

e-Learning Evaluation Report (Henry Keil)

1. Goals and objectives as set out in the 2005 *Aspire* HEFCE bid

1.1 Provision of a stable IT infrastructure

1.1.1. The choice of VLE platform

After an unsatisfactory experience with the Virtual Learning Environment (VLE) *WebCT* during academic year 2005/06 the open source software Moodle has been chosen as the main platform for online and blended learning at Harper from September 2006 onwards.

However during the first year of operation this change has resulted in poor staff acceptance due to

(i) difficulties in setting up/refining the Managed Learning Environment via integration with the Student Record System SITS

(ii) additional training requirements for staff to get used to the new teaching and learning platform

(iii) some serious technical issues relating to database corruption and failure of the backup occurring, first in the summer 2007 and then again in December 2007.

It was then decided to create a clean installation which was launched as *HarperMoodle* in Feb 2008. Since then the VLE has run smoothly without any disturbances and as a result staff have accepted *HarperMoodle* as an appropriate vehicle for delivering blended and distance learning. The statistics given below under 1.2., 1.3. and 2. provide support for this statement.

1.1.2. Service Reliability of the VLE

Since Feb. 2008 HarperMoodle has proven to be a robust and reliable platform to support teaching and learning with a 99.95% service availability (measured as '*unscheduled down-time attributed to Moodle server errors*'). The previous Moodle installation had a service availability of around 98% during the period April 2007 until Feb. 2008.

1.2. Development of on-line learning development

1.2.1. Level of engagement with credit bearing UG Moodle modules

Over a period of 28 months snapshots of the content in all UG Moodle modules were taken and classified according to well publicised criteria which are as follows:

Online modules are categorised into three levels of engagement, a basic 1* presence, (core course documents only), an intermediate 2* level (presence of at least one digital resource per week) and a more comprehensive 3* level (at least one *Moodle Activity* with evidence of student engagement).

	20/10/07		27/10/08		22/12/08		25/2/09		17/6/09		20/1/10	
* Rating	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
1*	68	20	58	20	75	24	78	26	73	24	50	19
2*	25	7	71	24	107	32	120	38	119	40	146	56
3*	13	4	15	5	15	5	21	7	26	9	39	15
Below 1*	236	69	149	51	104	39	82	29	83	27	25	10
Total	342 [^]		293		301		301		301		260	

[^] this number includes PG and WBL modules

Table 1: Quality of Moodle content in credit bearing UG modules across the institution, over a 28 months period, based in both absolute numbers and o/a percentages (in bold face);

source: KPI data.

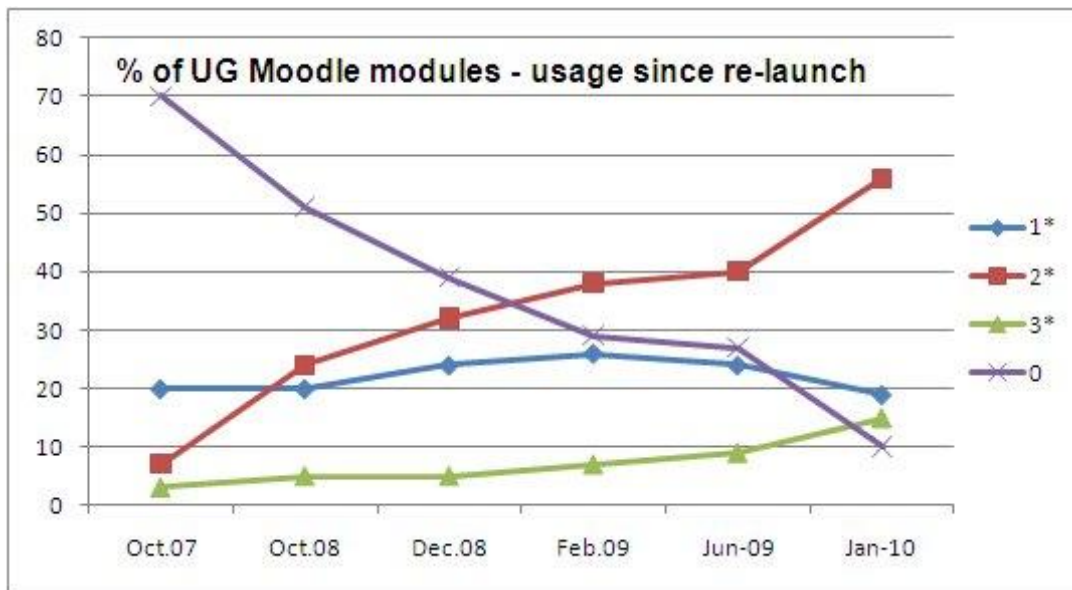


Fig. 1. Graphical representation of data from Table 1.

Cumulative distribution of content on Moodle modules since Oct. 2007

	20/10/07	27/10/08	22/12/08	25/2/09	17/6/09	10/1/10	Target
Modules at 1* or above	31	49	61	71	73	90	100
Modules at 2* or above	11	29	37	45	49	71	50
Modules at 3* or above	4	5	5	7	9	19	20

Table 2. Proportion (in %) of Moodle modules within the three different categories (source KPI data) – note that data is cumulative

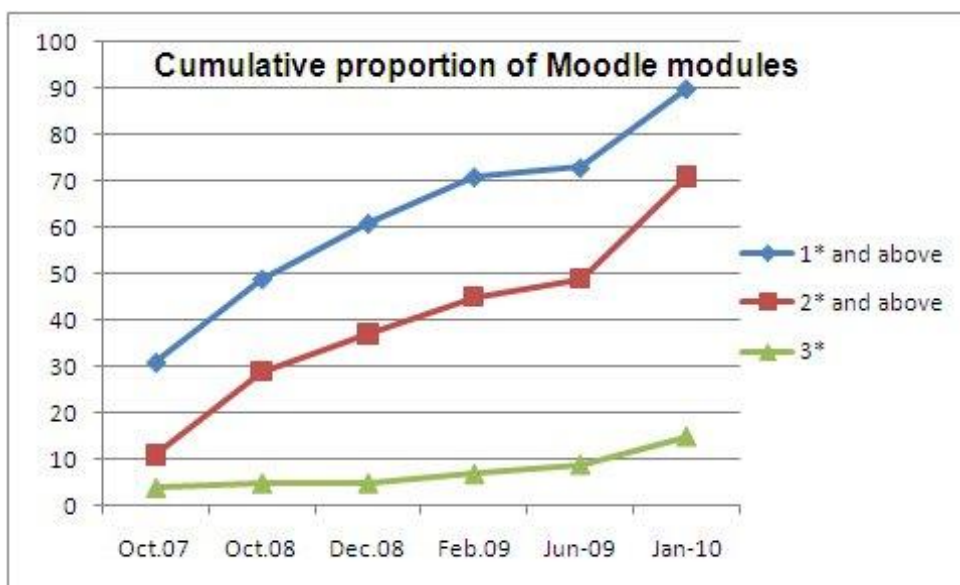


Fig. 2. Graphical representation of data from Table 2.

1.2.2. Level of engagement with credit bearing PGT modules

The data presented in tables 1 and 2 do not include PGT modules nor WBL modules (apart from the October 2007 sample); table 3 shows such data collected since Oct. 2008.

	27/10/08		22/12/08		25/2/09		10/1/10	
* Rating	Abs.	%	Abs.	%	Abs.	%	Abs.	%
1*	8	14	11	19	14	25	14	27
2*	4	7	8	14	14	25	12	24
3*	2	4	2	4	4	7	3	6
Below 1*	43	75	36	63	23	43	22	43
Total	57		57		55		51	

Table 3: Quality of Moodle content on credit bearing PG modules, based on both absolute numbers and o/a percentages (in bold face); source: KPI data

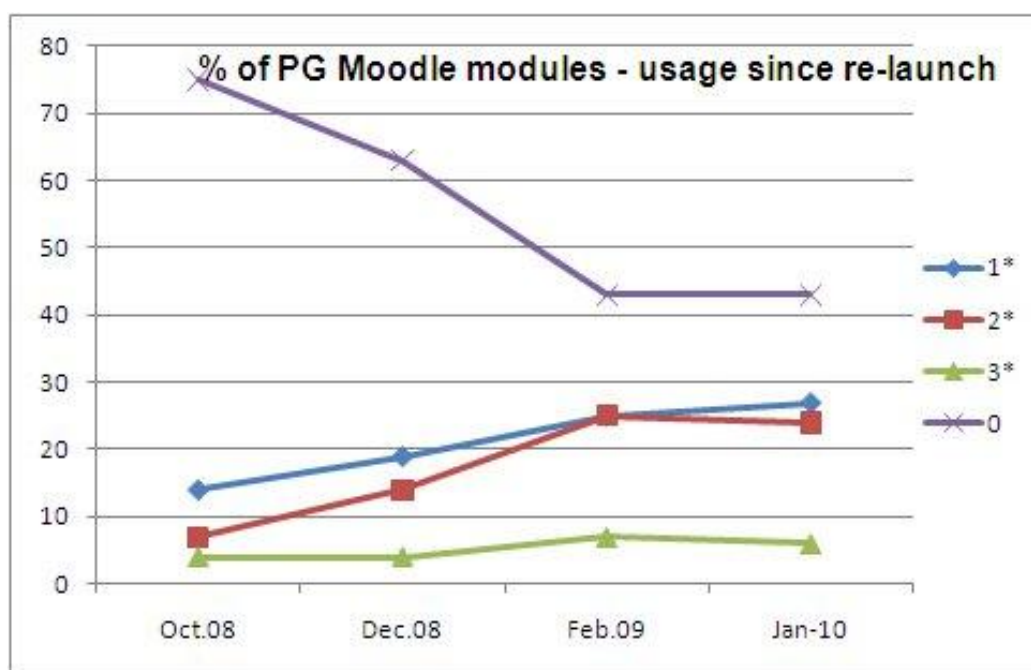


Fig. 3. Graphical representation of data from Table 3.

Summary:

The college-wide data presented above shows a continuing trend, in particular at UG level from modules with no content (labelled 0 in fig. 3 towards 2* and 3* modules.

At PG-level the effect is less pronounced and even seems to be levelling off, thus requiring further attention.

As far as the KPI target figures are concerned the college is slightly short of the 100% target for a minimum 1* Moodle presence, has easily surpassed the 2* target and is on track to reach the 3* level engagement.

1.2.3. Work-based learning/Employer Engagement modules

Harper is now offering an increasing range of modules for work-based learners, in particularly since the launch of the REEDNET initiative. More recently Moodle engagement on those modules is being measured separately and the table below provides the most recent snapshot.

star-rating	0	1	2	3	Total
No. of modules	12	1	1	13	27

Table 4: Moodle engagement on WBL-modules, as of Jan. 2010

The data shows a polar distribution of content with the AMTRA and other Animals' Department WBL-modules predominantly with 3* content and the BASIS modules from the Crops Department with virtually no content.

It would be interesting to know to what extent these striking differences are reflected in the respective teaching modes and employer requirements between the two departments.

1.2.4. Non-credit bearing cross-curricular modules

Initially all efforts for the development of on-line learning resources developing content relating to credit-bearing modules. Prior to the launch of *HarperMoodle* in February 2008 there were very few (3-4) non-credit-bearing modules available on the VLE.

Over the past 12 months the number of (non-credit) support modules on Moodle has increased considerably and as of January 2010 there are 13 such modules with links from the Moodle front page, with an additional 7-8 more specialist modules accessible via links from elsewhere within Moodle. The quality of these modules is often very high and they serve to provide specialist support to both students and staff.

Examples of such support modules include the following:

Library support, *Learner support* (Special Needs, Accessibility), the *PG Office* module to support PGT-students, the *Harper@Work* module for placement students, the *Lab Resources* module for those students (including work-based learners) who undertake laboratory work, the *Research Methods* module, *English for International Students* (final year BUA and PGT students) the *GenStat* Tutorial site for numeracy and statistics learning, the *Enterprise@Harper* module to instill entrepreneurship, and leading to a different platform the *Virtual Farm* to provide access to farm-related data.

There are also two modules available online in regards to how to use Moodle effectively and within a pedagogically meaningful context. Other modules point to resources of learning events held at Harper such as the *Learning and Teaching Forums* and the *Moodle User Group* meetings.

1.3. Increased support for IT skills development for academic and support staff

1.3.1. Attendance on Moodle training

Moodle training is currently offered at two levels, beginners (working with resources) and intermediate (online communication and collaboration). Table 5 below gives the absolute numbers of attendees on training sessions (in six-monthly intervals).

star-rating	09/07- 03/08	04/08 – 09/08	10/08- 03/09	04/09 – 09/09
beginners	29	14	10	16
intermediate	6	6	4	8

Table 5. Source e-Learning statistics

It is noticeable that after the initial flurry of activity on the beginners course there has been a steady decline until spring 2009. On the intermediate level course there is a consistent low level interest with a modest increase from Spring 2009 onwards.

1.3.2. Co-operation of e-learning with *Aspire* Development Fellows

Since its inception in 2005 the e-learning team has been participating in a large proportion of the *Aspire* Development Fellowships (21 out of 24) involving the use of learning technology in one shape or another, as indicated in the table below:

Academic year	2005/06	2006/07	2008/09	2009/10	Combined
'e-learning' fellows	4	3	6	8	21
Total no. of fellows	6	3	6	9	24

Table 6. Source: *Aspire statistics*

List of e-Learning *Aspire* Development Fellowship projects:

Principal Investigator	Title
J. Adams	Developing a Virtual Farm, through which current and historical farm financial data is made available for students to interrogate and manipulate
S. Turner	Developing web-based activities and articles for Academic & Professional Development
P. Parrot	Developing agri-business marketing case studies, integrating video and PowerPoint presentations
S. Ragbourne	Developing web-based resources and support for blended learning in rural practice chartered surveying
D. White	Developing and evaluating a chapter for a Harper Adams University College online farm machinery text interactive learning object
G. Rowsell	Developing interactive, reuseable learning objects and Computer Aided Assessment tools to support module EC003 CAD & Mechanical Design
L. Davies	Increasing access to farm-based resources through the use of electronic communication tools
P. Kettlewell	Production of an e-learning tool to enable students to use Genstat software within their major research projects
J. Boone	Using Web 2.0 technology to create learning communities
C. Thomas	Developing online resources to develop students' information literacy skills
J. Powles	Developing reusable learning objects to enhance students' lab skills
T. Underhill	Using text-based mobile communication (SMS) to support students
F. Davies	Creating web-based resources and a community to support the Enterprise Academy and enhance students' entrepreneurial skills
G. Rowsell	An investigation into the development and use of innovative Reuseable Learning Objects (RLOs) to promote and support student centred learning
M. Rutter	An interactive, touch-screen video encyclopaedia in the Companion Animal House linked to delivery of animal behaviour modules
S. Pattinson	Creating multimedia-based re-useable learning objects for the teaching of ruminant livestock (sheep) management
R. Greenhalgh	Exploring the use of interactive video-technology to enhance student feedback in the digital age
I. Warren-Smith	Creating a flexible learning support community to facilitate the development of independent post graduate research
M. Winchester	Using the Moodle Report tool to provide formative feedback as part of the teaching process
J. Boone	Developing learning resources and activities to enhance research skills
E. Tappin	Developing online learning resources to support PDP for PGT students

Table 7. All *Aspire* Development Projects undertaken with the help of e-Learning

Several *Aspire* projects are currently underway involving the creation of online resources at both UG and increasing PG-level to support PDP and other relating skills such as business, leadership and personal development skills, in collaboration with other *Aspire* subject areas. In one particular case (*Leadership and Professional Development*) a module is offered purely online, to a small number of PG-students.

2. Comparison between baseline and current data

2.1. Student usage of Moodle

2.1.1. Average number of individual student hits per module per academic year

2006/07	2007/08	2008/09	2009/10	Target 2009/10
16	12	36	19*	150

Table 8. Source KPI data; *2009/10 data are based on a 12 week period.

The data demonstrates that since the provision of a stable platform student engagement as measured by hits within Moodle modules has tripled and now runs at approximately **2.5 hits per week per student per module** (assuming a 15 week module) compared with a target of **2 hits per (week)day per student per module**.

At the moment the average student hit number per student varies hugely between modules with the top three accruing in excess of 100 hits (over a 15 week period up to early Feb. 2010 (>5 times the above average) with the most popular module accruing nearly 300 hits per student (see figure 4).

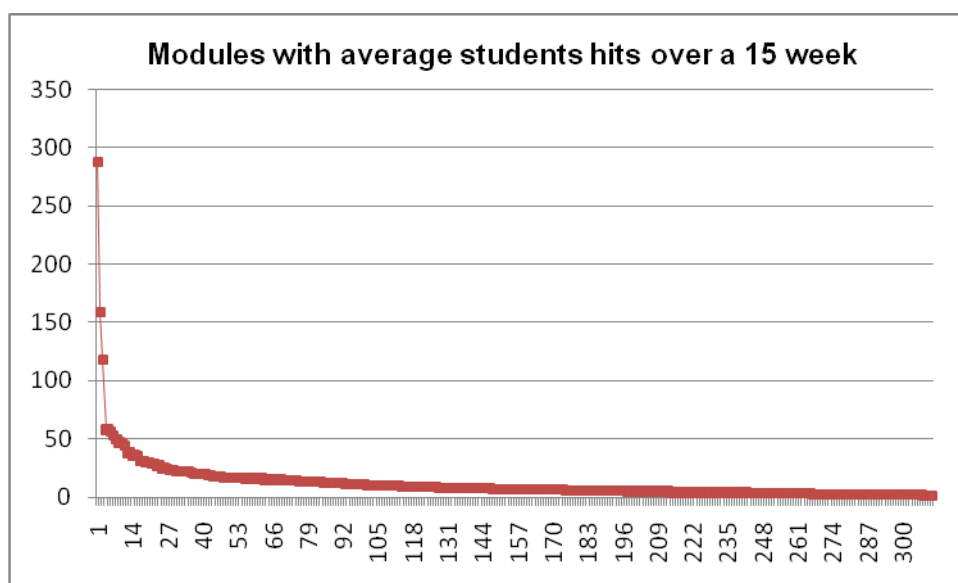


Fig. 4. The average number of student hits from 20 Sept. 2009 – 10 Feb. 2010

The diagram above plots the top 310 Moodle modules in regards to their average number of student hits which not unexpectedly follows a classical '*long-tail*' format, illustrating the importance of an 'institutional culture change' to make significant progress on the total number of student hits.

Very interesting is the observation that of the top 10 modules in fig. 4 **four** modules have been launched recently as part of the REEDNet WBL initiative, **one** module has been offered purely online to PG-students, **two** are offered on a 'serial blended' teaching mode (one of these with predominantly international students) and **one** is used in a Moodle pilot funded via an *Aspire* project.

Furthermore of the **top 25 ranked modules** 19 modules (76%) were 3* modules, with the remainder of 2* quality.

Such **best-practice** Moodle modules provide sound evidence that good online content on the VLE will attract increased student interaction.

It is hoped that since student usage data is a 'lagging parameter' and subject to availability of content in the first place it is likely that the usage figure will go up as online resources are becoming more widely available in particular if the institutional policy of e-learning takes root and more distance-learning modules are being offered

2.1.2. Student satisfaction with the VLE

This statistics is based on student feedback described as 'better than satisfactory' (in %) on a sample size of 877 students with a target set at '20% above baseline'

2005/07	2006/07	2007/08	2008/09	Target 2009/10
49	60.1	29.1	63.6	58.8

Table 9. Source: Annual Course Survey

After a dip due to the problems experienced with Moodle throughout 2007 the student satisfaction rate has reverted to previous levels, and is now slightly higher than during 2006/07, surpassing the 2009/10 target.

It will be interesting to observe whether better staff engagement with Moodle will further improve student satisfaction rates given that a lack of online resources uploaded by tutors is one of the students' most frequently cited criticism of the VLE.

To further enhance student engagement all first year students have been given a formal induction to Moodle since 2008, likely to further raise expectations.

2.2. Staff usage of Moodle

A total of **157 staff** have an account on Moodle and 113 (72%) are now making regular (at least once a month) contributions to the VLE. Amongst academic staff 96 out of 112 (86%) have contributed to Moodle within the current academic year, with 74 of them (66%) making regular contributions.

It is reassuring to note that new staff in particular are amongst the most avid Moodle users and most of them have been attending Moodle training sessions, up to intermediate level.

2.2.1. Proportion (in %) of staff actively engaged on Moodle (2* and 3* level)

2006/07	2007/08	2008/09	2009/10	Target 2009/10
n/a	42	58	72	40

Table 10. Source: e-Learning data

2.2.2. Proportion (in %) of tutors engaging at different levels (see *-ratings) on the VLE (Numbers are cumulative)

star-rating	2006/07	2007/08	2008/09	2009/10	Target
0	45-50	38	27	15	
1 or above	50-55	62	73	85	
2 or above	35	35	46	60	
3	3	7	12	15	
Combined 2*/3*	38	42	58	75	>40%

Table 11. Source: e-Learning data – 2006/07 values are estimates

There is a modest but significant increase in the proportion of lecturers engaging with Moodle at a higher (3*) level; this is accompanied by a reduction in the number of staff not using the VLE.

2.1.2. Staff satisfaction with the VLE

Recently an online survey has been undertaken to gauge the perception of staff in regards to any progress (or the lack of it) made with the VLE.

The most important findings are as follows:

(i) On the question as to what extent staff feel *better equipped to support students in regards to technology-enhanced learning* 83% of respondents consider themselves *very well* or *fairly well* equipped now. In comparison with 5 years ago 44% stated that they are much better or better equipped with only 7% stating as less equipped, with the remainder not being sure.

(ii) In regards to the usefulness of Moodle training sessions 71% of staff responded that they were very or fairly effective with only 8% stating that they were not effective (the remainder being either *Not Sure* or *N/A*).

72% of respondents have attended the *Moodle Beginners'* and 43% the *Intermediate class*, with a further 28% attending *ad hoc* sessions. Only 15% stated not to have attended any Moodle training sessions.

The importance of and desire for further training in the use of learning technology is evidenced by 56% of respondents expressing the necessity of staff development sessions in that area.

(iii) Two questions addressed the overall quality of the current Moodle service (fig. 5) and its performance compared with 3 years ago, in regards to seven aspects (fig. 6).

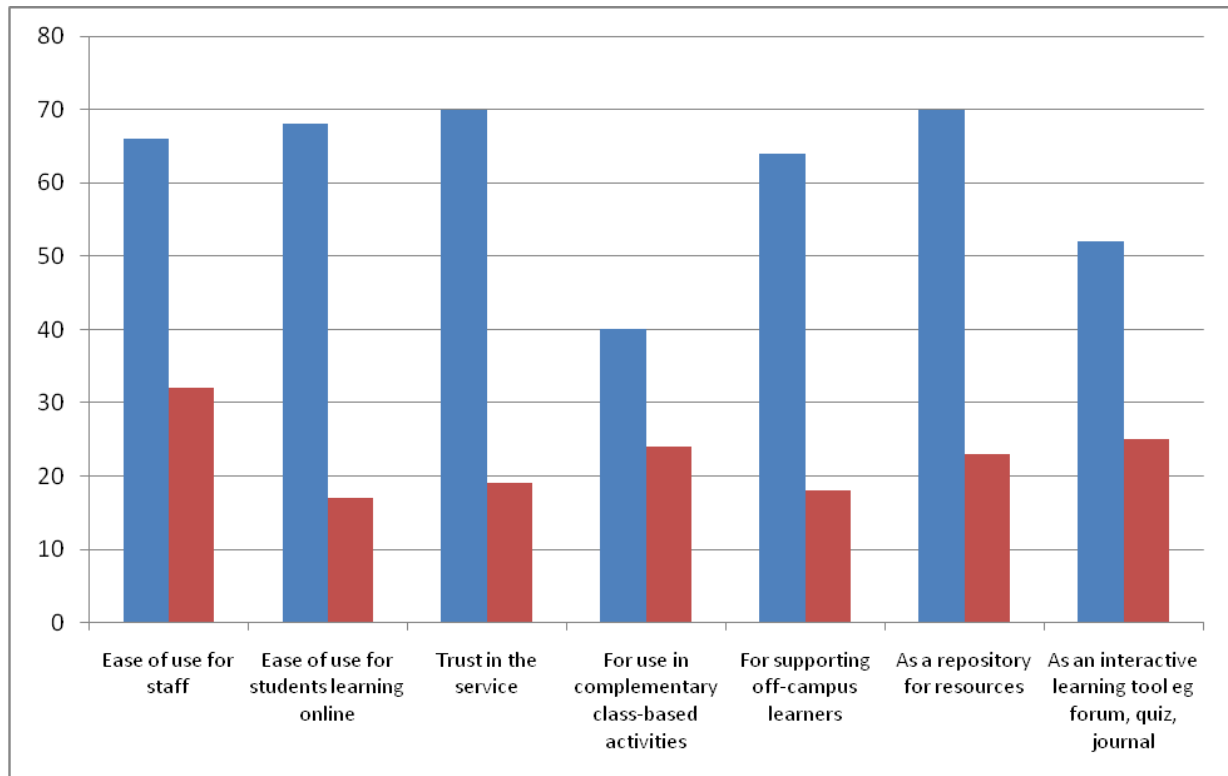


Fig. 5. Current level of satisfaction with Moodle (left column: satisfied and above [in %], right column: not satisfied [in %])

Data in figure 5 demonstrate that a clear majority of staff is satisfied with the current Moodle provision, its reliability, ease of use for both staff (less so) and students (more so) and its relevance in supporting blended (less) and distance learning (more). A reassuringly high proportion is also satisfied with its potential in providing interactivity for learning.

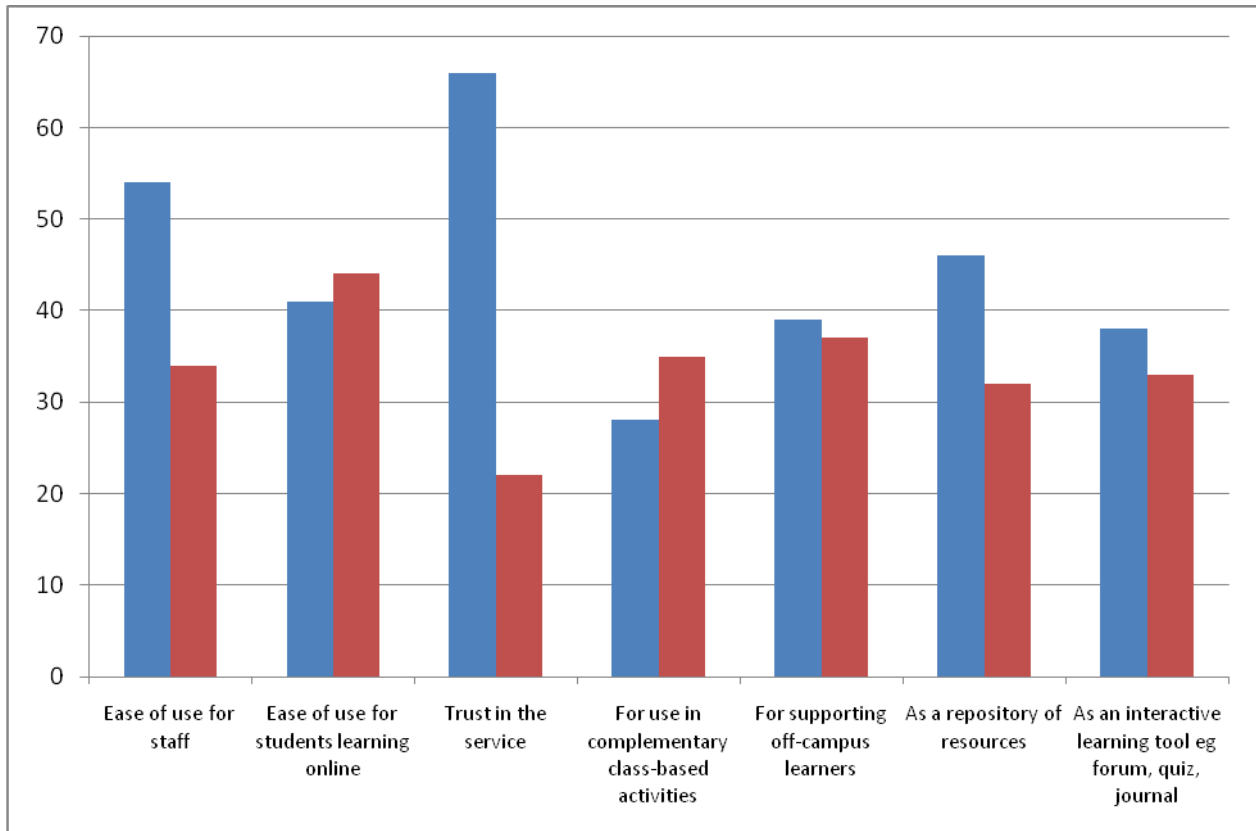


Fig. 6 . Level of satisfaction with Moodle in comparison with three years ago (left column: much or slightly better [in %], right column: no change [in %])

Figure 6 provides a comparison of the current service with the one provided three years ago. Here the picture is less clear-cut. Some aspects are seen as much improved (*trust in service* and *ease of use for staff*) whilst others are perceived to have changed relatively little, by about half the respondents (*ease of use for students, to support blended, distance and interactive learning*).

This suggests that the pedagogic potential of online learning, in particular in regards to constructivist learning models are either not fully understood or not perceived as relevant at this stage.

(iv) The final questions tried to address issues relating to what would be the most appropriate ways to promote the use of Moodle to staff, listing the three currently available options:

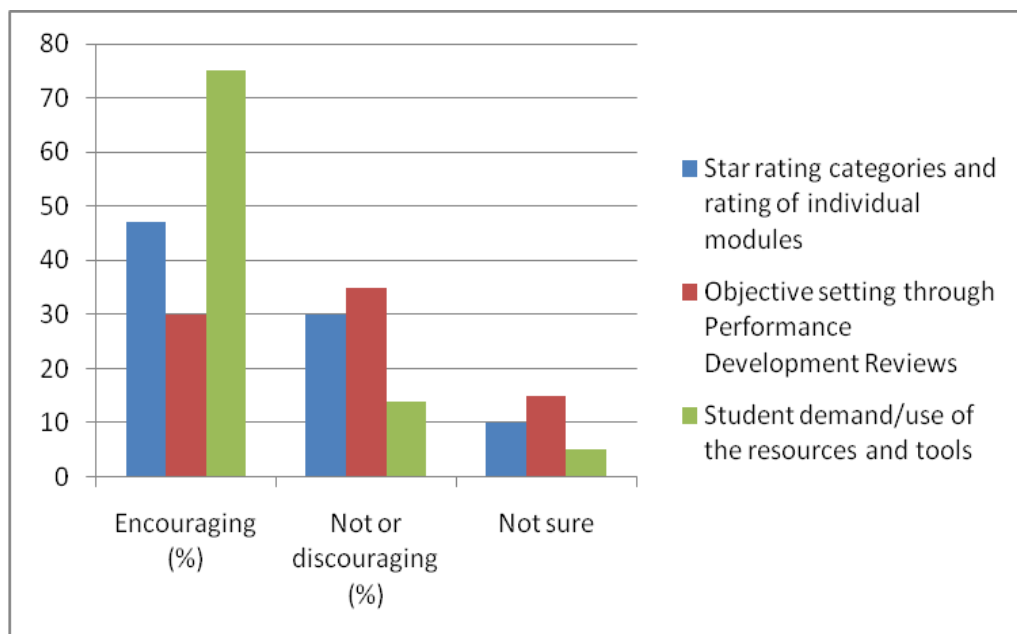


Fig.7. What encourages staff to engage with Moodle?

From fig. 7 it is obvious that the Moodle use by staff appears to be driven by student demand, significantly less so by the star-rating introduced two years ago and even less via the annual *Personal Development Review* process.

This in some ways is perhaps not unsurprising given staffs' reluctance to be pressurised into tasks they do not see as high priority but at the same time it is encouraging because all freshers now have to attend a Moodle training session as part of their (compulsory) IT-induction. In those sessions it is pointed out to them that they should expect teaching material to be made available online by staff as part of a basic teaching provision which is likely to raise customer expectations in the medium term.

3. Summary of improvements

The *HarperMoodle* VLE is now providing a robust and reliable infrastructure for online learning both for campus-based and increasingly for off-site learners. As a result it has been possible to make considerable progress in regards to usage by staff and, flowing from that by students, as shown in the data presented above.

The e-learning team has relocated during summer 2008 to be housed next to the End-User Support Team in the library. This has not only made it easier to deal with student queries due to the proximity to the open access students' PC area but also to collaborate with colleagues on joint projects such as the Virtual Desktop project.

In regards to the *Aspire* KPIs most have been attained or surpassed with the noticeable exception of the average number of hits per student/per Moodle module which is only about a quarter of the target figure. However it is hoped that this figure will go up during academic year 2009/10 getting closer to the target figure as part of the VLE student survey in summer 2010.

It is important to note that this figure will ultimately depend on the quantity and quality of the content available on the VLE and with the progress made as shown above students will inevitably engage more frequently with the VLE.

The noticeable increase in the number of non-credit bearing modules will support all students regardless of the modules and courses they are enrolled in and many modules are provided and maintained by both academic and support staff.

The e-learning team has been involved in supporting a large number of *Aspire* Development Fellows in relevant projects, in particular in regards to media (video) production and Web-development (Virtual Farm, Agricultural Machinery Web-sites) and the number of collaborative

projects has increased particularly within the last couple of years.

Most staff at Harper have clearly recognised the improvements seen on the VLE since its relaunch and now engage more, driven mainly by the fact that they wish to improve the learner experience although some still appear to struggle with the perceived complexity of the software.

In a recent development several staff have expressed an interest in the use of handheld high-definition camcorders to be used to record student presentations to provide formative feedback or to make informal interviews with colleagues and practitioners. This tool aims to empower staff and students to create their own standard quality multimedia production to be shared with others.

4. Gaps in data/evidence

Moodle

Online provision of content at PG-level and for WBL-modules is showing some deficits in particular in regards to the former. The PGT Course Manager has initiated a program to encourage staff to provide online resources across **all** PG-modules and progress and compliance with this will be monitored closely. A similar scheme would be appropriated for some modules offered as part of the REEDNet WBL initiative in order to provide some sort of consistency of service.

We would like to see more staff to extend their current instructivist teaching mode to a more constructivist model, for example by making more use of Moodle Activities.

Furthermore a more student-centred approach to teaching based on e-Portfolios or other reflective learning platforms, to be offered for example as part of placement learning or PGT/PGR teaching is recommended, as part of an extended VLE provision.

A project has also been initiated to monitor student usage at the module level, based on the Moodle **Report** tool. Several lecturers at Harper are now using this tool to glean how students make use of the VLE and what resources are most popular and effective with students. This data is likely to refine the provision of online resources and activities to the benefit of the learner. Such data will facilitate the identification of any 'best-practice' modules.

Web-sites for Learning

There are two main areas where staff and students can find relevant resources for teaching and learning, the *Virtual Farm* containing farm data and the *How to Moodle* and *e-Resource* site explaining and showcasing a variety of e-learning tools. Anecdotal evidence on the usefulness of the *Virtual Farm* exists but is based on a very small sample size. The *Virtual Farm* also provides media-rich and interactive content, for example via a user-manipulated Webcam surveying the new free-range chicken area, or the interactive display of kml-data files documenting the University College campus and adjacent agricultural land via *GoogleEarth*.

Alternative platforms

Although the data presented above focuses on the Harper VLE we are in the process of exploring alternative institutional learning platforms such as the e-portfolio tool *Mahara*, currently piloted with a group of students on work placement and the social networking/ blogging tool *WordPress* for higher-level and reflective learning.

Some staff have made use of relevant external Web2.0 applications as part of their teaching applying for example Google's *Blogger*, the social bookmarking tool *del.icio.us*, the collaborative tool *Huddle* or visual tools such as *XTimelineDebategraph*, all accessed via the VLE.

Collaboration and Dissemination

The *Aspire* Development Fellowship Award scheme has allowed to provide funding of 21 e-

learning related projects over a five year period, with 19 Principle Investigators and an additional 20 or so additional participants. This has allowed the creation of a critical mass of early adopters at Harper some of whom have sufficient expertise to encourage and assist their colleagues in making best use of the VLE. About half a dozen e-learning champions at Harper have been willing to disseminate their findings at the Harper *Moodle User Group* meetings and/or *Teaching and Learning Forum* or the, leading on occasions to subsequent collaborations.

Several examples of best practice now exist and some staff have created 'template' modules or activities for others to use in their online teaching for example for the second year *Research Methods* module or in regards to the provision of formative feedback within Moodle modules.

The *Aspire* Work-based Learning Developer has created a Moodle module called *Leadership and Professional Development* at TPG-level which is offered entirely online, as an evaluative pilot for distance learning modules and statistics in regards to student online engagement suggest that it is effective. Lessons learned from this teaching mode will inform the Harper *Community of Practice* in disseminating good work practices at an institutional level. This approach has been extended in a joint project with Shrewsbury College of Art and Technology in the application of audio-feedback in English Language tuition, undertaken as part of an *Aspire* Partnership Fellowship and it is intended that a similar approach is taken to provide audio-feedback in Foreign Language teaching at Harper.

As a consequence of an increased diversity of learner we are continuously refining the Harper Managed Learning Environment (MLE) possibly including the Library Management System (LMS) through changes to our Identity Management (IDM) implementation to effectively enrol non-traditional students such as work-based learners and add special requests made by their employers.

An important contribution is made by reminding staff regularly to apply Learning Technology within a particular context and in a pedagogically sensible manner.

This is achieved by frequent contributions made by the e-Learning Co-ordinator to the weekly *Harper Adams Newsletter*. From February 2007 until now a total of 48 one page entries have been written, to provide advice and support to staff.

Key Achievements

There is clear evidence that good progress has been made in regards to encouraging staff to make use of Learning Technology as part of their teaching. The role of Moodle in this has been monitored closely in regards to online content, and both staff and student engagement. It is highly likely that by the end of the current academic year (summer 2010) almost all KPIs will have been either reached or surpassed. There are now sufficient staff (both academic and non-academic) who have enough skills to enhance the online learning provision, and given that more courses and modules are likely to be delivered predominantly online, as part of the WBL-initiative, this aspect is particularly important.

It is hoped that Harper Graduates who have received a comprehensive blended learning experience will have acquired enough confidence to return to Harper, later in their lives for further study, either on short courses or to obtain additional professional qualifications.

Unintended outcomes

Although the emphasis of implementing e-learning has largely been within the context of blended learning and credit-bearing Moodle modules the biggest improvement has been seen in the expansion of cross-curricular support modules the use of which will benefit all students. Many of these modules have been created by non-academic support staff who now make up a significant proportion of Moodle developers.

Conclusion

Given the considerable institutional commitment towards Moodle it is essential that it will remain at the heart of the online learning provision for the foreseeable future.

However at the same time there now appears to be an opportune time to look at technologies beyond the VLE (*as recommend in the (draft) JISC Strategy 2010-2012 Paper*) and to prepare

the ground for a gradual shift away from the traditional tutor-centric instructivist VLE towards a more learner-orientated infrastructure around alternative open-source platforms such as *Mahara*, *WordPress* or *OpenCasting*, and possibly in the long run towards hosted solutions.

This move although incremental will inevitably match the expectations of future generations of learners (*Digital Natives* and the like) and their particular life styles.

In the light of the Government's emphasis on flexible, life-long and work-based learning it is crucial for teaching staff to be looking towards constructivist teaching methods and possibly new delivery modes based on the new generations of mobile devices such as *SmartPhones*, e-book readers and smart tablets.