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# VLE Intercompatibility and Recommendations for EU harmonisation

## *Background*

The VELVITT project has been investigating the use of Virtual and Managed Learning Environments (hereafter termed VLEs in this report) within technical teacher training. One of the aims of the project has to been to explore the practical and theoretical implications of these emerging forms of pedagogic interaction and how teacher training establishments within the European Union can harness the potential they have for collaboration and the harmonisation of teacher education curricula. Networked learning uses the power of the internet and provides the opportunity to transcend the limitations of geographical location in radical ways. The possibility for institutions across Europe to collaborate becomes a reality with VLEs and this exciting prospect, bringing as it does the promises of greater integration and mutual understanding, was the driver behind the development of the VELVITT project. However as with many technological issues, we note that for every promise of positive outcomes there are practical and theoretical barriers to implementing change. One of the major barriers which currently exists within VLE usage is the large number of current systems on the market and the problems which institutions have in selecting an appropriate solution for their needs. The large number of current systems is an index of both the rapid growth of interest in web-based, data driven learning platforms and the commercial interests which have followed these developments. VLEs are now big business and the market is competitive. The marketing of VLEs is aggressive and targeted towards pushing the superiority of a particular system. This makes objective decisions at institutional levels difficult. We can conclude that although there is currently evidence of rationalisation in the market (for instance with the merger of Web CT and Blackboard), the reality is that there will be different platforms in use across Europe and no single VLE looks set to become a de facto standard. We therefore needed to asses the intercompatibility of VLEs, and the possibilities they offer for moving courses and content between platforms. Understanding in more detail the technical and practical issues involved in VLE intercompatibility.

## *Methods*

The findings of this report are the result of a variety of investigative methods. A primary source of information was a comparison between Blackboard and Moodle made as during a period of common module delivery between Tampere Polytechnic in Finland and the University of Huddersfield in the UK. Common modules developed as part of the project were delivered firstly using Blackboard which is the current

VLE system at Huddersfield, and were then switched to delivery on Moodle which has recently become the VLE of choice in Tampere. The practical knowledge resulting from the arrangements needed to transfer these courses between VLEs has been central to the insights in this report. Rather than testing the intercompatibility of VLEs using abstract case studies or the narrow perspective of help files and technical specifications, we used instead the real life experience of tutors delivering courses to students and therefore engaged in the solution of immediate and pressing pedagogic issues. This report outlines our experiences of using two of the major VLEs available at the time of writing (Moodle and Blackboard) and has a comparison of their functionality in terms of teaching and learning and draws conclusions about what they can add to further EU harmonisation in this area.

## *Understanding Compatibility*

Compatibility is a complex concept and we need to define it before continuing. Conceived of in a narrow form in relation to VLEs it relates to the possibility of moving a course between platforms with the minimum of human intervention. A perfect or 100% intercompatibility between VLEs would mean a course could be transferred with a single command or instruction. As the number of steps needed to transfer the course increases, the intercompatibility of the VLEs reduces. An intercompatibility rating of 0% would mean that every singe item in a course would need to have a human intervention before being uploaded. This continuum is of course a theoretical abstraction. 100% compatibility could never be achieved as all VLEs will require some customised steps in order to transfer content. Likewise, because VLEs work using the common frameworks and languages of modern computing (mark up languages such as HTML and XML, common file formats such as RTF and JPG), the 0% compatibility end of the spectrum is also never going to manifest itself in reality.

### Technical and Social Compatibility Compared

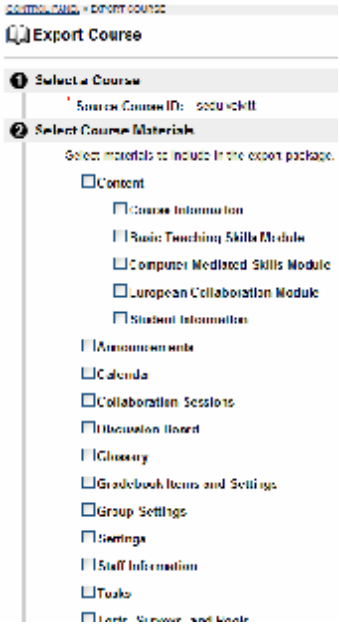
In order to fully understand issue of compatibility it is necessary to understand that technical compatibility, defined as the extent to which the various systems can be used interchangeably is only one aspect of a complex question. Our work on the VELVITT project demonstrated that in addition to understanding technical compatibility, there needs to be attention paid to the social and cultural dimensions of compatibility. These are aspects which govern the human resources in each of the organisations and the ways in which lecturers and staff can collaborate across platforms. Without work to harmonise curricula and assessment methods, technical compatibility will remain an abstract concept and will not impact on the ability of organisations across Europe to become involved in joint curriculum delivery projects. The work on the 3 common modules has demonstrated that finding a common framework for delivery and assessment is more important than thinking solely about technical issues. If institutions agree to deliver, the same or at least a similar, core of content in aspects of the vocational teacher training curriculum then it is possible for staff and students to work across platforms with little extra training. This was demonstrated when the Finnish partner provided access to the Moodle VLE and students and staff from both the UK and Hungary were able to access the system and engage in asynchronous dialogue with each other. The level of training required to

move students from using Blackboard (the system tested prior to using Moodle) was trivial and in most cases lasted less than a single session of teaching. Bringing assessment frameworks into closer proximity also allows compatibility issues to be addressed. For instance the decision to make the assessment tasks for the 3 common modules portfolio based meant that students in each of the participating countries could build their portfolios using whichever VLE they happened to be using at the time. Evidence of learning can be gathered using a variety of platforms and the onus is on the individual student to assemble the evidence as proof that learning outcomes have been met. As we are dealing with students who are, or who will go on to be practicing teachers, this form of assessment is entirely suited to them as they need to take control of their own learning and where necessary acquire additional technical skills in order to complete the tasks.

## *A Case Study: Comparing Blackboard with Moodle*

In this case study we provide some brief evidence of the technical compatibility issues which arose when the common modules were transferred from the Blackboard system running at Huddersfield to the Moodle system at Tampere. This test was conducted on a real course using actual tutors and therefore provides evidence of the actuality of moving courses between platforms, rather than relying on technical specifications which do not always capture the whole picture.

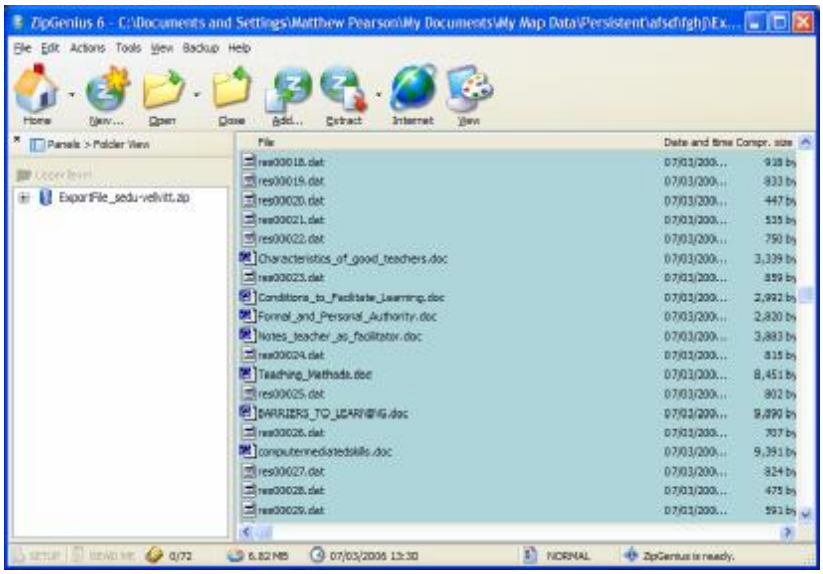
**The "export course" option in Blackboard showing choices of what to export**




The common modules consisted of a number of documents in various formats. Word documents were used for the module specifications and assessment briefs, with URL files for specific web links and a Zip file which extracted further information when run within the Blackboard environment. There was no single click solution to transferring this material into Moodle. Blackboard does allow for a course to be exported, but this is when the importing process will be back into the Blackboard

environment. This is useful for tutors who move their courses between various installations of Blackboard (for instance if they change jobs), but offers no functionality in terms of transferring a course in total from one platform to another. The Zip file created by this export function can be opened up and the files which contain content can be extracted which does offer a time saving over having to save them all manually prior to upload to a different system such as Moodle. But users need to be quite skilled in handling files as there are files saved in the export process which are solely for the use of Blackboard and these need to be ignored (see figure 2).

**Zip file archive from Blackboard "export course" option, showing course files and additional data files used by Blackboard**

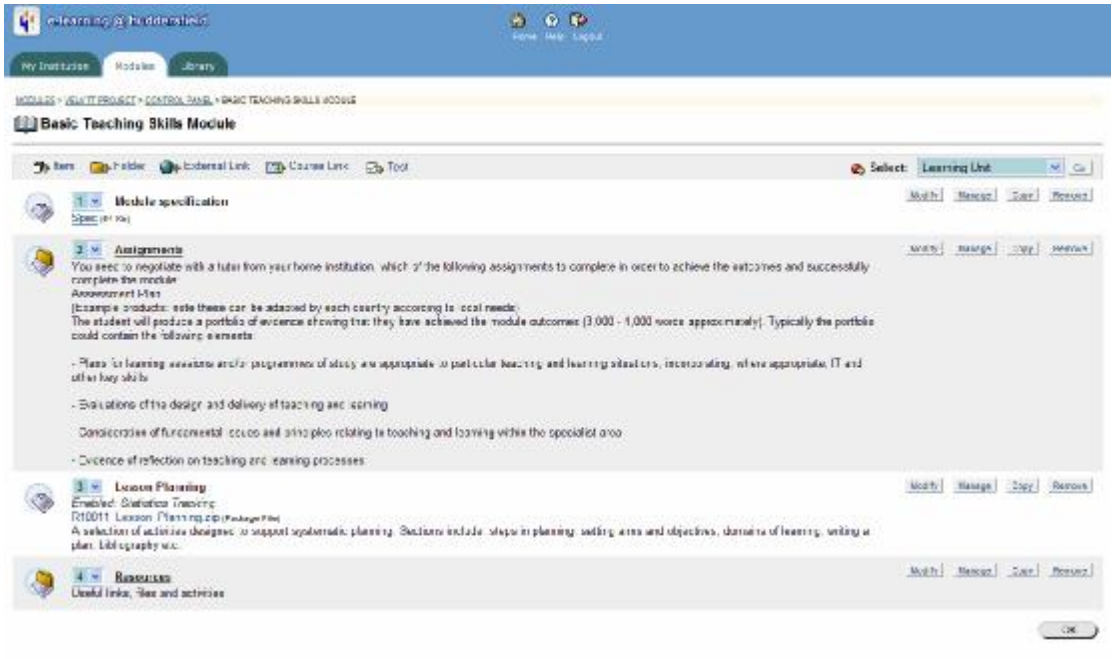



We therefore found that the material from Blackboard needed to be moved manually into Moodle. The two systems, although offering similar functionality, differ in their layouts and the methods of editing. Both systems are well designed and easy to use when appropriate training has been given to teaching staff, but there is little in the way of common procedures so two sets of skills need to be learned to be able to use the two systems.

In terms of uploading content, in Blackboard this issue is addressed using the control panel feature. This allows tutors to upload files and provide textual descriptions. The files which are uploaded need to be placed in a specific area and where one does not exist, this needs to be created, again using control panel. The screenshot below shows the Basic Teaching Skills Module upload area. The toolbar towards the top of the screen allows the addition of new items, or the creation of a new folder (which can then be populated with content). Items already in the system can be modified,

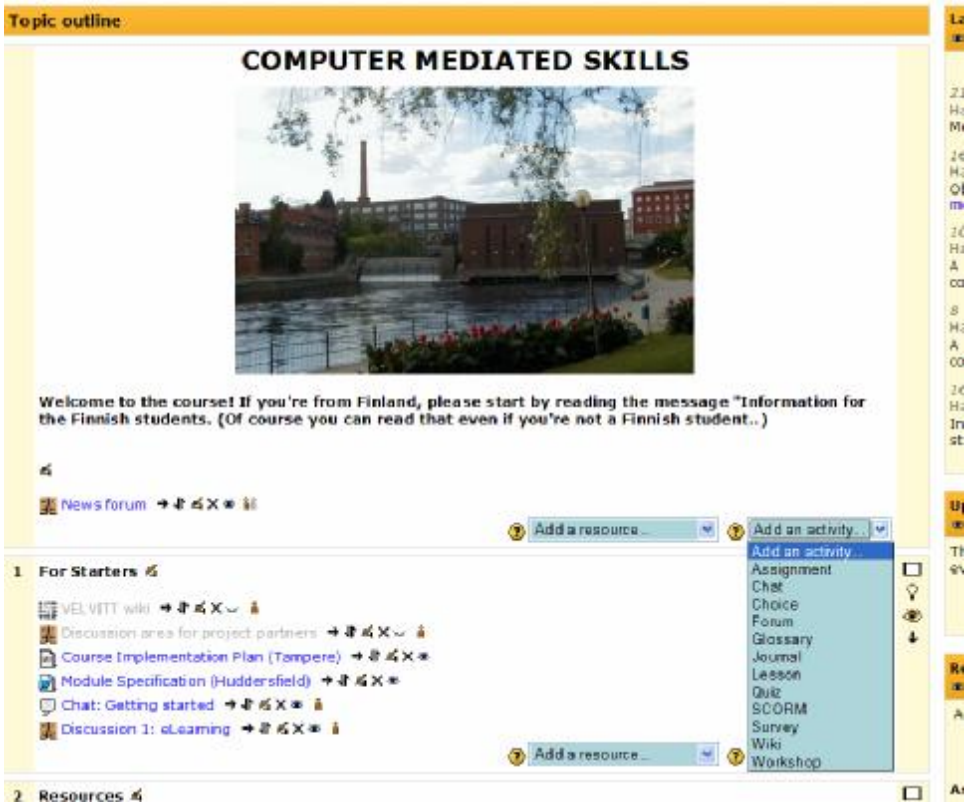
managed, copied or removed and the order of items within the section can be changed using a drop down box next to each entry.

**The control panel view of Blackboard showing the screen for adding and controlling content**




In the case of Moodle, there is no control panel which tutors alone can access. Instead they work with the same view as the students, but opt to turn editing on. This shows a series of icons next to each section of the course to control appearances and also two upload boxes appear which allow various document to be uploaded (see screenshot below which has editing switched on for the Computer Mediated Skills module). In the case of both Moodle and Blackboard, uploading pre-existing content is not a difficult task once training has been completed and requires no specialist knowledge of FTP or web design. A familiarity with file formats and directories and folders is needed but both of the systems are intuitive and easy to use. However as we said before, the procedure is different in both cases so compatibility is not particularly high between these two systems.

**Moodle with the new activities options highlighted (this leads to a screen where documents can be uploaded)**




Setting up group discussions is an important feature of the common modules, so some comparison between how this is done in Blackboard and Moodle is useful. In Blackboard, the new discussions are set up from within the control panel

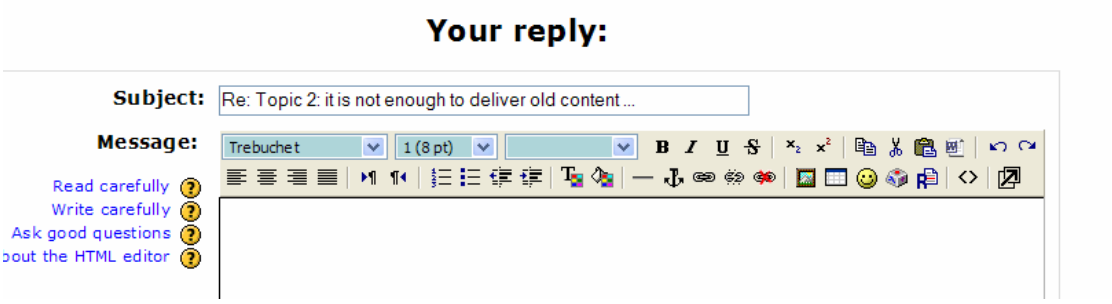
**The control panel of Blackboard with Add Forum facility showing**


A new forum can be added by the tutor, given a suitable name and various parameters governing posting rights can be controlled. Setting up a new forum is a matter of just a few mouse clicks. In Moodle a new forum can be added at any section by selecting the option from the drop down box.

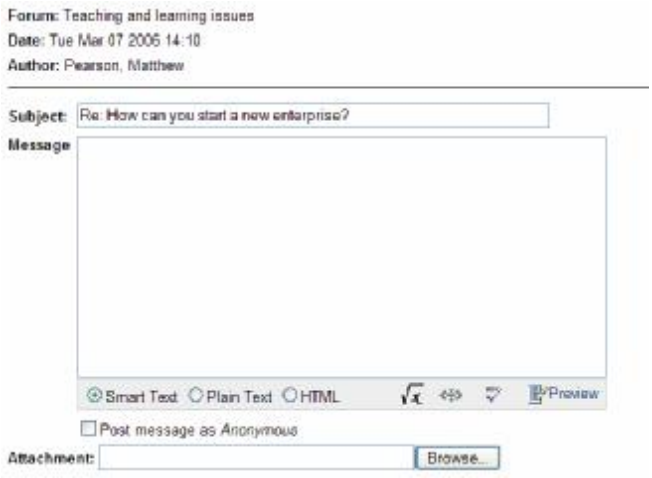
**Adding a new forum in Moodle using the drop down boxes**


this creates a new forum at that point in Moodle. Moodle offers some far superior tools and functions to Blackboard in the way that discussion fora are handled. For users with experience of using word processing, the system can take any rich text formatting and turn it into HTML content. Links can be added on the fly by using the various icons and generally the features available for posting are superior to Blackboard (see screenshot below for the features available for editing textual content using Moodle, and the shot below that for a comparison with Blackboard.

**Moodle text tools**



**Blackboard text tools (at bottom)**




Unlike Blackboard which groups discussions together under a heading called "discussion groups" which appears on the left hand menu bar, in Moodle discussions can be started anywhere in the content. But keeping a check on the discussions is also made easier because the system also groups them under the Forums link. This gives tutors the best of both worlds, with a space to keep an eye on all Forums and the flexibility to create discussion spaces anywhere within the course.


In terms of compatibility we can conclude that setting up discussions is a straightforward task in both Blackboard and Moodle, but once again the procedures differ slightly and require separate training. There is no facility to move a discussion, particularly once it is populated with content between the two systems. So the choice of where to hold a discussion needs to be made at the outset of a teaching activity. The differences between the discussion tools in Blackboard and Moodle are considerable and a full consideration of them is beyond the scope of this case study. However we can conclude that the collaborative features of Moodle are superior to Blackboard in just about every way and if online collaboration is an important feature of a course, then Moodle will become the system of choice.

## Funding and Licensing Issues

The issue of gaining access to students who are not part of an institution but are engaged in collaborative teaching and learning projects is linked to funding and licensing issues. In the case of VLEs which are licensed and which require financial support from an institution (as is the case with Blackboard), the arrangements for providing guest access to students outside the organisation is complex. Funding for this project allowed this to happen in the case of Blackboard, but in the future institutions wanting to collaborate using a proprietary VLE will have to set aside both money to fund this and human resources to negotiate the new licences and ensure that all legal and commercial issues are taken care of. Licensing issues effectively disappear with an Open Source (OS) such as Moodle where the software if free to use and distribute and there is no limitation of the number of users or their physical location of institutional affiliation. The only limitation here comes from the hardware (servers and internet access) running the system which needs to be sufficient to

provide for the additional users. Modern web servers are now very fast and extra hard drive space is very cheap so these OS VLEs can easily be scaled up by an institution with minimal extra cost (presuming that the institution has already invested in the VLE hardware for its own students). This reason alone recommends Open Source over proprietary solutions regardless of the technical features of the various systems. Our broad investigations into VLEs on the project have found that all solutions available on the market are largely similar in terms of functionality and solutions which require payment (such as Blackboard) do not offer additional features which can be accessed by end users.[1]

## *Recommendations for EU Level Harmonisation*

The world of VLEs is developing rapidly and making definitive pronouncements on EU harmonisation is not possible given the speed and pace of change in this area. However the work of the project has uncovered some basic principles which can be outlined here.

1: Harmonisation must proceed firstly from institutions agreeing joint teaching and assessment projects. Reaching agreement on what is to be taught and how is a necessary preliminary step in any successful joint venture using VLEs. These social and organisational agreements need to precede any choices of technical systems to be used. This harmonisation of curricula and assessment methods should be conducted within the overarching enterprise of the Bologna process ensuring that innovations on the Virtual Learning Front are transferable into all aspects of education.

2: At present there are no technical solutions for 100% VLE compatibility. Users must therefore learn to negotiate a variety of systems. This state of affairs is not however as undesirable as it first appears in relation to Vocational Teacher Training Students. It can be argued that these users can benefit from gaining the knowledge and skills needed to work on a number of different systems and the core of knowledge about virtual learning is generic with different techniques and processes needed to manage the resources on each system.

3: Open source systems such as Moodle are serious competitors to proprietary solutions and because funding and licensing issues can be a serious barrier to further harmonisation, they offer a very real opportunity for institutions to work together within minimal additional cost.

4: Staff training is very important in terms of further harmonisation. VLE technologies currently offer powerful affordances for teaching and learning across the EU but staff confidence needs to be high in order to use these to their full potential. Further investment in research and training of staff should therefore be a priority.

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[1] Blackboard Enterprise Edition does have support for database integration with an institution's existing student database and this feature requires extra payment. Adding students from other countries requires manual handling in any case, so this feature of the software, although it is desirable within an organisation and has led purchasing decisions at institutional level, does not impact on the parameters of this study.