

Open Source VLEs (MOODLE) and student engagement in a blended learning environment

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Introduction

Most higher education institutions deploy a Virtual Learning Environment (VLE) also often known as a LMS (Learning Management System). When considering VLEs, it should be noted that not only can a wide variety of materials be made available to learners but the progress can be monitored by both teachers and learners alike. Whilst a VLE is often thought of as a tool which is particularly useful for remote access, the advantages of a VLE in a face-to-face classroom (blended learning) are not to be minimised. In the context of higher education in the UK, there is an argument that *all* students are now distance learning students as, following the introduction of £3,000 annual tuition fees, most students participate in the informal economy to work their way through college (CHERI, 1995). Currently, it is quite common for nominally full-time students to be devoting almost equal amounts of time to their formal study and their participation in the labour market.

However, there is much more to e-learning than the use of a VLE/MLE. As the technologies develop, so too does the means of accessing material. The Joint Information Systems Committee (JISC) supports the use of ICT in colleges and universities. Their communications manager has been quoted:

"All learners are becoming distance learners, because they are increasingly working from home or on the move. We are looking at platforms such as personal digital assistants, mobile phones and iPods,"

(Source: Pothin, P cited in Hoare, S., 2006)

The distinction between full-time and distance learning students is fast diminishing. As Professor Gilly Salmon at Leicester University has indicated:

"My remit is to introduce e-learning across the board. If you separate out distance learning completely, you will not be benefiting either the distance or the full-time students."

(Source: Salmon, G. cited in Hoare, S., 2006)

Developments in usage of VLEs

Accurate market statistics for degrees of market share obtained by the principal systems will always be difficult to ascertain. Two ways of measuring market penetration are by the numbers of installations and the users that they serve. Vendor information has been used for the following table, reported in Aberdour (2006) so the information needs to be treated with a degree of caution:

	Installations	Users served
SumTotal	1,500	17m
Saba *	1,100	15m
Blackboard/WebCT	3,700	12m
Moodle (2006)	19,000	10.3m
Moodle (2007)**	25,185	15.35m
Skillport	1,200	5m

* Saba figures represent Saba Enterprise Suite, of which the LMS is one component

** The latest figures from Moodle suggest that the number of users served exceed those of Blackboard/WebCT

Nonetheless, the interesting statistic to emerge from this comparison is the absolute number of installations reported by Moodle. MOODLE (Modular Object-Oriented Dynamic Learning Environment) is the brainchild of Martin Dougiamas, a computer scientist and educator. Development began in the 1990s when Dougiamas was trying to install and maintain WebCT at Curtin University in Perth, Australia (Everitt, 2006)

Universities now operate learning platforms in which they can access a range of materials. Some of these may be multimedia and material specifically written for self-study. However, an important part of the platforms are those elements designed to encourage interactivity in the shape of forums (bulletin boards), chat rooms, wikis as well as varieties of email and VOIP. In the last year, many universities have tried to move beyond the traditional learning platforms in order to take advantages of personal devices such as personal digital assistants, mobile phones (particularly if WAP enabled) and iPods. As Ashraf (2006), the Bradford University lecturer who

has taken the decision to dispense with the traditional lecture and make them all available as podcasts, remarked:

‘I couldn’t help noticing that many of my students were welded to their iPods, mobile phones and laptops.... Students are increasingly digitally literate and techno-savvy... they live and work in a in a 24/7 society, juggling family, work and social commitments’

(Source: Ashraf, 2006)

Developments in e-learning are taking place across the university sector in the UK. For example, Leicester University has established an e-learning project, Leicester Online, which will be available to all students and will include a digital library, administration, counselling and study support. Some universities are moving away from the early commercial systems to make use of more flexible, open-access systems including Moodle and the Bodington project. Bodington is a free open source VLE which exists to support an open source environment to support teaching, learning and research. It is claimed to be particularly suitable for large and complex institutions and for inter-institutional collaboration, It is currently deployed at the universities of Leeds, Oxford and the UHI Millenium Institute (Scotland)

There is some evidence that the demand for proprietary VLEs appears to be falling over the years – between 2001 and 2005, the market share for these systems has fallen from 93% to 57% which indicates a drop of some 10% a year. Similarly, the combined market share of BlackBoard and WebCT (now merged) has declined from 56.8% to 43.7% over a similar period (Bell, 2007; Feldstein, 2007). Some of the apparent gap in the market may well be taken up by the advance of Open Source platforms such as Moodle and Bodington but this is only a partial explanation. Feldstein (2007) reports that the number of ‘homegrown’ VLEs has expanded even more rapidly, from 7% to 30% He argues that development components such as a discussion board and a fileshare system will supply what about 70% of university teachers are currently using in a conventional VLE. He speculates that cost is not an overriding concern but that institutions may well have particular needs that were not met particularly well by conventional systems.

The Moodle philosophy

All VLEs contain features that are designed to encourage student participation as well as individualised learning i.e. students learning at their own pace. The guiding lights behind Moodle have constructed a VLE explicitly built on an explicit educational principle which the authors term *constructivism*. The elements of this are illustrated in five principles as follows:

- 1. All of us are potential teachers as well as learners - in a true collaborative environment we are both.**

This perspective helps to combat the tendency for the tutor to be thought of as the ‘fount of all knowledge’ Rather, it helps to redefine the nature of the tutorial relationship to one in which the tutor becomes a facilitator rather than ‘the sage on the stage’. Thus opportunities should always be sought to allow other participants to share and test ideas with their peers. The role of the tutor may well be to be able to ask the good question.

- 2. We learn particularly well from the act of creating or expressing something for others to see.**

Much on-line learning is essentially static and teachers tend to concentrate their efforts into the creation of resources (the lecture, associated materials) rather than a learning activity. Textbooks often point the way ahead with exercises at the end of every chapter, but this may not be reflected in course construction. The assumption here is that students should be engaged in producing materials that are **for others to see** (and not just the tutor to grade). This encourages a degree of self-checking (and self-reflection), in which students will become deep learners.

- 3. We learn a lot by just observing the activity of our peers.**

The key concept here is that of the ‘classroom culture’ in which individuals take cues from other and act accordingly. If a new student is presented with a

classroom in which there are rows of students listening to a lecture, then they will respond in a similar passive fashion. But were they to be involved in a very participative type of class, then they would experience at least the social pressure to join in and to participate in like manner.

4. By understanding the contexts of others, we can teach in a more transformational way (constructivism)

Advice from a mentor or friend can have more import than similar advice from a stranger. The assumption here is that once a learning culture has been stimulated, individuals can learn from each other because they can use the language and concepts with which their fellow class members are familiar.

5. A learning environment needs to be flexible and adaptable, so that it can quickly respond to the needs of the participants within it.

If the role of the tutor is that of a learning facilitator in which there is a growing knowledge about the course participants giving them opportunities to ask questions and express opinions, then a more flexible learning environment is indicated. A degree of flexibility is important if one were to discover that much of the background assumptions were misplaced because the tutor was anticipating a knowledge base that the students did not possess, calling for a degree of adjustment of the course content. As students may have differing demands upon their time, it becomes more rather than less important to offer asynchronous activities in which people can work together but at different times.

(Source for the headings: Dougiamas, 2006)

Dougiamas (2006) expands his view of the ways in which the designers and advocates of Moodle are consciously attempting to create and adapt the software to follow the needs of the learners.

This educational philosophy means that Moodle is much less ‘tool-centric’ than other VLEs. For example, Moodle will allow you to organise a course chronologically by week, conceptually by topic or socially with a ‘big forum’ as essentially a free format structure. There is much less emphasis upon static content and a correspondingly greater emphasis on tools for extending discussions and constructing artefacts.

This can be illustrated by examining the Moodle feature list:

Feature	Blackboard	WebCT	Moodle
Upload and share documents	Y	Y	Y
Create content online in HTML	N	Y	Y
Online Discussions	Y	Y	Y
Grade discussions / participation	N	Y	Y
Online Chat	Y	Y	Y
Student peer review	N	N	Y
Online Quizzes / Surveys	Y	Y	Y
Online Gradebook	Y	Y	Y
Student submission of documents	Y	Y	Y
Self-assessment of submission	N	N	Y
Student workgroups	Y	Y	Y
Lessons with paths	Y	Y	Y
Student Journals	N	N	Y
Embedded glossary	N	N	Y

Source: Cole, J. (2005)

Blackboard has now merged with WebCT and it is anticipated that, over time, their product lines will converge to incorporate the best features of each into the merged product. It can be invidious to compare products on a feature-by-feature basis as the most important issues are to examine the totality of the student e-learning experience – and in particular, the ease of use and look-and-feel of the various VLEs. From a brief comparison of the above table, it can be seen that Moodle contains features such as *Student peer review*, *Self assessment of Submission* and *Student Journals* which are absent from the other two offerings. This reflects the educational philosophy upon which Moodle was built and there are many, and varied, means within Moodle to secure participation in a range of activities. There are about 20 different types of activity available (forums, glossaries, wikis, assignments, quizzes, choices (polls), scorm players, databases) each of which can be customised. These

are supported by other tools making it easier to build a community of learners and include blogs, messaging, participant lists as well as tools such as grading and reports.

An important principle is that Moodle is Open Source Software. This means that source code is freely available to be modified by end-users and there is a world-wide community to help solve problems and implementations. Colleges and universities are increasingly making use of this cost-effective solution, particularly as JISC (Joint Information Systems Committee) now advocates the use of open source software as the default for software development and regularly issues guidance as to its implementation and use,

The effectiveness of VLEs (including MOODLE)

It is rare that any voices be raised that dare to question the current educational orthodoxy that deep learning is a desirable outcome. However, one line of argument suggests that a distinction needs to be drawn between learning strategies and teaching strategies. Gawith (2004) argues that these two terms have often been confused and perhaps used interchangeably. She argues powerfully that learning strategies have to be taught, perhaps very explicitly:

If these learning strategies are not *TAUGHT* (coached, modelled, monitored) they are unlikely (research shows) to be *caught*.

...

You save time by coaching, scaffolding, and monitoring *tested* learning strategies.

(Source: Gawith, 2004)

This is an interesting line of argument, for it strongly implies that educators need to be more fully aware that the encouragement of a philosophy of 'deep learning' may require a more didactic teaching style. Moreover, there may well be an interaction between learning styles and teaching strategies as 'deep learning requires slow teaching. If we want them to learn it thoroughly, we need time to slow down and teach it thoroughly' (Gawith, 2005, p. 3)

Without questioning the overall all thrust of the constructivist philosophy that underpins Moodle, a few words of caution may be in order. The discussion that follows indicates that translating the Moodle philosophy into practice may well be more problematic than might be thought.

The nature of the student demographic

Although the nature of the student body is changing and an argument can be made, at least in the UK context that ‘all students are part-time students’ there are still some differences that cannot be glossed over. In purely statistical terms, we can characterise the student population in one of two ways:

- the 18-25 year old cohort whose experience of school-based learning is likely to be recent. Although many such students may have experienced a ‘gap’ year before entering higher education or even have worked full-time briefly, these students constitute the majority of what might be termed the ‘full-time student’. As pointed out previously, even this generation of student will be juggling educational, work-based, social and domestic responsibilities.

- The 25+ students are more likely to have worked, perhaps in a responsible position before entering higher education and for them this has been a very positive move rather than being carried along the ‘educational escalator’ of the 18-25 group. These students may well be in full-time work and are attending university on a part-time basis or may have made a conscious decision to leave full time work in order to enter higher education.

Empirically, one is likely to find a continuum of student experiences within the students enrolled for a specific module – some modules will evidently be specifically directed to students who are engaged in a distance learning experience. However, the admixture of student experiences within a particular group can be a very stimulating and rewarding experience on occasions but the diverse nature of experiences and expectations can also lead to the expression of some frustrations as well.

Students who fall into the 25+ category are more liable to appreciate the benefits of interactivity and of deep learning. They may be more adept in manipulating the technology (as they use a variety of systems in their places of work) and be more willing to engage more frequently and more willingly in online interactions. The 18-

25 group may be exceptionally diverse encompassing both the technophiles who embrace all forms of new technology to the technophobes for whom navigating the relevant VLE is yet another obstacle to be surmounted in a highly strategic view of learning.

The argument advanced here is that the tutor or instructor cannot be assured that students engaged in a module that requires a highly interactive engagement will all approach it with the same degree of enthusiasm or commitment. Whilst it is true to say that all VLEs allow for a degree of individualised learning for any class member, there will still be differences in the group culture that emerges in the those enrolling for any particular module.

Size of teaching group

One suspicion in British higher education that VLEs would help to alleviate the problems associated with a massified higher educational system in which nearly one half of the relevant age cohort now experience higher education and there has been an increase in student intakes and class sizes and a corresponding reduction in the staff student ratio. This now stands at 16.8:1, a figure in excess of the OECD average of 15.5:1 (BBC News, 2007). Whether such suspicions are justified is a matter of conjecture but no hard evidence has come to light that this, in fact, is the case (Morris and Rippon, 2003)

When class sizes are large (i.e. of the order of several hundreds), it may well be that any VLE is useful in ensuring standardisation of delivery – moreover, the ability to work through learning materials at an individual pace is also facilitated. But at the same time, it is difficult to see how beyond a certain point how a course director could be party to the more interactive learning envisaged by Moodle. It is probable that quizzes and other more easily marked assessed work may drive out the more innovative parts of the Moodle philosophy but more research is needed on this point. The fact that in the UK the Open University has decided to adopt Moodle (after some adaptations) may well be an interesting case study in itself, although it must be said that the Open University's typical student base is the 25+ group described above. In

its favour also is the fact that Moodle makes it easy for a team of tutors to interact with other without the students being aware of this.

Prior experience of interactive learning

Moodle is now the VLE of choice for the Further Education system in the UK where class sizes tend to be smaller and the level of technological expertise required to maintain a full-blown VLE not as extensive. So students who have experienced this VLE in their college or school experience prior to encountering it in a college environment may well be used to the interactivity enjoined by the system. However, there will be other groups of students who are used perhaps to no VLE or a VLE predicated on different principles. To such students, the different pattern of working may represent a culture shock. Some comments drawn from the comparison between BlackBoard and Moodle by Munoz and Van Duzer (2005) are instructive. It must be stressed that these comments are by no means representative – the majority of comments were in practice supportive of the Moodle environment. However, the particular mixture of positive and negative comments do indicate that a new method of working is anticipated.

- I went into this course very concerned whether I could handle an on-line course or not. What I have discovered is how much I have learned from this type of learning format. ***It forced me to participate a lot more frequently than I believe I would have in a traditional classroom setting.*** Yes, I did put more time into this class than I might have in a regular classroom but it paid off for me. I learned that I can do this!
- One thing that I didn't like was having to post 3 times a week. Sometimes, if I was one of the last people to say anything, I would have to come up with something original to say after there was not much else to add about the subject. It didn't happen too often though. ***I just like how in a sit down class, when you're having a bad day you can just let others speak up.***
- I had a hard time in this class because it was online. I learn better in the classroom with the teacher and students physically present in class.
- This class was a good learning experience. I am not sure if online classes are for me though. ***Although someone who is shy like myself the online posts were great because I was involved in them, usually I don't participate much in class.***

- I found it difficult to remember that I had an online class that I had to check in with 3 or more times per week.

Source: Munoz and Van Duzer (2005)

Pedagogic culture

Typically students experience a blended learning culture in which online resources are used to supplement conventional modes of delivery such as lectures and a variety of small group work. Students are normally exposed to several modules in any one session (the typical number being four but there are variations on this) but the amount of exposure to a VLE may vary between modules. Therefore the ‘total student learning experience’ may differ from one institution to another (or even one semester to another) if the various course teams decide to utilise a VLE in different ways. For example, it is theoretically possible that out of four modules in any one session, some course teams make no or minimal use of a VLE whilst others use it with varying degrees of enthusiasm. If students are presented with a common culture in which a VLE (such as Moodle) is enthusiastically endorsed and students are given clear expectations about the part that they are intended to play in their own learning, then a pedagogic culture will have been put in place in which participation is the norm.

The culture of expectations within a student group is an interesting area for investigation. It is known that students whose first language is not English may experience a certain degree of diffidence when it comes to expressing an opinion – in such circumstances, the ‘democratic’ nature of a forum and the ability to revise what is said before it is posted can act as a liberating force. However, it is also the case that face-to-face as well as on-line discussions can be dominated by individuals who are overly assertive or self-confident. Moderation of the contributions of such individuals may well tax the skills of the tutor to the utmost, even if they have the time entailed in the moderation of large numbers of posts. It can be that such individuals may serve to inhibit the responses of other group members. Whilst the philosophy of Moodle implies that learning will take place at a deeper level when more interaction is displayed, there is also an implicit assumption that all students will bring with them a variety of experiences that they may contribute to a discussion. But this flies in the face of the evidence that some students have a much greater wealth of resources

available to them – most mature students, for example, will have some years of work experience upon which they can draw. By contrast, the low-status, poorly paid and casualised experience of jobs available to students may not provide the depth of experience necessary to contribute to discussions in anything other than a superficial way.

To some extent, the expectations required of a new student group may be set early on by members of a course team who are determined to ensure that students interact with the course materials and their fellow students in a particular way. But there is also evidence that some students may learn from an early stage how they can successfully negotiate their way through the requirements of a course and in this case become highly strategic about those parts of a course that ought to be actively pursued or ignored. This may mean that unless activity is measured in some way and contributes to an overall assessment grade that it might not be taken seriously by some course members.

Learning, groupwork and grading

Group work can often be a source of contention in the student community. The principal source of discontent lies not in the nature of the group activity itself but in its assessment. Specifically, there is a feeling that obtaining an equitable distribution of contribution to a group becomes more problematic once groups move beyond a very small size (2-4) and even these can be problematic upon occasion. Those students who contribute the most feel that their grade may be unfairly ‘dragged down’ by the lack of contribution from other group members. They may also feel aggrieved if they perceive that some group members who have failed to engage or to participate fully in the group still benefit from a common group mark.

To what extent do similar feelings apply once students express thoughts, views and opinions on-line – is it possible that students themselves are wary of their own contributions becoming ‘plagiarised’ by fellow group members? At one level, this may be regarded as trivial, but at another level it adds a layer of complexity to the dynamics of group interaction. The diligent student may well study and engage intellectually with source material (a journal article, for example) but may not take

kindly to the fact that a less diligent fellow student takes these and similar contributions and weaves it into his or her own analysis. In the same way that some students may learn to skilfully ‘patch’ materials obtained from a surface skimming of the web (Google and Wikipedia, for example), then the same patterns of behaviour may also exhibit themselves when it comes to their on-line contributions. Some might argue that all students will have learnt by one route or another and the source from which students have acquired their material is immaterial. But the counter-argument is that some of this knowledge is hard won by some members of the student community and the same expropriated – at the very least, this offends canons of fairness and equity, especially when the outcome is a similar of set of grades once work has been marked.

Use of the VLE for Computer Supported Collaborative Work (CSCW)

The thrust of the educational philosophy behind Moodle is to support collaborative learning within the student community – but this VLE can be utilised just as readily to support a version of CSCW (Computer Supported Collaborative Work) in staff. There are two particular instances in which Moodle can, in particular, enhance CSCW

Many staff engaged in accessing a document set

As courses are subject to periodic review, it is typical for some staff to be drafting out sections of documentation and many staff will need to keep abreast of developments. In a case like this, Moodle can be set up in as topic centred or as a ‘free format’ mode and, provided that they are all enrolled as ‘tutors’ as well as students on the course then each will have the opportunity to download and enhance documents. Evidently, this will not have the capacity of a true multi-editing system but it will serve the purpose. As well as periodic review, there may be other occasions (e.g. a group research or strategy document) in which the ability of many staff to easily locate and contribute to documents and to ongoing discussions can only be beneficial.

Consortium of colleges offering Foundation degrees (FdA)

Many universities are now offering a range of Foundation degrees in close collaboration with partner colleges in the further education sector in their locality. Given the need for a degree of synchronisation of teaching materials and the necessity to moderate volumes of assignments across institutions, then Moodle lends itself well to such ventures. According to Metcalfe (2006) there was no significant use of Moodle in UK FE colleges in October, 2003 but a figure of 56% of colleges were deploying Moodle by March 2006. This figure looks set to rise even further.

Colleges need to collaborate closely with each at all times and the benefits of a common and affordable VLE across all institutions is not to be underestimated. Metcalfe (2006) points out that serious business like IBM, Sun Microsystems and Redhat build their business models around open source software. As Everett (2007) points out, the Open University has invested £5m in using Moodle as the core of its new online student learning environment and it is expected to be fully operational with 180,000 students by February, 2007.

Conclusions

The Moodle system has certainly shown dramatic growth and has attracted the attention of educators for two principal reasons. As a VLE it is built upon a particular and well-articulated educational philosophy. Additionally, and of great importance, is the fact being Open Source it is 'free' although it will still need support in the way in which it articulates with enrolment systems for example.

A student community introduced to Moodle *ab initio* with an enquiry-centred and interactive model of education in the minds of the programme managers will probably find Moodle very much to their liking – particularly as the learning curve appears to be short and they are more likely to be familiar with it from a college environment experienced before entry into higher education. However, students used to more traditional modes of course organisation and delivery may well find that the Moodle way of working is more demanding of them. Ultimately, this may well help to stimulate them into modes of deep learning and therefore justify whatever

adjustments they are forced to make in their own learning styles and ways of approaching their whole higher education experience.

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