

The survey sought to ascertain the level and purpose of usage patterns with regard to the proportion of coursework incorporating VLEs, frequency of use, purpose of access, the results of which are highlighted in Figures 2, 3 and 4. Figures 5, 6, 7 and 8 focus on the issues that influence the effective (or not) use of VLEs.

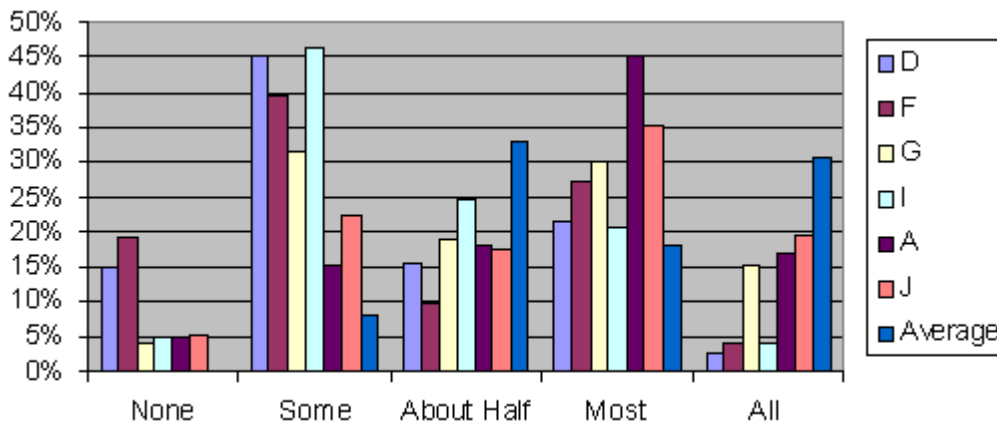


Figure 2: Proportion of coursework in the VLE per semester (data averages weighted according to student population in each institution, we have data for this question for only six of the institutions)

With regards to the frequency of use of the VLE (Figure 3), some variation exists (especially in the case of institution E), but overall the VLE has become a tool of very frequent use by higher education students across the country.

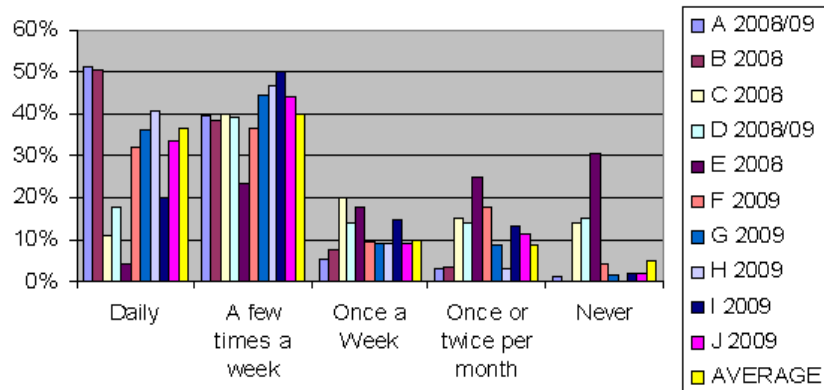


Figure 3: Frequency of use of your VLE

However, when looking at what students actually use their VLE for (Figure 4), it is fairly clear that it is mainly used as a repository for course notes and readings, secondly used to administer assignment submission, with more interactive learning activities such as online discussions and online quizzes lagging far behind.

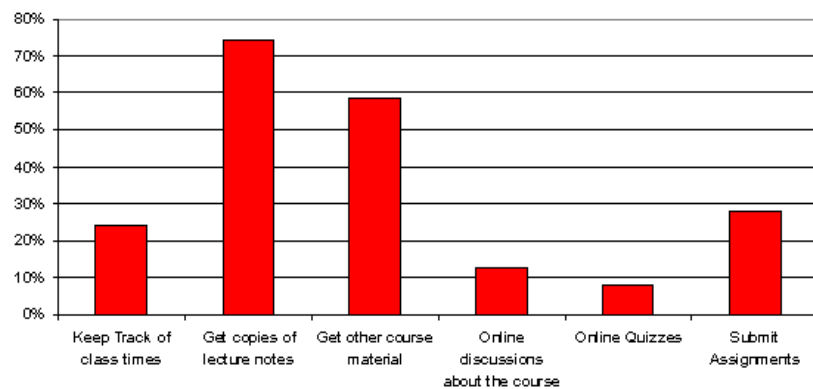


Figure 4: Uses of the VLE (average)

When students are asked for the reasons why they do not use their VLE, the overall trend is also clear: lecturers' reluctance to use the VLE is the most important factor inhibiting student use (Figure 5). It must be noted however that there is a built in bias in the sampling method, as technophobic students may have self-selected out of the sample.

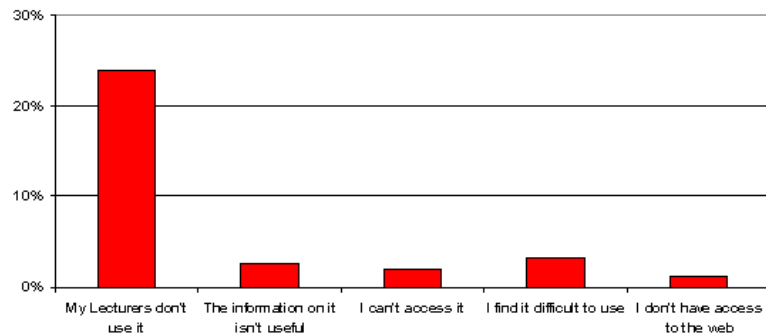


Figure 5: Barriers to usage (average)

Figure 6 presents students' opinion about how good their lecturers' use of the VLE is (from 1=bad use to 5=good use), in relation to their expectation of increased lecturer use of the VLE (from 1=no expectation to 5=full expectation). There is a common trend across students in all institutions agreeing that their lecturers do not make good use of their VLE. Views on whether lecturers should use it more are fairly neutral, although arguably using the VLE more does not necessarily imply that it is used in a more pedagogically effective way.

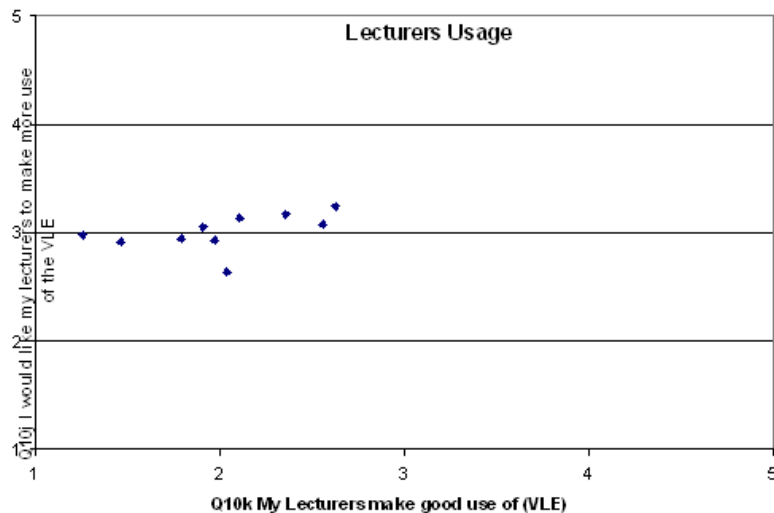


Figure 6: Lecturers' use vs. students' expectation of lecturer use

Figure 7 shows the relationships between the ease of use (from 1=difficult to 5=easy) and VLE usefulness in facilitating student learning. (Data is missing for one of 2009 administrations. Twelve data points are represented since results for three institutions that administered the survey both in 2008 and 2009 have not been amalgamated). An expected correlation appears between both variables, indicating that inbuilt intuitiveness of the system,

and supports available to use it, are likely to enable students make the most of their VLE. There appear to be two different clusters, but we would need to unpack the institutional case histories to understand what the reason is and what is driving this.

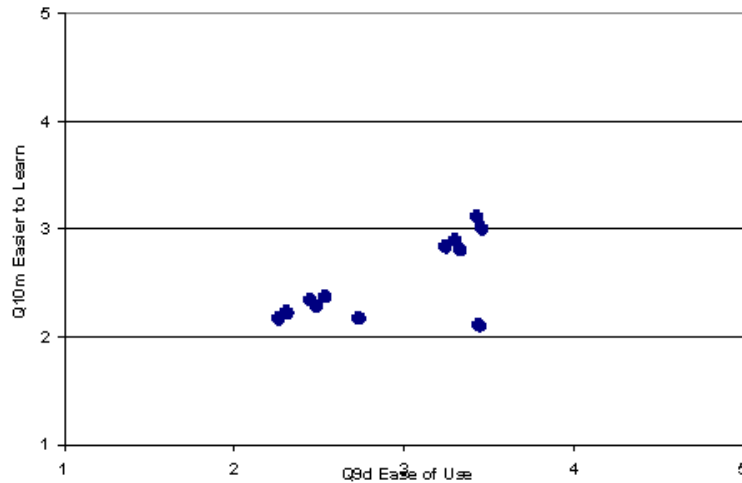


Figure 7: Ease of use vs. VLE usefulness in facilitating student learning

Finally, we considered whether VLE usage deters students from attending class, which tends to be a common argument against VLE adoption among faculty. Figure 8 clearly challenges this view showing that a large majority of students disagree or strongly disagree that getting notes in the VLE discourages them from attending lecturers, which is encouraging given the previous finding that VLEs tend to be used as a content repository. This may be a moot point for distance learning or part-time students where attendance of physical classes may be less relevant or non-mandatory.

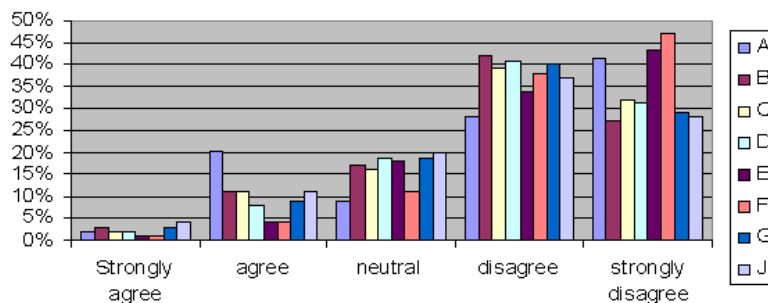


Figure 8: VLE use and class attendance

4. Discussion

The Irish institutional VLE survey explored students' perceptions on the use of VLEs for teaching and learning, although this view is somewhat limited as e-learning in Irish institutions must be examined from a multidimensional outlook, including institutional strategy, the role of E-learning and Teaching and Learning Centres, and lecturers' views. Also, there remains an important caveat to the survey; by and large the majority of students who took part in the study were full-time campus attending students where VLE usage is not necessarily an integral component of teaching and learning; a point raised previously in relation to [Figure 8](#). This being said, the results found are worthy of further discussion.

4.1 The Learners' View

Students have come to depend on the VLE for access to course material and will use it regularly when lecturers upload new material to courses ([Figure 5](#)). The survey shows that teachers upload to VLEs two main types of items; 1) course notes and reading materials, and 2) assignment submission and administration. This corroborates previous national findings stating that learning management systems tend to be used as content repositories ([Donnelly & O'Rourke 2007](#)). More widely this has been seen as part of a trend where lecturers tend to make, on average, only incremental changes to their practice when faced with new technology in the form of a VLE ([Dutton et al. 2004](#); [Jenkins et al. 2005](#); [Kirkup & Kirkwood 2005](#)). However optimistic commentators predict the VLE to be a "Trojan horse" ([Weller 2006](#)) that will affect change through a process of "gradualism rather than revolution" ([Kirkup & Kirkwood 2005](#)). Moreover, [Figure 7](#) shows that students do not consider using VLEs as repositories as 'good use', agreeing with the view of [Heaton-Shresthe et al. \(2009\)](#) that there is a divergence between the perspectives of staff and students in relation to some aspects of VLE use in teaching and learning, particularly in relation to the issues of student performance and the extent to which it increases their control and ownership. Although in the past years some inroads have been made in the usage of VLEs at third level, the attitudes of both Irish third level teachers and students towards learning in a VLE have to be developed. Both groups need to be guided towards the opportunities in learning support, collaboration, and research that good pedagogical e-learning can offer, ensuring all come to appreciate and feel comfortable with all the facilities available. Clearly this is not the case at present, and our personal observation is that considerable variation exists in the number of tools that are used in online courses among disciplines.

4.2 Attendance and Student Retention

One of the fears often voiced by senior teaching staff unacquainted with the use of VLEs is that they could have the effect of lowering attendance at their viva voce lectures. Our observations do not support this view. The majority of students disagreed that having access to their course material on-line affected their attendance record ([Figure 8](#)), with the majority saying they attend their lectures despite lecturers' notes being available on-line. The majority of Irish Institutions incorporate e-learning as part of blended learning courses, where lectures

are held by tradition and students may access course material on-line. Empirical studies assessing the role of ICTs in improving retention rates in campus-based undergraduate courses have been singularly lacking (Heaton-Shresthe et al. 2009). This is all the more regrettable since the combination of flexibility with opportunities for social interaction in blended learning may lead us to expect higher retention rates on 'blended'-mode programmes (Heaton-Shresthe et al. 2009).

4.3 Digital Divide – a Real Issue or a Dead Letter?

Our study has found that access to ICT was not found to be a major barrier to the use of the VLE by students, which is consistent with the finding by Heaton-Shresthe (2009) that the majority of students use the VLE between lectures and while on campus. However, given that national broadband coverage in Ireland still hovers around 85 to 90% (CCR 2009) it can be appreciated that the VLE experiences of students attending institutions located on the periphery of the country's broadband network may be quite different to those living in areas with high quality broadband coverage.

In terms of the digital divide, it is too simplistic to conceptualise it in terms of access or the lack of access to hardware and/or hi-speed connectivity. Being a successful or unsuccessful e-learner for that matter depends on a number of elements. Clarke (2004) notes that whilst there is still not a lot of evidence as to what constitutes a successful e-learner he does identify some of the necessary characteristics:

- Confidence as an independent, successful learner, especially when learning in non-formal settings (e.g. in your home, work or community);
- A positive attitude to learning;
- Being self-motivated to succeed;
- Having effective communication skills;
- An ability to collaborate and co-operate with other learners;
- Being a competent and confident user of ICT.

E-learning platforms, regardless of their degree of functionality or ease of use, are only effective if users feel comfortable using computer technology.

5. Future Work

5.1 Lecturing staff survey

The inclusion of the new institutions in 2009 certainly adds a level of national comprehensiveness that the previous administration was arguably lacking. However, it must be acknowledged that the focus on the students provides a somewhat one dimensional view of VLE usage in third level institutes. Another important element in mapping the use of VLEs in third level institutes is that of the lecturer's perspective. One of the most telling findings was

in response to the question “why students did not use their institute’s VLE?”. As demonstrated in [Figure 6](#), by far the most common response was ‘because their lecturers did not use the VLE’. The response to the question relating to students’ experiences of their lecturer’s use of VLEs ([Figure 7](#)) provided little comfort either, as the students reported moderate to low levels of satisfaction. However, it is overly simplistic to characterise the student responses simply in terms of low levels of staff engagement. Rather, the responses add weight to the argument for the need to combine staff surveys and map out the lecturer’s perspective as part of the overall research strategy going forward. To this end a number of the institutes have already begun surveying lecturing staff. The aim of the staff survey is to ascertain their views towards ICT in general, the ways and means that lecturers use the VLEs, the level of training and support that they receive and the barriers (if any) they have experienced when incorporating VLEs into their teaching and learning strategies.

5.2 Future case studies

A particularly useful resource in identifying issues regarding the management and implementation of VLEs in UK educational institutions are a series¹ of studies carried out on behalf of the Universities and Colleges Information Systems Association (UCISA) and funded by the Joint Information Systems Council (JISC) ([Jenkins et al. 2001](#); [Browne & Jenkins 2003](#); [Jenkins et al. 2005](#); [Browne et al. 2008](#)). The reports’ findings, whilst relating to the UK, did highlight a number of key aspects which are worth considering. Whilst there was strong recognition of the potential that VLEs offer, this recognition was often “poorly matched by delivery” ([Jenkins et al. 2001](#)). However, the [Jenkins et al. \(2005\)](#) and in particular the [Browne et al. \(2008\)](#) survey both acknowledge that the situation has considerably improved since. [Browne et al. \(2008\)](#) report that the enhanced stature of e-learning (or Technology Enhanced Learning (TEL) - the term used in the 2008 Survey) has resulted in a concomitant improvement in the depth and range of support and services provided. Nonetheless, despite these improvements the reports note that staff implications in terms of numbers, time, training and institutional cultures remain a consistent feature and source of concern and possible barriers to expansion of (or even continued) e-learning provision. Future staff surveys in the Irish context are to incorporate some of the issues highlighted by these studies. The ongoing commitment to continue and expand this research certainly affords the opportunity to build up a similar longitudinal picture of VLE usage in the Republic of Ireland’s higher education sector. While large-scale surveys certainly provide macro level data and analysis, the researchers’ aim is to also utilise the multi-site longitudinal aspect of the study in terms of publishing a series of case studies that allow inter-institutional lessons and comparisons to be drawn out. Lessons and subtle contextual nuances that might be overlooked in national surveys can be highlighted and examined in smaller localised case studies.

1 The 2005 and 2008 studies included a number of extra sections however, the VLE style questions used in the 2001 and 2003 surveys were largely retained in order to extend the longitudinal comparison.

5.3 Possible new areas of interest

Thus far the surveys have largely concentrated on the computer based element of VLEs; however given the increased functionality of mobile devices such as PDAs and mobile phones greater consideration will need to be given to incorporating the use of such devices as a constituent part of the VLE experience. Only a small number of the respondents indicated that they accessed VLEs from a mobile device which is somewhat surprising as somewhat ruefully the JISC (2010) note that 'despite the almost ubiquitous ownership of mobile phones the adoption of mobile technologies in post-16 teaching practice is still in its infancy'. When one considers that in 2008 mobile phone ownership in the Republic of Ireland stood at an incredible 120% in relation to population (CCR 2008), mobile or m-learning as an element of VLEs certainly merits further consideration.

Another aspect that is worth considering is the manner that students use online library facilities as a component of their overall online learning experience. The provisions of user friendly library facilities both virtual and physical are now an integral pre-requisite of every third level course. However, the protocols and procedures that are designed for students who attend the campus on a regular basis may not be suitable for remote students. Jill Needham of the Open University (OU) and Kay Johnson of Athabasca University (Canada's version of the OU) have proposed ethical guidelines for the provision of library support to distance learners that comprise ten principles (Needham & Johnson 2007). Amongst these principles two of particular note call for college libraries and authorities to:

- Provide distance learners with access to equivalent levels of library services, resources and support as students at campus-based universities;
- Acknowledge the reality that distance learners may need library services that are more personalized than those for on-campus students.

The Online Computer Library Centre Inc. (OCLC) represents² a significant voice in the library world both academic and general. As far back as 2003 the OCLC's E-Learning Taskforce report argued that 'course-management systems (CMS) should be viewed as another means for academic libraries to become more engaged in the learning and teaching missions of their institutions' (OCLC 2003). This point has also been well made by Gibbons (2005) where she argues that:

...to remain relevant, academic libraries must go where the students and faculty are. More to the point, libraries need to be where the learning is happening, even if this is the virtual environment of a CMS.

The use of online library facilities such as the online electronic book provider Ebrary offers lecturers another means of providing a more in-depth e-learning experience; the extent to which VLE embedded online library facilities are utilised is certainly an area worth exploring in future surveys.

2 More than sixty thousand libraries in over one hundred countries.

6. Conclusion

This investigation has taken place within the context of pervasive use of VLEs across all Irish higher education institutions. First and foremost the government need to address the lack of broadband throughout rural Ireland, so there is access to VLEs anytime, anywhere. After this, the question for us to answer is how to encourage a better use of VLEs on the part of teachers and students.

At the institutional level, Minshull's (2004) report on mainstreaming VLEs raises some very pertinent points regarding the importance of planning and governance if VLEs are to deliver on the promise of widening education participation that many people believe they offer. Minshull believes that the first and most important question that should be asked is: "what is the reason for buying a VLE?" (Minshull 2004). Quite simply there is no point in investing time, money and resources into a major project if it does not fit with the college's strategic goals; in effect the college authorities need to have a clear answer to the question - what is the potential of a VLE for furthering these goals; such as the creation of a richer learning environment for all students through the use of VLEs and the provision of more remote learning opportunities for non-standard students?. Each goal positions the role of VLEs differently relative to different student group needs. Depending upon whether the VLE is used for blended learning, content delivery, collaborative learning, on and/or off campus use or for learning support will impact on factors such as staff development, software functionality and IT support. What is clear from the studies to date is that there does not appear to be a consistent approach to purpose or use adopted both intra and inter institutionally. To support lecturers in using VLEs, institutions need to provide support in developing and applying innovative learning using technology, and help teaching staff to widen access and provide more flexible forms of delivery to the diversity of the student population. Training time and facilities are required to address slow uptake of e-learning development amongst academic staff. E-learning Centres should be resourced so they can provide the necessary support to lecturers to deliver quality teaching and learning through innovative technology enhanced learning (TEL) programmes. These changes are dependant on institutions incorporating a well-defined TEL strategy into the overall institutional strategy.

At the teachers' level, our results would seem to indicate that, even with widespread accessibility to their respective institutional VLE, one of the biggest barriers to students to using their institution VLE more effectively was their lecturers' reluctance (or inability) to do so. In the same vein, the Dublin Regional Higher Education Alliance (DRHEA) has recently carried out an audit on how e-learning is supported throughout their member institutions. The audit results point to lecturers being slow to engage with e-learning due to a perceived increase in workload, copyright issues, security of on-line materials and lack of training whilst a lack of well defined e-learning strategy for some institutions is a reality (ibid). The fear that some lecturers have that VLEs lead to less attendance does not seem to be borne out from the results of our study; rather students see them as an important aid to their learning and lectures not as a replacement. Using a VLE has to be made easy and transparent, addressing the fears of teachers and the possible abuses of students. It has to be looked at positively, emphasizing its advantages and facing its disadvantages with clarity. The effective use of

VLEs depends in part on how good time management on the part of teachers and students is stimulated. A traditional lecture format is very efficient in that all the students are supposed to attend simultaneously. This would still apply to blended learning using VLEs, but then the students would have access to the material and to teacher time, privately via email or publicly via discussion boards that could foster more mature discussions on the learning process. Quizzes and exams can become a nightmare if not all students can attend simultaneously in the same invigilated venue. Satisfactory mechanisms have to be found to avoid plagiarism, possibly by requiring students to use anti-plagiarism software such as Turnitin®. In summary, students are still to discover that VLEs can play a significant role in helping students meet or establish networks of support (Heaton-Shresthe et al. 2009).

In conclusion, VLEs are frequently portrayed as a means of realising the potential to deliver lifewide and lifelong learning. While we will need to continue monitoring the way that students utilise VLEs we will also need to consider how best to capture the different (if any) ways that off-campus students utilise and negotiate the use of VLEs. Overall, the study demonstrates that there is quite a lot of VLE activity across the participating institutes albeit generally as a remote content repository. Nonetheless, on the demand side of the equation the student willingness to engage gives cause for optimism. Future surveys incorporating the views of lecturing staff afford the opportunity to investigate the use and provision of VLEs from the supply side.

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