

Virtual Learning Environments

training material

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Foreword

Most of the partners in our recent project also participated in a former international project (Lifelong Learning in Technical Teacher Training). When we summarised the conclusions of using Information and Communication Technology in life long learning we recognised further opportunities relating to new ICT developments, with special regard to the use of virtual learning environments.

Dr. David Lord and Dr. Matthew Pearson from Huddersfield University (UK) initiated a project supported by their experience on virtual learning environments. In 2003 the project received EU funding under the Leonardo da Vinci scheme. The title of this new project is Virtual Electronic Learning in Vocational Initial Teacher Training with the acronym VELVITT. The web-site of the project: velvitt.banki.hu. The project was co-ordinated by Bánki Donát Faculty of Budapest Polytechnic and the consortium was formed by experts from Finland, Greece, Holland, Hungary, Portugal and the UK.

This textbook includes a major product of the project: training materials on VLEs and methodological issues concerned. All of these materials can be used for staff development and also for teacher training purposes.

THE SYSTEM OF VLES

Development of e-learning and Virtual Learning Environments

(Pál Pentelényi – Ágnes Tóth)

Combining the services of computers, local networks and the Internet, VLEs provide facilities for the flexible organisation of all aspects of the learning process, both in terms of access to resources and communication with others.

The application of VLEs is of great significance to vocational training in many ways:

- § the content of vocational knowledge is rapidly changing; VLEs support a modular structure to the syllabus, which ensures that specific modules or their elements can be easily updated, and which allows efficient tracking of changes in the electronic documents
- § a major part of vocational training and re-training is undertaken by adults, and the provision by the VLE of training content independent of the place and time of study is advantageous to these ‘lifelong learners’
- § the wide-ranging application of information and communication technologies (ICT) is reflected in the safer handling of the informatics background to vocational services, that is the application of ICT in VLEs enriches ICT content knowledge and promotes its use in the vocational field.

Adequate ICT skills in vocational teachers are essential for the effective application of VLEs in vocational training. This imposes a dual task on vocational teacher training:

- § on the one hand, the content of pre-service vocational teacher training for the application of ICT needs the appropriate emphasis through the content enrichment of education technology, multimedia and subject methodologies, with a proper acquisition of experience in the field of e-learning and VLEs
- § on the other hand, in-service training of practising teachers, who have received their qualifications in former years, as well as of teachers taking part in vocational teacher training, must summarise and publicise in the form of distant training the content and methodology changes due to ICT development.

The following sections of this report detail the introductory module for the in-service training of vocational teachers and the vocational teacher training staff. In addition to this there will be the practical training modules, within the framework of the in-service training.

A Brief Survey of the Development of Internet, E-learning and VLEs

Major steps in the evolution of Internet

1945 – Vannevar Busch drafted his informatic vision of the future and the electro-photomechanic storage unit for the extension of memory, thus practically forecasting the later application of hypertext and hypermedia as well as the logical links that can be established among stored documents.

1966 – Dany Engelbert prepared the prototype of an on-line system, which was able to process hypertext materials and enabled the use of e-mail. The application of the mouse as a device for feeding data into the computer was among his inventions.

1973 – The Bolt Beranek and Newman Inc. (BBN) installed Telenet.

1980 – With the programme of Tim Berners-Lee, considered to be the father of the world web, the individual cluster computers of the network became addressable and the materials stored in them accessible.

1982 – The protocol used in Internet application was defined.

1989 – Tim Berners-Lee's proposal ("Information Management: A Proposal") was published and the term of World Wide Web introduced.

1995 – WWW and search machines became the technologies of the year.

By making a global size dialogue possible for its appliers, Internet secured an active participation in communication for the users. This fact together with the technical possibilities: multimedia environment,

the application of hypertext and hypermedia as well as overcoming communication space and time, opened up new vistas for education, which, with an almost prompt reaction, urged the pedagogical application of Internet, because educational experts recognised that it motivated users for the independent acquisition, organisation and continuous reorganisation of knowledge.

The development of information technology also created the trend, to be regarded independent, of e-learning.

The development of e-learning

It is almost impossible to follow the fantastic development of e-learning technologies.

Flash created and developed through several versions by Macromedia, and supported by almost all the important browsers, is suitable for the displaying of programmes that are vector-graphic, with various animation effects and sounds, and offer interactive possibilities. Its display, applied with the widely used browsers, ensures unified surfaces on the various platforms.

Java Script provides the possibility for displaying dynamic HTML pages for the insertion of interactive elements into static HTML pages. Its disadvantage is that, due to the inadequacy of standardisation, the dynamic elements only function in particular browsers.

Although VBS and the web pages containing different DirectX elements guarantee more possibilities than Java Script, they can be used only on a single platform (Windows, Internet Explorer).

VRML pages are even more advanced regarding service content, pages are stereoscopic and suggest movement of 3 grades of liberty in a space constructed in advance. Owing to the increased bandwidth and computer speed, the institution of education itself, together with its classrooms and equipment, can be modelled, that is the virtual classroom has come into being with their help.

SUN Java is a programming language the virtual running environment of which has been prepared for almost all the popular platforms.

So the development of e-learning has led to the formation of VLEs.

E-learning is the comprehensive and complex application of the use of ICT to support education.

According to the "e-Learning Action Plan" document of the European Union, e-learning embraces all the forms of education that wish to

make the teaching-learning process more efficient with the help of multimedia-based ICT. The environment of e-learning is virtual, its resources independent of place. Looking for the position of e-learning among the various forms of teaching and learning, it can be stated that in a certain sense it is a common part of computer-based learning (CBL) and web-based learning (WBL). Experience proves that it best aids the teaching-learning process if applied as a complement to the traditional educational experience.

The European Union summarised the developments necessary to secure the spread of e-learning in the document, "e-Europe":

- § each citizen of Europe must possess the abilities needed for living and working in an information society
- § efforts must be made that the overall population should possess the skills of digital reading and writing, which presupposes the system of concepts in information technology, IT skills, the knowledge of language, and technical competence.

The most important tasks of the programme of e-learning have been defined as follows:

- § extensive provision of adequate equipment (with multimedia computers organised into networks)
- § establishment of links with varied forms of source centres (educational centres, libraries, museums)
- § development of quality multimedia contents and services by reinforcing the multimedia industry as well as the establishment of links between institutions or centres of education and vocational training
- § changing the organisation of the educational process and the methods of education by means of teacher training and in-service teacher training.

The development of VLEs

Managing the Digital Enterprise (<http://digitalenterprise.org>)

An enterprise of distant learning, which offers courses and provides sources both for institutions of higher education and company courses.

Embanet (www.embanet.com)

A non-technology-specific service without a Learning Management System of its own. It offers the choice of the following five, various system shells.

FirstClass (www.firstclass.com)

Supports internet co-operation, basically not founded on distant learning.

IntraLearn (www.intralearn.com)

Develops flexible e-applications for enterprises and institutions of higher education.

Prometheus (www.prometheus.com)

Offers a public system shell for higher education and research, which users may freely adjust to their needs.

Blackboard (www.blackboard.com)

Its system shell is suitable for organising courses and forming higher education portals with appropriate administrative surfaces. Provides opportunity for the placement of free courses.

WebCT (www.webct.com)

Offers a web based learning environment. Syllabus developers prepare HTML pages. Applies a simple system of evaluation (multiple choice, gap filling, cross-word puzzle).

Natschool (www.natschool.com)

Uses standard search. Download and installation of further software are necessary for the operation of the full system. Its new feature is PCM.

Asymmetric Librarian

Ensures multimedia developing environment through the individual programming of the syllabus. Programming and developing the syllabus require the knowledge of the entire system.

Computer communication, such as discussion among study groups, e-mail or synchronous chat, in VLEs is very efficient; it enables students and tutors to develop interactive relationships, thus avoiding the risk of isolation involved in on-line learning.

Nowadays several established companies are already creating VLE networks internationally. At the same time, however, there are solutions developed at training institutions using inner and usually outer networks, too. The advantage of the former is that due to the normally richer financial background of the developer company the products are many-sided and more professional. They are more expensive for the user and there are more limitations of use. To enlarge the circle of potential customers, generally much more of them are offered than needed by the user, therefore unnecessary excess expenditure appears on the side of the user. Local development

usually works on a more modest financial basis and with simpler solutions, and its development demands a lot of time and energy of tutors. At the same time, however, such environment adapts itself very well to concrete needs. Particular demands may occasionally be met by local development only, in an inexpensive way. This circumstance makes local development not only justified but indispensable as well.

The advantage of locally developed electronic syllabuses is that they reinforce relations between training institutions both nationally and internationally. Relationship and co-operation that are really productive and long-term are established almost exclusively by local research and developments.

Nevertheless, it is to be clearly seen that the selection of VLEs is a process requiring the thorough analysis of relevant factors.

Tutors may at any time and place, or at least at several places, download professional and pedagogical information, texts, figures, charts and data with the help of which they may flexibly form the content, course and methods of training. At the same time, they may incorporate into training the latest technological and pedagogical results in the fastest possible way.

VLEs also make the international exchange of experience possible in the development of teacher training in the set of students and tutors respectively, and in the common set of the two as well. International co-operation is becoming increasingly important with the expansion of the use of VLEs. This may be hindered by problems of compatibility, which can, paradoxically, be solved just with the help of co-operation. When developing contents, efforts must be made to make feasible a later change-over either to a new system or to an improved form of the system applied.

XML makes it possible with the joint preservation of content and architecture to store documents structured according to the objective of training. Conversion into another format can be performed without data loss in XML format.

Changes in Learning Strategies due to the new Information and Communication Technology

The most significant change is to be seen in the transformation of learning strategies. Learning has so far been characterised by a certain linearity. As we describe things with a sequence of words one after the

other, so we mostly turn the pages of textbooks in the order of page numbers. We are used to things following each other in succession. However, the exclusive application of the sequential model of syllabus-transmission has become antiquated due to the development of ICT.

With the change in the form of the appearance of syllabi an increasingly wider use of constructive and heuristic models has become possible besides the sequential one. The preparation of students for independent orientation and learning in the new ICT environment has become an important task.

In this environment there is an opportunity to orientate oneself, then to roam about as if, to use a simple simile, one glanced into different rooms from the different storeys, corridors and their bifurcation in a three-dimensional building; then, on reconsideration, one changed floors by express lifts in back staircases. Similarly learning is continuously being reorganised as the aims are changing on the way; therefore an opportunity presents itself to harmonise learning strategy with the nature of the syllabus and the student's individual needs.

For independent knowledge acquisition and the independent as well as continuous reorganisation of the knowledge acquired, it is important for students not to get lost in the 'hyperspace'. Strategies must be recommended, which aid orientation and progression. Since it is systematically impossible to open all the thousands of menu points one by one, the recommendation of "bookmarks" may make learning more expedient.

Compared with spontaneous internet learning, VLEs consciously endeavour to use the possibilities of interactivity. Such uses are synchronous and asynchronous types of communication (e-mail, chat, forum, inner message system, web-telephony, web-videophony).

Teachers' roles have in several respects changed owing to the development of ICT. Teachers have to, metaphorically speaking, "scaffold" the entirety of the learning process so that the particular intersections provide safe holding points and orientation. The organisation and continuous reorganisation of knowledge appear as new tasks. The explanatory role of the teacher is complemented by an interpretative one, which helps students' adjustment to the changing sources of learning. The necessity of disciplining thought also appears, justified by the limitless use of technical tools.

VLEs reshape the traditional teacher-student relationship. The teacher is informed of problems of understanding not only by the student's

verbal signals (questions) but he also has the technical possibility of following progress in the student's studies as well as of prompt intervention. The teacher can continuously alter and develop the syllabus on the basis of students' comments and difficulties in learning.

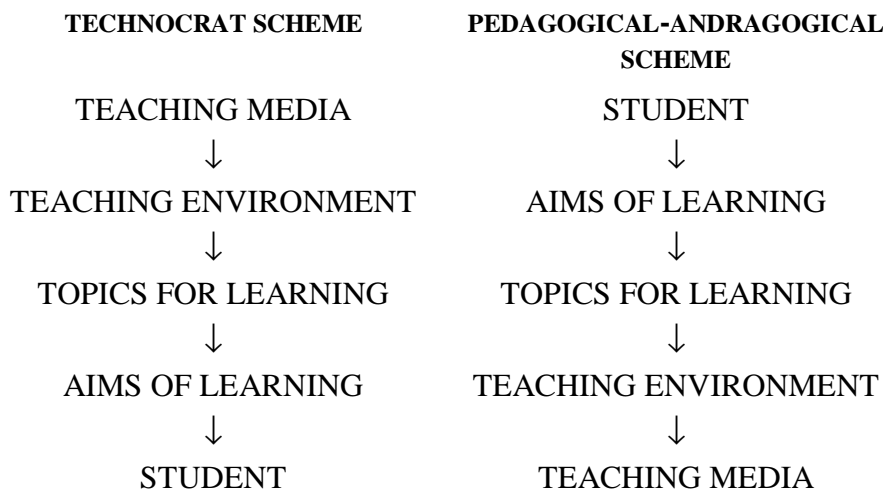
Teachers are set varied and new tasks in the fields of handing out and taking in assignments, organising group work or testing. The administrative burdens of these tasks become simplified and statistics are easily generated.

However, the key element in the teaching process remains undoubtedly the production of the content of teaching.

To this a more definite consideration of students' needs and an exact definition of output requirements is becoming increasingly important. Teachers must learn the tricks and methods of electronic syllabus writing.

The main token for the introduction and spread of e-Learning is the training of teachers/trainee teachers for the preparation and/or use of new teaching materials.

In her "Thematic Assessment of E-learning Projects within the Framework of the Leonardo da Vinci Programme", Andrea Kárpáti justly accentuates the basic importance of the how-s of syllabus planning. She contrasts the outdated technocrat scheme with the up-to-date pedagogical-andragogical e-learning syllabus organising scheme, and recommends the latter. The logics of the two kinds of syllabus planning schemes show an exactly opposite order of processes:



It can be seen that the comparison of the two schemes does not only reflect well the paradigm shift in virtual e-learning but also that in traditional forms of education.

It is not accidental that the Dutch Heesch Hooghuis' analysis points out that in this new environment students "are expected to build up a knowledge of their own instead of passively accepting being taught. They are expected to study." Motivation in studying for individual learning is obviously enhanced if planning focuses on students' interests and aims. Syllabus planning starting from students' needs may harmonise the structure and the characteristics of the syllabus with the possibilities of ICT interventions.

"In technical solutions pedagogical methods lie hidden." A discerning application of the system may radically transform teachers' methodology culture.

New syllabi are usually prepared by team-work. The teacher willing to engage in team-work acquires the use of already existing materials first. This way he encounters (either positive or negative) examples and, in possession of critical experience, he may later have a better chance to plan and/or prepare competent teaching materials of his own.

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General Issues of Virtual Learning Environments

(Matthew Pearson – David Lord)

Introduction

This resource is designed to assist lecturers and teachers involved in vocational initial teacher training (ITT) in using Virtual and Managed Learning Environments in their work. The resource combines advice and guidance on the pedagogical implications of using online learning, with practical help on the technical skills and competencies needed to effectively teach vocational education online. The resource is generic and does not cater for one particular learning environment. Instead the advice and guidance is designed to be used across a range of platforms. Throughout the reader is given general information on skills and expertise needed, and then is encouraged to apply this to the particular platforms, software and systems which are in operation in their particular teaching and training context. Examples are included where appropriate and these are mostly drawn from the Blackboard and WebCT learning environments which are popular in many European countries.

The resource is divided into four sections, covering various aspects of learning environment use and application. It is written to give an overview of most aspects of online learning within a vocational education context, and includes information about wider issues which need to be considered when implementing initiatives and innovations of this nature.

The first section, titled “Preparing to Teach Online” deals with the general issues to be considered when a course which has been predominantly taught on a face to face or traditional basis, is moved into an online environment. Various kinds of strategies for implementing online learning are considered and the reader is advised about important considerations.

The second section, titled “Managing Content”, deals with the management of learning content in an online environment. Online learning and learning environments now allow for many different types of material to be placed online for easy download by learners,

and the implications of these issues are considered in detail. Additionally, technical and software issues relating to file size and type are covered.

The third section, titled “Managing Learners” deals with the registration and management of learners within a system. Various models of learner management are considered and advice is given about effective strategies for managing this process.

The fourth and final section, titled “Managing Policies”, covers wider issues of VLE usage, particularly accessibility and copyright issues, and the effective implementation of acceptable use policies so that all users of the system are clear about their rights and responsibilities and the system is protected from abuse.

Preparing to teach vocational education online

The key to effective teaching and learning online is preparation and a clear sense of direction. It is relatively easy to implement strategies for online learning which are piecemeal and proceed according to the skills and competencies of teachers and lecturers involved. But it is clear that a more systematic and structured strategy is needed if online is to be embedded successfully into a course. This section covers some of the initial decisions about online learning and provides some useful advice about steps which can be taken to ensure that any implementations are successful and innovation is sustainable.

Models of online learning in vocational education

There are many different implementation models available to those wanting to use online learning in vocational education and training. Many people who are new to these systems make the mistake of thinking that the move to an online environment needs to be a “big bang” where the course moves entirely online at a single point and where traditional models of learning and teaching are replaced at a stroke with virtual methods. Experience has shown that this “big bang” approach can be problematic and can lead to disillusion on both the part of tutors and students with online learning. An alternative model is that of gradual movement, where elements of online learning are grafted onto traditional practice in a slow but sure way, and where

the best of the traditional model is preserved whilst the opportunity for innovation using virtual methods is also put into practice.

Managing Content

The ability to allow learners anytime, anywhere access to course materials is one of the most important features of online learning environments and in this section we will cover the most important aspects of content management.

Preparation of content

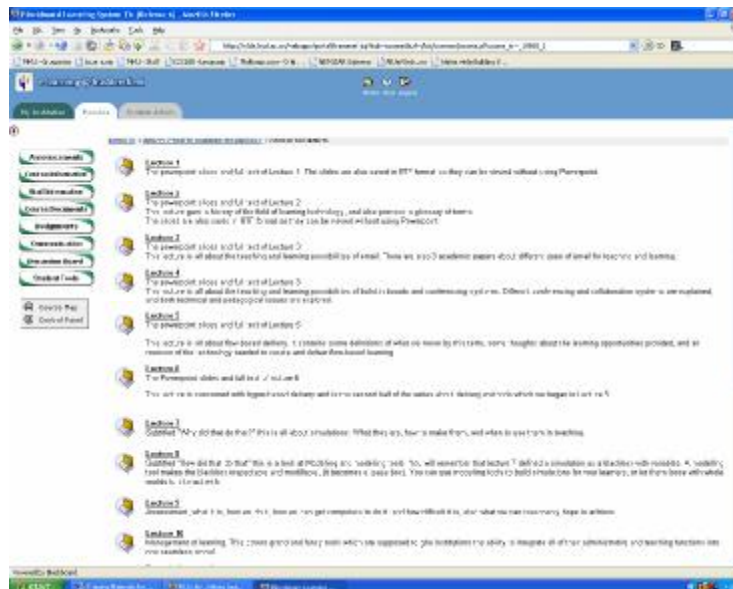
Procedures for preparing content prior to uploading will vary from course to course and between institutions. In many institutions, lecturers and teachers have been using information technology to produce teaching related material for many years, and in many cases these files can be uploaded into learning environments with minimal changes and adaptation. Lecture notes, handouts, PowerPoint presentations, web address lists and other multimedia resources are all suitable for uploading into the majority of learning environments. However, it is not recommended that lecturers or course teams simply “dump” the contents of their computers into the learning environment. This practice has been widespread, and has often been referred to as “shovelware”, a term which refers to material placed online as quickly as possible, and with little consideration being given to usability, appearance and accessibility. Within in an educational context, shovelware is also unlikely to provide suitable pedagogic support for learners and can lead to frustration and negative attitudes to online learning being developed, as students struggle to make sense of a myriad of files and content which does not have coherent and structured routes clearly linked to learning objectives and outcomes.

Avoiding the shovelware approach requires planning and discipline. Each file or chunk of content should be carefully checked. Firstly the checks should ensure that the content is up to date and accurate. Next the presentation of the material should be checked, formatting errors and issues with written expression should be corrected. Finally there should be a clear plan of where the particular resource fits in with the rest of the content being uploaded. There is little use in uploading stand alone files to a learning environment without giving learners a clear sense of why they are, and how they should be used. Many

resources which have been used by teachers and lecturers in face to face teaching require adaptation before they are suitable for online use. In particular the content needs to be checked so that an adequate explanation of the resource and how it should be used is added. In classroom situations this is often done verbally by the teacher, but when using the same resource online, these instructions need to be made explicit within the environment itself. Take for instance a set of safety guidelines for using workshop equipment. If used in the workshop itself, these would be copied and handed out to students and the lecturer would explain what each guideline means and why it is necessary. If the students access these materials online, they will need this contextual information built into the resource itself. Either the resource should be modified so this extra information is added to the primary document, or an appendix or supplementary document should be added to cover this extra information.

Many learning environments allow for extra information to be uploaded along with the files themselves. This can be useful in letting learners know what a particular file contains and what its purpose within the course is. Figure 1 shows an example from a Master's course, which demonstrates the use of this explanatory framework.

Figure 1: index page of lecture content, showing explanation of each resource



Each folder contains a set of lecture notes and resources and a brief but informative textual description added to each resource explains to learners what each folder contains. This is useful for a number of reasons: firstly it can give learners an important overview of a course online so they can plan their study strategies; secondly it allows lecturers to easily find content when updating material; and thirdly it prevents all users from having to load unnecessary content as each course segment is clearly labelled.

File types

Most learning environments can now handle uploads from nearly every possible file type and software program. The issue is not therefore whether you can upload a particular file, but rather whether your learners can easily access this file and use it successfully. Your choice of file type and software will be reliant on a number of issues, including:

Size of file: the size of files can vary enormously, even within an application. The general rule when choosing content formats for upload, is to work to get the smallest file size possible.

Accessibility of file: your students need to have the necessary software to read the files you upload. There is little point in uploading special graphics and illustrations in a software format which they are unlikely to be able to read. The rule is to choose formats which are readable on software which most users will have, and which has freely available “readers” which can be downloaded. Examples of these common interchange formats are:

PDF (portable document format) PDF files are easily readable by using PDF reading software, which can be freely downloaded in the unlikely event it is not already installed on a machine. The particular advantage of PDF files is that they print exactly as the creator intended, they are therefore a good choice for files which learners will print. PDF files need to be created using specialist software which is often expensive, and finished PDF files cannot be easily edited by users. These factors need to be considered when using PDF files for learning materials.

RTF (rich text format) RTF is an exchange format for word processed files. Unlike PDF, the files can be ready in most popular word processing packages and although there can occasionally be issues with formatting when files are passed between software packages, the medium is generally reliable. Files can easily be edited by the end user, so this is a good choice when uploading worksheets and templates for assignments, as learners can save the files locally and then begin making their own amendments.

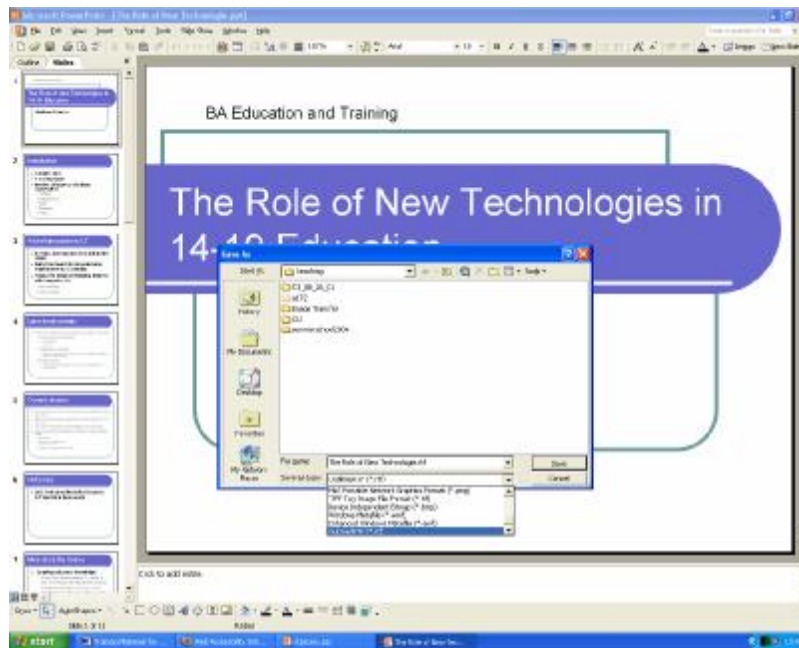
Web page format (HTML) Hyper text mark-up language is the basic tool of composition on the web and is thus hugely accessible. It is also very efficient in terms of file size, with a great deal of text being able to be carried in small file sizes. Pictures can easily be added, although these need to be uploaded separately and linked to the original documents, as HTML does not allow for the embedding of media. Linking between documents is easy in HTML. HTML can be composed in a variety of ways. Some users will write their HTML documents by hand, adding tags and mark up to achieve a close control over the content, others will use specialist software, such as Front page and Dreamweaver, and an increasingly popular option is to use the “convert to HTML” features which are available in many office packages. HTML is excellent for making your content accessible to the maximum number of users, and it can also be very efficient on download times. However, some expertise and skill is needed when creating content in this format and authoring content in this format is not recommended for beginner users of learning environments.

Using vendor specific formats

The formats listed above are all non-vendor specific, and therefore offer enhanced accessibility for most users. In many cases, institutions can use vendor specific file formats, because it is known in advance that the necessary software is installed on all machines that the students will use to access learning material. So many tutors do rely on Microsoft Office formats (DOC, XLS, PPT) when uploading material, or use other formats specific to specialist software. Consideration should always be given to the accessibility of file formats. It can be good practice to provide the same file in a number of

different formats. For instance, PowerPoint presentations can be saved in “outline” mode as RTF files as well as in the original format. Dual saving and uploading of files has a number of advantages. Users can choose which file type to access, and for those on slow connections, often outline formats are far easier to download. A disadvantage of saving a file in multiple formats is the increased maintenance time if the file is changed. All files relating to the master document need to be changed and uploaded if the learning environment is to be kept up to date, and this adds an increased burden of work on the tutor.

Figure 2: A demonstration of how to save a PowerPoint in outline format, using the “save as RTF” feature



Uploading

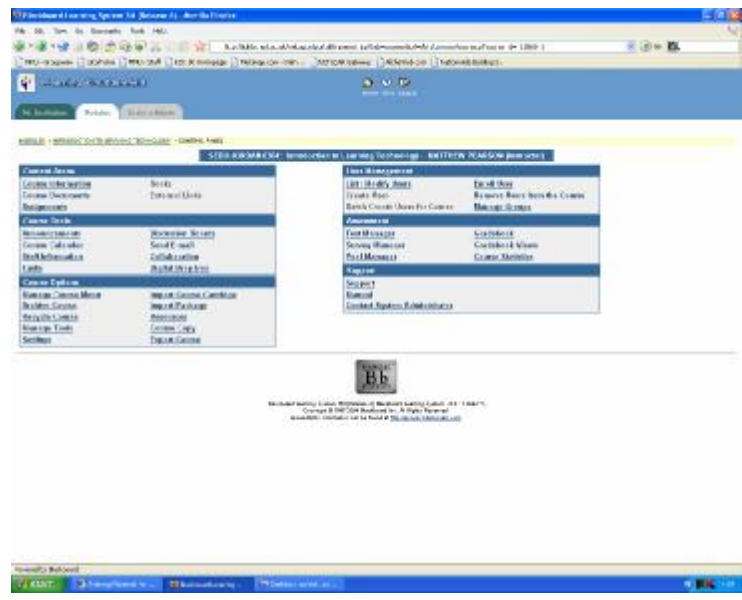
Uploading is the generic term used when files are transferred from the hard drive or other local storage device into the online learning environment. The materials uploaded are always a copy of the originals, and the originals remain in their place. The material is thus effectively duplicated, once in the local setting, and again in the virtual setting. This procedure has many technical advantages because

the creation of two copies of a file acts as a natural back up in the case of the failure of either system. It does however have implications for the management of content. A lecturer who updates files on his or her computer, must remember to upload new copies to the learning environment, and importantly outdated or obsolescent material needs to be removed so that learners are not confused or frustrated.

Uploading is typically done through the use of tutor web pages which have special functions to allow material to be passed to the server. These pages are only available to tutors on courses, to prevent students from uploading content and removing files. Some learning environments rely on a method of transfer called FTP (file transfer protocol), which requires the use of specialist software. The use of FTP is beyond the scope of this resource, but any readers whose learning environments or websites require the use of FTP will be able to get local help with these issues.

Figure 3 is a screenshot of the tutor management pages for Blackboard. The buttons relating to uploading files are contained in the upper right panel.

Figure 3: tutor page for controlling content in Blackboard



Blackboard splits content into a number of categories in order to create a top level hierarchy of content management. These categories can be switched on or off for each particular course.

Managing Learners

One of the main benefits of a virtual or managed learning environment over a traditional web based course is the enhanced support for managing learners which these systems provide. Most systems allow the creation of individual log-in names for each user and then customise content and courses according to the profile of the learner or lecturer. These features are handled through the database which is embedded in the software. However, it is still necessary to have a rigorous and systematic approach to managing learners in these systems and databases and records need to be maintained and kept up to date. This section will consider some of the main issues involved in managing learners in online environments, and will draw on some examples of good practice to demonstrate how to work effectively.

Registering Learners

The first stage of using any system with learners is to create log in names and passwords for them. In some institutions this process has been automated and log-in names are created through the use of database transfer and batch operations. If your learner accounts are created automatically, then much of the hard work has been done for you, but you should still be prepared to work on learner management, as experience has shown that even the best system is likely to fail in some instances, and you may well need to manually register some learners on the system, particularly if they join courses late or transfer.

If your learner accounts are not created automatically, then you will need to decide, both as an individual and as a course team, who to tackle this time consuming process. There is nothing essentially difficult about creating accounts for learners in most of the popular learning environments, but for numbers in advance of 20, the process can be rather repetitive and can waste valuable lecturer time. It is therefore wise to explore the possibility of getting technical help with this, and handing the registering of students over to support or administrative staff. You will need to decide on a clear and consistent policy for creating user log in names and passwords; failing to do this

and relying on ad hoc systems can lead to confusion for both student and tutor and is can be a huge waste of time. If your learners already have log in names and passwords for other systems, then it is wise to at least use the same log in name for the learning environment. In many institutions this will be the student ID number or similar. If you create accounts with the same log in name, confusion about which log in to use will be minimised. When creating passwords, you need to consider whether to create individual passwords for each student, or whether to create a generic password which individuals then change when they are logged in. Most manual creators of learner accounts favour the latter as it streamlines the process. However, there are security issues to be considered as all students having the same password can lead to abuses and misunderstandings. To alleviate these, it should be stressed that it is the responsibility of all users to change their generic password to an individual one as soon as possible, and then it is their continuing responsibility to keep this password safe from the knowledge of others.

Email addresses and user names

Many systems now offer an integrated email system from within the learning environment. This is the case with Blackboard; user email addresses can be added to the system, which can then act as a mail server. This can be extremely convenient for both staff and students, as an integrated email and content system reduces the number of software systems to be mastered and makes for a streamlined communication environment. However user emails need to be correctly set. This is often done automatically with batch set ups, but in the case of manual learner entry, you will need to decide whether to enter these emails or have the students do this when they access the system. The second option is preferable, as the student become responsible for maintaining their emails and the workload for tutors is reduced.

Communication

All learning environments offer enhanced possibilities for communication between students and tutors. It is not possible to list the totality of all features supported by systems, so this section instead gives an overview of common features and how these can be used within vocational education.

Email: The most basic communication tool and not restricted to learning environments. Email remains the most popular tool for communication on the Internet and its use in education should never be underestimated.

Discussion Boards and Online Forums: these asynchronous forms of communication are extremely useful as they allow the posting of messages in a common space used by a course or module. They have many different uses within a course, and the exact choice of deployment will vary. Some tutors use the online forum features of learning environments as social spaces for students and tutors to talk about a range of issues, whilst others prepare formal work to be completed and even tie assessment outcomes to participation in these discussion boards. Creating discussion boards is straightforward in the majority of systems, and tutors can add new boards or delete ones that are finished with easily. The following guidelines for good practice should be considered when using discussion boards within vocational education

Give students a reason to participate. Experience has shown that all users usually require a reason and sound motivation to take part in online discussion. Do not expect it to magically happen just because you make the system available! You should explain to learners clearly why you are making these features available and what they will get out of using them. For instance, you may explain that the discussion areas will be used for talk about the assessment process and you will give specific help on these issues here as opposed to in the classroom. You may even make participation in the discussion areas compulsory, but in this case you will need to think this decision through carefully and draw up clear rules governing acceptable participation. You should also make provision for those students who are prevented from taking part.

Synchronous Chat Facilities: these are features of a system where users talk in real time. They are often text based, but increasingly these systems are increasing in complexity and features such as shared drawing spaces and even rudimentary audio and video conferencing have been added. Features of this nature are rarely used currently

within vocational education, although there is a case to be made for exploring how this could be changed in the future.

Support for assessment

Submitting assignments

In the final section in “managing learners”, we will consider the support for assessment provided by online learning environments. At the most basic level, the environments provide a way for tutor and student to communicate virtually, so files can be passed for assessment purposes. This has many advantages over the traditional use of paper drafts, but it needs to be clearly managed, otherwise the tutor can be overwhelmed with the number of drafts coming in, and tracking each submission can be difficult. It is good practice to create a clear policy for accepting submissions by email through an online learning environment, and publicise this to students. Some systems, such as Blackboard, build on the idea of using email and attachments, and offer a “digital drop box”. This is a space on the server which can be accessed by each user and where files can be left for the tutor to access. Once they have been read, the tutor can reload the file into the drop box and it can be collected by the student. Using the digital drop box has a number of advantages over using normal email for assessment transfer, not least in that the email box of the tutor is kept free of the often heavy traffic which this practice can encourage. The system also lets both tutor and learner know when a file has been accessed or changed, so a degree of transparency is achieved.

Quizzes and surveys

Both Blackboard and WebCT have tools for creating quizzes and surveys. These are usually variations on multiple choice. The software handles the administration and marking of the tests, and many features of the tests can be controlled by the tutor. It is the case that these features are largely underused within vocational education. Although there are undoubtedly limits to the kinds of knowledge and skills which multiple choice style tests can measure, they can be used effectively in many contexts especially when combined with other assessment methods. The tests are marked automatically and scores are passed to the tutor so a great deal of time is saved by using these

systems. Tests can also be reused from year to year, and once the initial time expense of creating the test has been invested, maintenance is relatively easy.

Managing policies

As VLE usage in an institution increases, there is a need to inform users of their rights and responsibilities and to manage and control the way the system is used. In most cases this is achieved by the drafting, ratification and publication of access and usage policies which are sometimes called “computer user codes of conduct”. We have noted that nearly all teaching training institutions have already existing policies on computer and internet usage, and these policies set out in detail what is and is not acceptable when using the system. The policies are created for a number of reasons, the first is to protect the integrity of university systems, expressed in policy terms as prohibitions on “hacking” and deliberate attempts to compromise security, and the second is to protect users from harmful or malicious communications which is expressed in terms of prohibitions on posting material which is offensive or inappropriate or using university systems to access or create material of this nature.

The existence of these policies on computer and internet usage means that in many cases, there is no need to draw up a separate policy for VLE usage. Because the VLEs are part of an existing setup they are automatically covered by any policies in many cases. But each department and institution should review its policies in the light of VLE usage and check that both users’ interests and the organisation itself are protected. It may be necessary to provide explicit guidance to users that their usage of the VLE is covered by the existing codes of conduct or policies and care should be taken to ensure that there are no loopholes or ambiguities in policies which could lead to misunderstandings among users.

Resources

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Technical Features of VLEs

(Anton van den Brink – Paul Dirckx)

Introduction

A virtual learning environment (VLE) is a set of teaching and learning tools designed to enhance a student's learning experience by including computers and the Internet in the learning process. In general, VLE users are assigned either a teacher ID or a student ID. The teacher sees what a student sees, but the teacher has additional user rights to create or modify curriculum content and track student performance. There are a number of commercial VLE software packages available, including WebCT, Blackboard, N@tschool and Moodle.

There are two terms currently being used when referring to environments that are involved in the management of the learning process: VLEs (Virtual Learning Environments) and MLEs (Managed Learning Environments). The two terms are often interchanged. The opinion of the JISC (Joint Information Systems Committee) Steering Group is that an MLE might consist of a whole range of different software and systems that interrelate, share data and contribute to learning management. A VLE refers to a specific piece of software that enables learners and staff to interact, and includes content delivery and tracking.

Features of a VLE

A VLE is a single piece of software which provides an integrated online learning environment, bringing together functions including content delivery, communications facilities, assessment, student tracking, and links to other systems. VLEs can be used in a variety of ways, e.g.:

- § To deliver entire courses to distance learning students.
- § To provide additional content and support to complement face to face classes.
- § To provide support through the communications facilities to classes delivered entirely face to face.

Because VLEs are accessible via standard browsers, they are available from the college intranet, and, if the college chooses, via the Internet,

from anywhere in the world with an Internet connection. This provides students with significantly greater flexibility in learning; and also has implications for when and where staff provide student support.

Principle functions

The principle functions that the complete VLE needs to deliver are:

- § Controlled access.
- § Student tracking.
- § Resources and materials.
- § Communication.
- § Links.
- § Customization.

The next paragraphs look at these functions in more detail.

Controlled access

This means controlled, secure, access to the curriculum that has been mapped to elements which can be separately assessed and recorded.

A VLE should allow the organisation of students into virtual classes, with individual, secure log-ins. Content should be organised in elements or modules and mapped to learning outcomes of programmes, linked to the units of which they form a part. Students should have their own individual, customized workspaces.

Student tracking

Tracking student activity and achievement against these elements using simple processes should make it possible for tutors to define and set up a course with accompanying materials and activities to direct, guide and monitor learner progress.

A VLE will need to record certain basic information about students, irrespective of the learning context, including registration details, course details, course prerequisites, qualification aims, (notional) study time and tracking information. It should offer comprehensive tracking and recording facilities. For example, it should automatically

record individual students' log-in time and dates, length of time online, what content has been read and how often, assessments completed, with dates and times of these activities.

Ideally, the username and passwords used to control access to the VLE should be the same as those used for other systems within the institution, to allow a 'single log-in'. It should not be necessary for a user to log in several times to access different systems.

Resources and materials

There should be support for online learning, including access to learning resources, assessment and guidance. The learning resources may be self-developed or professionally authored and purchased materials.

The VLE needs to be able to support a variety of content formats, not only hypertext markup language (HTML). It should also be easy to transfer content between VLEs either because institutions (or consortia) have different VLEs or because it is necessary to change VLE (in light of circumstances such as the supplier going out of business).

The VLE will need to provide a simple method of uploading content into the environment, so that it is then available for the creation of learning programmes and pathways. Methods of doing this will vary from simple drag-and-drop to more complex uploading processes, including batch uploading of files and courses. Once uploaded, content elements have to be assembled into programmes of learning, which will mean devising pathways through the content, creating hierarchical structures, building links, etc. Again, the way this is implemented should make it easy for non-technical staff to use.

From the student point of view, the VLE should offer simple navigation tools through the content, and they should be able to access their own course details and performance information.

There should be a variety of assessment options, including multiple choice and free text submission. Assessment should be automatically graded and/or manually marked. The VLE should be able

automatically to tailor the content presented to the student on the basis of test results.

Communication

This includes communication between the learner, the tutor and other learning support specialists. There are three basic methods of communication within a typical VLE: email, forums or discussion groups and chat rooms, although not all VLEs will necessarily provide all of these. However, where they don't, it should be possible to incorporate (and integrate) third party products into the VLE easily.

Links

This means links to other administrative systems, both in-house and externally. The VLE should integrate easily with core administrative/management systems. Its data should be seamlessly shared between the VLE and the management information system. It should also be possible to transfer student data and content easily from one VLE to another.

Customisation

VLEs should be customisable. Most VLEs will allow the look and feel of the user interface to be customised, so that it can easily be redesigned to appear in the college colours, display the college logo, etc. It should also allow the creation of standardised course templates.

Components of a VLE

On the previous chapter, the features of a 'complete VLE' were laid out in detail. This chapter offers an at-a-glance listing of both the essential components and the additional tools that could make up the essential VLE.

Essential components

The essential components are:

- § Content Management.
- § Discussion (synchronous and asynchronous).
- § Assessment.

Additional tools

Some additional tools can be:

- § Videoconferencing
- § Group support (including both teacher defined and student defined groups)
- § Student-only Areas (to encourage post-class discussion amongst learners)
- § Content Discussion (which would allow users to actively comment on a particular piece of content)
- § Alternative assessment tools
- § Linking tools enabling the cross-referencing of ideas between study units (thus avoiding the single content repository element of a VLE)
- § Annotation tools (to flag content for discussion).

Probably there are more suitable VLE components that warrant inclusion in this paragraph, but in our opinion these are the most important ones.

Choosing a VLE

The process by which a college will evaluate and choose a VLE will be slightly different in every college. Buying a VLE is a big decision, even if you're piloting it first, rather than rolling it out to the whole college.

This chapter gives you some advice on choosing a VLE. What are the general issues? Why should comparison tables most definitely not be used as the only basis on which to choose a VLE?

General issues

Some typical questions you would need to ask a supplier are likely to include:

- § Does the VLE system already contain content, or are materials available separately from the producer?
- § Is the system purely a shell in which you place your own content, sourced elsewhere?
- § How easy is it to write and upload materials?

- § Is uploading content to the VLE a simple drag and drop process, or much more complicated?
- § Is it easy to create online tests?
- § How much HTML (Web authoring) knowledge is required? The less the better!
- § How easy is to do administrative tasks, like enroll students into the VLE?
- § How open is the system? Does it allow you to share with other resources or systems you might have? Does it talk to your Management Information System for example? Is it compatible with other VLEs? Does it meet the emerging standards?
- § Are all the other functions, e.g. communications, student tracking, assessment, easy to use and well designed?
- § What about installation, technical support, and training? What's included in the purchasing price and what isn't? Is training face-to-face, online, or both?
- § Is there an email or Web-based user group you can join and monitor before purchase, and if so, what sorts of comments have existing users made?
- § Can you get an evaluation version to install and test before buying?
- § Is it configurable to the look and feel of your college?
- § Does the supplier offer a hosting service, where the VLE is hosted on their own servers, rather than your college servers, so reducing your need for technical support to be provided internally?
- § Which other colleges already use the VLE you are considering? Are there reference sites or demonstration courses?

Comparison tables

By choosing a VLE it's also possible to use a comparison table. The document '**Summary results matrices depth test.doc**' has been used in the Velvitt-project by comparing WebCT, Blackboard, N@tschool and Moodle. However, comparison tables should most definitely not be used as the only basis on which to choose a VLE. There are various reasons for this:

- § They are extremely difficult to keep up to date, as VLEs change very quickly, and new features and versions are out all the time. Note that the tables in the links we give below are certainly not guaranteed to be up to date, and you use them at your own risk.

- § Tables can be very large and cumbersome. For example, a typical question a table might seek to answer is "Does the VLE provide its own internal email system?" - on the face of it, a simple yes/no answer. But then if it's yes, you can get into all sorts of questions about the detail of that email system - e.g. can a student copy or blind copy to others in their class, can they set up groups, can emails also be automatically forwarded to their external POP account, etc. So, to be meaningful, the table can get incredibly large.
- § They don't allow for qualitative judgements. For example, a key question about VLEs is "how easy is it for lecturers to upload content?" On some it is quite hard, on others very easy. However, it's very hard to quantify that in a comparative table, and make it meaningful.
- § Tables concentrate more on the VLEs features, rather than the pedagogy, and how it will be used, and can give the false impression that the more features there are, the better the VLE is for teaching and learning.

This is not to say that comparison tables are entirely useless, far from it. They can be at least used to identify some minimum features which your college thinks are essential, and so rule out VLEs which don't have those features. In this way, they are an important part of a first stage of VLE evaluation.

Piloting a VLE

Buying a VLE is one thing; getting people to use it, and to use it appropriately, is quite another. Even the process of buying a VLE will affect how (and if) it is used. If one person goes out and buys the VLE without consulting with other people, especially staff, the future users of it, it will be that much harder to gain acceptance for its use. No-one will have ownership of it. On the other hand, if there is wide discussion with, and involvement of, staff in the process of choosing a VLE, they will have ownership of it, and be much more likely to use it.

It's important to make a few points first:

- § A VLE (and, in fact, online learning generally) is not a simple technical fix. It involves a big cultural shift in the way people

teach and learn. People have to learn new ways of doing things, and, within a big organisation, this takes time.

- § VLEs aren't really only about distance learning, so much as flexible and accessible learning; in most cases, the work done within a VLE by students will complement work they do in their face to face classes, not replace it. So VLEs need to be integrated into other teaching, and should not be seen as a separate entity.

Because of this, colleges will inevitably make mistakes when implementing a VLE for the first time. So rather than go for the big bang approach of implementing a VLE right across a college, it's almost certainly better to run a pilot project first. This will give you the time to sort out the technology, source the content, check out any problems, and, crucially, develop a core of staff with the skills and knowledge to effectively and appropriately use a VLE-staff who can then subsequently be used in staff development for the rest of the college.

Implementing a VLE

Moving from the pilot to a full scale implementation is the real challenge with VLEs. Running a pilot with one or two enthusiastic staff and a small group of students is relatively easy. Moving from that, into using it with many, or even most, staff, and all students, is much more of a challenge. Here are some suggestions on how to do this:

- § Use the VLE for general staff development. Put online content within it so staff use the VLE to access courses such as ECDL, or other training courses.
- § Ensure that there is content on the VLE which is relevant to a wide range of students and staff.
- § Make sure someone, or a small group of people, has responsibility for promoting and championing the VLE.
- § Make sure staff understand how the VLE can make their life easier, e.g. by providing them with relevant online assessments which can be marked automatically, or by showing them how the built-in communications can make it easier to work with students.
- § Make sure the VLE isn't a burden for staff, e.g. have admin staff to do the work of putting students into the VLE, giving them

passwords, etc. This should be done as a matter of course, for all the students (and staff).

This isn't a full list, but implementing these ideas will make it a lot easier to ensure that the VLE is used as widely as possible.

Resources

Book:

Centrum voor innovatie van opleidingen (CINOP). Het kiezen van een elektronische leeromgeving (Advies 2003).

Websites:

Whatis?com: The leading IT Encyclopedia and learning center.
<http://whatis.techtarget.com>

JISC: The Joint Information Systems Committee
<http://www.jisc.ac.uk>

Ferl First
<http://ferl.becta.org.uk>

EXCELO: Expertisecentrum elektronische leeromgevingen
<http://www.excelo.nl>

Solin
<http://www.onderwijs.solin.nl>

SURF: e-learning Themasite
<http://elearning.surf.nl>

Suggestions for choosing a VLE

(Anton van den Brink – Paul Dirckx)

Structure of inventory of virtual learning environments

Introduction

In the framework of the Velvitt project, an inventory was carried out of the four VLEs (Virtual Learning Environments) used within the participating institutions. The background to this survey is the fact that more and more educational institutions wish to use e-learning, and are actually getting down to work with a distance learning platform.

The objective of this survey is to find an answer to the following questions:

- § What are the possibilities and limitations of the various virtual learning environments?
- § What virtual learning environments are suitable in given situations?

The results of this inventory can be used by educational institutions wishing to make a choice from the existing virtual learning environments.

The document consists of an introductory chapter in which the structure of the inventory is described, a chapter describing the results and a chapter in which a number of conclusions and recommendations are made.

Finally: **“The best VLE is the VLE that suits you best!”**

Question

In order to be able to compare different learning environments, a list was prepared of specific questions and statements relating to developers, managers, lecturers and students.

The evaluation aspects can be broken down into five broad categories. These relate to:

- § the educational vision;
 - s primary objective;
 - s target group.
- § the didactic functions;
 - s cooperation possibilities;
 - s communication forms;
 - s coaching and support possibilities;
 - s test and question systems;
 - s possibilities for managing competences and skills;
 - s possibilities for adding content.
- § the organisation of education;
 - s portfolio;
 - s student monitoring system.
- § the functional structure;
 - s interface;
 - s ease of use.
- § the technical infrastructure;
 - s data interchange;
 - s methods for adding content;
 - s standards;
 - s etc.

In this document, emphasis is placed on the first three of these categories. In selecting a virtual learning environment, the first aspects the institution looks into are the areas of application and functions. The functional structure and the technical infrastructure generally are only considered at a later stage by the institutions.

Selection of virtual learning environments

The virtual learning environments used at present by the participants were inventorised in the Velvitt project. The table below shows the institutions and the accompanying virtual learning environments.

Virtual learning environment	Educational institution
WebCT	Tampere Polytechnic – Finland
Blackboard v6	University of Huddersfield – United Kingdom Budapest Polytechnic – Hungary Dunaujvaros Polytechnic – Hungary
N@Tschool v8	Fontys PTH – The Netherlands
Moodle	Tampere Polytechnic – Finland

Selection of virtual learning environment

The table below is a summary of the most important results of the survey. The results are broken down according to categories. For a detailed overview of the results, you are referred to the document ‘Summary results matrices depth test.doc’.

	virtual learning environment			
	WebCT	Blackboard v6	N@Tschool v8	Moodle
Educational vision:				
Primary objective	Making and offering online courses	Establishing tailor-made education (VLE has course management facilities)	Self-study and cooperation in groups, accessible via Internet	Making Internet-based courses
Target group	Groups of students	Groups of students	Groups of students	Groups of students
Didactic functions:				
Cooperation possibilities:				
Working in subgroups	+	+	+	+
Communication forms:				
Whiteboard	Yes	Yes	Yes, in new version	Yes
Chat	Yes	Yes	Yes	Yes
Video communication	No	No	Yes, in new version	No
Discussion forum	Yes	Yes	Yes	Yes
E-mail between VLE users	Yes	Yes	Yes	No
E-mail between VLE users and external users	No	Yes	No	No
Coaching and support possibilities	No specific facilities for process supervision	No specific facilities for process supervision	Contains a separate supervision module	Contains a separate supervision module

Virtual learning environment				
	WebCT	Blackboard v6	N@Tschool v8	Moodle
Test and question systems	Yes, commonly-used question forms can be included	Yes, different question types can also be used	Yes, the VLE offers both open and closed test modules	Yes, different question types can also be used
Possibilities for managing competences and skills	No	No	Yes, there is an extensive competence instrument. The whole system is linked to the portfolio.	No
Possibilities for adding content	All types of content	Teaching material in all normal formats, but also the use of multimedia material (text, photographs, audio, video)	All types of content	All types of content
Organisation of education:				
Portfolio	No, no specific portfolio function. It is possible to make a presentation area, to be used as a portfolio	No, no portfolio facility present	Yes, there is a portfolio facility present	No, no portfolio facility present
Student monitoring system	Yes, there is a 'track students' function	Yes, there is an online grade list available	Yes, the study results available to the lecturer are registered	Yes, the lecturer can monitor all activities of the students on one page

Conclusions and recommendations

In this chapter, the criteria for selecting a VLE are described, followed by a summary of the inventorised virtual learning environments.

Considerations when selecting a VLE

First of all, the definition of a VLE. This can be described as: the technical facilities (hardware, software and telecommunication infrastructure) that facilitate interaction between:

- § the process of learning;
- § the communication necessary for learning and
- § the organisation of learning.

A VLE which supports a flexible learning environment must offer the three following main functions:

- § Teaching material / test section;
- § Communication / cooperation section;
- § Organisation / registration section.

Before a teaching institution selects a VLE, a number of considerations must be made, namely:

- § What types of VLE are available on the market?
- § What is the user situation?
- § What requirements are imposed on the VLE?

VLE types

VLEs can be broken down into integrated VLEs and non-integrated VLEs. A characteristic of the first group is that the interaction is facilitated between the three key functions, whilst a non-integrated VLE only supports a particular aspect of the process of e-learning.

In many cases, the VLEs combine the three main functions using fixed components. There are also VLEs in which users can connect together the required components. The VLEs with fixed components generally assume distance learning at study/course level. The platforms that assume separate components are generally based on institution level.

User situation

At organisational level, broadly speaking, there are three user situations, namely:

- § Distance learning as a supplement to existing possibilities.
- § Distance learning as a replacement for part of the curriculum.
- § Distance learning as the dominant teaching form.

VLE requirements

To test the usability of a VLE in all these components, it is valuable to take account of the wishes and requirements of various users.

Training institutions will also have to take account of following considerations when selecting a VLE:

- § The intention of use of a distance learning platform.
- § The readiness for the use of a distance learning platform?
- § The flexibility and openness of the platform.
- § The costs (consisting of fixed and variable costs).

Summary of the VLEs inventorised

WebCT

WebCT is a learning environment focused on making and distributing online courses, and as a result is extremely suitable for any form of support for contract education. Facilities such as a portfolio and possibilities for managing competences and skills are not available within this VLE.

Flexibility in determining the order of learning tasks (teaching material, assignments, forums, tests) is very successful within WebCT. Within this VLE, it is also possible at any point to make a forum for discussion and/or exchange.

Using a standard browser, this VLE can be used by any user. If an institution is looking for a VLE that can be deployed reasonably rapidly, WebCT is a very good option.

Blackboard v6

The Learning System in Blackboard is ideal for deployment for institution-wide implementation. In addition, it is also possible to opt

for the 'Learning Basic System', if broad implementation is not (yet) relevant. The latter system offers fewer functions, but in many cases is still perfectly usable.

It is therefore possible to switch from system to system. In addition, the system can be extended with additional functions, such as Building Blocks. These Building Blocks are software applications from other suppliers that can represent a welcome addition to the virtual learning environment.

One disadvantage is that Blackboard is relatively complex for inexperienced users, due to the multitude of improved possibilities. For people who are already conversant with the VLE, however, it is certainly an enriching experience.

Using a standard browser, this VLE can be used by all users. All standard formats of file (content) can be used in the VLE. Content management takes place within a course. There is also no content management system or a portfolio, in Blackboard.

N@Tschool v8

If use, management and exchangeability of content are extremely important, alongside the organisation of groups of students linked to study programmes, this virtual learning environment is eminently suitable.

This virtual learning environment offers extensive possibilities for its users. Within N@Tschool, students can work through digital material in the form of study routes (combining a number of study routes results in a study programme). They are also able to make tests and work (together) on projects.

One disadvantage of N@Tschool is that establishing and commissioning all possibilities and functions takes a long implementation period.

The operation of this VLE is very similar to Windows. To gain access to all possible functions, on one occasion only, software must be

installed on the user PC. If only a standard browser is used, it is possible to work with this system, but not all functions are available.

Moodle

Moodle is a Learning Management System that can be used for managing course subject matter. Users are registered, and course participants' details are registered, whilst the system carefully selects the courses from a catalogue. Using Moodle, assessments can also be carried out online.

The possibility of multiple suppliers adding course information to and removing it from the system is a very strong point of Moodle. Moodle offers no facilities for a portfolio system, for example.

Finally, Moodle can be easily accessed by all users, via a standard browser.

Resources

The information sources consulted are:

Internet pages

<http://www.excelo.nl/marktmonitor/start.htm>

http://www.onderwijs.solin.nl/index.php?id=149&no_cache=1

<http://moodle.org/doc/?lang=nl>

Other information sources

Completed lists of questions and statements by participants in Velvitt project (see document 'Summary results matrices depth test.doc').

Joke Drost

Reference work: 'Selecting a virtual learning environment',
recommendation
2003, CINOP

FOR TUTORS

“e-Tutors’ Training Profile”

(Teresa Oliveira - Alcino Pascoal - Lourenço Frazão)

There are a deep discussion about e-tutor and mentor, we agree with Hubal and Guinn (2001) when they said that mentoring perceived as the last stage of a progression that starts with tutoring and is followed by coaching. As well as we can found different understanding for the online education and e-learning. However, the e-learning concept was generalised and transferred for any process or teaching and learning based online information.

When we design or promote an e-learning course, we should pay attention on: students, the e-learning course it selves and the technology.

§ Concerning the students, we take notice that nowadays who are involved in the teaching-learning process through have differentiated educational experiences and good technical skills, such as using computers and gathering info from the Web.

Another important point for the e-learning its to understand that the students have economical, cultural and ethnical backgrounds more diversified then before, but , at the same time they need to learn permanently, in order to pursue their success in a global society driven by high-tech competition.

§ When we plane an e-learning course it must be the result of extensive knowledge and experience about fundamental issues such as role of tutoring/mentoring, training, and learning. Another important point is that the course materials should be structured in a way that facilitates individual study and provides clear information about the development of specific competencies relevant for learner’s professional and personal growth.

The evaluation and assessment should be on mind when the e-learning course is planned. Therefore, the procedures should be adjusted to the nature and scope of the e-course.

It is necessary to recognize that the involvement of all community is crucial in e-learning because, without the active support and participation of a “learning community”, there is no online course.

§ Nowadays, the information communication technology it’s a challenge to the educational system, to training and students themselves. It affects the way we deliver instruction, how we interact with the orders, specially our colleagues, how we teach

and how we manage and change our pedagogical and didactic attitude and provide curricular innovations.

e-Tutors' Roles

For the e-tutors training, it is necessary to know their roles and competencies. The e-tutors are not only an expert, but also a mentor, facilitator, motivator, counsellor, coach, administrator and assessor. He (she) could even be the person responsible for the technical support.

Probably, one of the e-tutor main roles is to set-up the “learning community”, in order to facilitate discussion, to intervene at key moments and to be a co-learner. Additional role is to implement pedagogical and communicational processes, in accordance with the specific situation and maturity of each group of learners.

The e-tutor should have competencies of different nature, such as pedagogical; technical; managerial; scientific; communicational and social. However, the tutor can perform distinct competencies in accordance to the timeline: “prior to the course”, “during the course” and “after the course”.

“Prior to the Course” the e-tutor must have clear knowledge about course requirements and goals; define participation and grading criteria; manage student expectations; allow flexibility and negotiation; communicate in clear language; use whatever technology; develop exercises that take advantage of the web and manage various evaluation tools.

“During the course” the e-tutors should act as a “facilitator”: on course content and the development of the “learning community”; promote “collaborative learning” and cooperation among students; help students being integrated within the institution and its culture; to be acquainted with the specific needs of new students, who might be unfamiliar with the adopted VLE (prevent them of fear and anxiety); promote active learning techniques; use the best practices for enhancing the participation of peers; motivate students complying with deadlines and agreed-upon working times: emphasis on time for task; evaluate students and to give prompt feedback; foster learner centeredness; promote reflection; help students identifying their strengths and weaknesses; assist students developing critical thinking skills; encourage students bringing up real-life examples to the online classroom; contact students (typically by phone) who are not

participating or are disruptive; respect privacy and to bear in mind that there are real people attached to the words on screen etc. etc.

“After the Course” the e-tutor have to reflect on the course as a whole, that is: the exercises, outcomes, roles, and student comments; use those for students’ evaluation process; provide prompt feedback to students on final assignments and tests and continue respecting individual privacy issues after the course has come to an end.

e-Tutors Training

The e-tutors training are an excellence way for assisting individuals in the acquisition of new skills.

Tutors’ training for online teaching requires the one to move beyond traditional pedagogy and to adopt new and easy-to-use practices. Therefore, tutors need specific training and institutional support in order to be willing to adopt new teaching paradigms. At the same time, tutors require specific training programs addressing core technical issues and selected written materials. However, it is difficult to predict who will perform well in online tutoring, even for teachers who have good records in conventional learning environments.

It is unreasonable to expect from well-experienced teachers in face-to-face teaching to suddenly begin doing well by using a VLE, but there are exceptions.

A small number of tutors have themselves been instructed via online education, and those tutors need specific training in order to understand how their courses shall be implemented in the new learning environment.

In order to implement e-tutors, training we argue that it should be based on communities of practice, based on multidisciplinary teams, formed by individuals who have different life experiences and are strongly committed to the success of learning. Tutors have to put aside isolation, and respect the individualism and their privacy. Besides this the e-tutors have to encourage interaction among students and to move well beyond simple collaboration activities onto real and authentic “learning communities”, centred on practice.

We suggest a training forum for developing e-tutors’ competencies in synchronic and asynchronous communication. Therefore, training forum enables its participants to be engaged in collaborative learning through online discussions. To develop those competencies the institutions should set-up the training forum mentored by an

experienced e-tutor. To do that we can proceed in two steps starting by providing a mutual support learning community, but further proceeding into strategic development of enlarged existing trainers' learning communities in order to facilitates communication among all.

Conclusions

Tutors need specific training and institutional support to adopt new teaching paradigms;

Specific training programs addressing management, technical support, communication tools and competencies synthesis in written language and selected materials is required;

It is important developing e-tutors' competencies in synchronic and asynchronous communication in order to enable the participants to be engaged in collaborative learning through online discussions;

Training based on multidisciplinary teams within a communities of practice, help tutors to play new roles;

The "learning communities of practice" (inside and outside educational institutions) is crucial for decreasing the constraints of e-tutors' training.

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e-Tutors' Competencies

(Teresa Oliveira - Alcino Pascoal - Lourenço Frazão)

„There are good and objectives reasons for thinking that we live in a crucial historic transitional phase. The exchanges that affect us are not limited to a concrete earth zone but they are expanded to every parts of the Earth” (Giddens, 2000).

This paper is based on our previous work done in VELVITT project. Our work intent to be a contribution for the e-tutors training necessary change in order to achieve a conscious intervention in educational activities.

Concepts

There is an apparent arbitrary use of the terms “e-Learning” and “education Online“ as well as “tutor” and “mentor”.

Are “e-Learning” and “education Online” equivalent or have different meanings? Both are educational models based on Information and Communication Technologies (ICT) however the term “e-learning” is not a very accurate one (Paulsen, 2002) and it means a set of applications and learning process which contend is available online. The “Online education” has a broader definition and integrates several educational services but the term “e-learning” seems generalized as translating the concept of any process or teaching and learning model based on available online information.

Concerning the concepts of “tutor” and “mentor”, Hubal and Guinn (2001) describe mentoring as the last stage of a progression that starts with tutoring followed by coaching. According to this framework, at the end of practice the tutor becomes a mentor, prepared to provide guidance or feedback if the student requests.

The Change of Goals

Throughout recent years there has been a growing consensus that the aim of education is no longer to prepare young people for safe and lasting jobs. Huge technological changes and a global market require individuals with a wide range of education competences able to solve problematic situations across diverse areas, have flexibility,

communicative capabilities, and the ability to undertake lifelong learning.

The development of competences, (knowledge in action) which go beyond a list of contents, is a training fundamental aim. Students must be involved in the teaching-learning process through differentiated educational experiences. This wide definition of competence is based on Perrenoud's concept (1998), which is the process of activating resources (knowledge, skills, strategies) in a variety of contexts, namely online.

Nowadays to develop competences is necessary to work as part of interdisciplinary team and to interact with others. Attention needs to be paid to the developing sense of community in order the learning process to be successful. In online context the learning community is the vehicle through which learning occurs. Members depend on each other to achieve the learning outcomes for the course. "Without the support and participation of a learning community, there is no online course" (Palloff and Pratt, 2001: 29).

Our current students have been prepared differently from those who attended school 20 years ago. They have high levels of skills in some areas such as using computers and gathering information from the Web and they frequently have backgrounds more economically, culturally and ethnically diverse than they were before. This diversity of backgrounds is a challenge for tutors.

Hardly deniable is the fact that new technologies are definitely entering in all dimensions of human life, changing it and demanding new skills.

In Education, changes in information technology are affecting how we interact with colleagues, how we teach and how we face pedagogical and curricular innovations. Those same changes offer the prospect of affecting the way we deliver information and how we interact with our students. However, besides the technological skills required, current trends about the development of the individuals do recognise also the importance of the so-called soft skills (Nyhan, 2001; Casanova, 1991; Aubrun, Orofiamma, 1990). These are in fact crucial for the adaptation of each individual to a social reality in constant change. Thus, students should be ready to perform differently in terms of professional and social behaviour, ethical attitudes and creativity.

e-Learning Courses

The e-learning courses, in spite of its novelty, has been the stage for the generation of an extensive knowledge and experience about not only the innovations brought by Information and Communication Technologies to distance learning but also about general and fundamental issues such as tutoring/mentoring, training, and learning.

The central question about e-learning course is building up and sustaining a learning community what is a difficult endeavour. There are many possible paths that a course can follow, which imply that the design of a new course requires the clarification of different issues. According to Chagas (2004) some main lines are presented as crucial for the success of the e-learning courses:

Explanation should be given to students about the place that the e-learning course will take among all the other courses that are offered in the present as well as the pedagogical and didactical principles that guided the organization of the materials and the design of the course's activities. A clear statement of the objectives and outcomes of the course is one of the essential steps in order to clarify the prospective learner as well as to build a coherent curriculum. The lack of a clear statement of the course's aims and principles may reflect the need for a more coherent theoretical foundation for the course design and development leading to a clarification of the concepts to approach and the skills and competences to develop.

In e-learning courses it is necessary a clear information given about the development of specific skills and vocational or professional competencies relevant for the learner's both professional and personal growth as well as the description of the assessment procedures hindering the analysis of their adequateness to the learner's ability and achievements. If his point is absence learners are not aware of evaluation procedures and how assessments can be challenged. This situation can affect learners' participation because they are discouraged to take responsibility for their own learning.

Tutorial courses, based on learning communities, calls attention to the communication tools that will enable learners to interact with tutors and colleagues: email, forum, and chat. The reading units, activities and resources available in the course suggest an image, obviously subjective, of the prospective learner. The materials available have to contain references to the course's target group of learners.

Consequently, it is possible an accurate appreciation of the adequateness of the content and materials to the participants' needs.

The course's activities and materials should be structured in a way that facilitates individual study conditions for the learner to develop study skills. They must encourage the learner's personal engagement through discussion with peers, searching within recommended websites and achieving tasks that demand previous experience (e.g. e-activity planning). This activities claim for the learner's participation contributing for promote their citizenship. He/she has to do several readings and search for information using the resources available in order to accomplish the required tasks. If the materials tend to present factual knowledge about the study topics inviting to memorization it is expected a trivial participation of the learner in online discussions that are part of most traditional activities. Instead, the development of higher order thinking skills is recommended. The resources consisting of several reading materials, which provide good quality, updated and accurate perspectives enhance learning. Different kinds of activities and different kinds of resources presented to the learner keeping his/her motivated and engaged. However, the appropriateness of the course materials to different learning styles is a concerning question. A sequence in the general organization of the course is perceived through the activities that should be progressively more demanding as the course progresses.

The graphical display should be particularly appealing but close to neutral. Navigation should not offer particular difficulties as well as the size of the display should not offer difficulties to the user.

e-Tutors' Competencies

Learner-centre programs and competent tutors are two oft-cited keys to success in e-learning courses. Teaching online requires specific skill sets (competencies). For online programs with their absence of face-to-face interaction the virtual classroom interaction becomes vital. Palloff and Pratt (2003) believe that e-tutor "need to be much more deliberate [than in face-to-face classrooms] in paying attention to who the students are and what they need because he/she is not physically seeing or interacting with them on a daily basis" (pp. 124-125).

The e-tutor encompass a far wider range of roles and functions than was ever performed by a traditional, physical-world tutor. The e-tutor

is not only subject matter expert, but also mentor, facilitator, motivator, counsellor, coach, administrator, assessor, and even a technical support person. According Banks et al. (2004) the role of the e-tutor is to create the learning community, facilitate discussion, intervene at key points, and be a co-learner. As White (2000) notes, e-learning is structured around the dynamics of human communication, thus the tutor's roles are focused on pedagogical, social and communicational processes and depend on the specific situation and evolution of each group.

For all the above mentioned the e- tutors face several challenges: a. how to present course content and promote learning and citizenship in the virtual environment; b. how to foster the development of a learning community; c. how to be trained and develop competencies as tutor.

Smith (2005) identifies and describes the competencies needed by e-tutors in different phases of the e-courses:

Competencies Needed Prior to Start of a Course

The e-tutor should be clear about course requirements, communication, participation and grading criteria. e-Tutors also need to consider factors related to manage student expectations, because the syllabus should include information designed to dispel expectations of immediate responses to questions posed by students. The e-tutors should not be regarded the syllabus as inflexible, but is intended to provide structure for the course while allowing for flexibility and negotiation. All of this (and other) information should be communicated in clear language at a pace that avoids overwhelming new students.

e-Tutors should be able to effectively use whatever technology has been selected for course delivery. This competency will be needed as the course is set up prior to start the first session and will continue to play an important role throughout the course.

In addition to technological issues, tutors need to be able to set up a well-organized course site and translate content for online delivery. The latter requires information about online instruction trends and issues and a willingness to continually improve related skills and knowledge. Web-based resources often provide a valuable resource for involving students in the search for and discovery of pertinent content, thus e-tutors need to be able to develop exercises that take

advantage of the web. e-Tutors will benefit from an ability to network with others involved in online education continually evaluating themselves and their skills and, in effect, becoming a lifelong learner. Additionally, competencies are needed to make the transition to the online learning environment and getting ready to prepare students for offline learning.

Competencies Needed During the Course

As the course begins, e-tutors need to act as facilitator, focusing not only on course content but also on the development of a learning community. Student-student (peer interaction) and student-tutor interaction is essential. Some key aspects in learning community development are to promote collaborative learning and develop reciprocity and cooperation among students. Ideally, the tutor should also begin to develop relationships with students, encourage contacts between students and training institution, and help integrate students into the institution and its culture.

Especially in courses that have many new online students, e-tutors need to teach students about e-learning, promote active learning techniques, and help them link this delivery mode with their own personal learning styles. e-Tutors need to accomplish all of this without overwhelming new students who may be unfamiliar with the online learning platform, software needed to support learning, policies and procedures of the institution, basic study methods, and uncertainties inherent in electronic communication that may generate fear and anxiety.

With respect to effective and efficient course management, tutors should use best practices to promote participation, getting students to respect due-dates and agreed-upon working times, emphasizing time on task, evaluating student, giving prompt feedback, modelling good participation and, when appropriate, using humour. Tutors should foster learner centeredness, promote reflection, helping students to identify strengths and areas of needed improvement and develop critical thinking skills; and encouraging them to bring real-life examples to the online classroom. This learner-centred approach helps students become aware that they are valued and have information and perspectives that may aid others in their learning quests.

e-Tutors must maintain the momentum of the course. This may require taking some actions that might not normally be needed in a

face-to-face setting, such as mandating participation and directing the discussion if headed in the wrong direction. e-Tutors should also be willing to contact students (typically by phone) who are not participating or are disruptive. The e-tutor should remember that there are real people attached to the words on the screen and respect privacy issues.

All of the above must be accomplished within the institutional performance guidelines that, for example, may mandate or constrain times and frequency of interaction. Finally, as the course progresses note: “Most of all, have fun and open yourself to learning as much from your students as they will learn from one another and from you!” (Smith, 2005).

Competencies Needed After the Course

Grading naturally requires evaluating students but tutors should also reflect on the course as a whole. In particular, the e-tutors for evaluating themselves should use exercises, outcomes, roles, and student comments. e-Tutors should give prompt feedback to students on final papers and tests and continue to respect individual privacy issues long after the course has ended.

Training for e-Tutors

Initial and ongoing e-tutors training, and assessment of effectiveness are keys to the success of any new online learning program. Training is crucial, but what is training? Training is the excellence mean assisting individuals in the acquisition of new competences, whatever their nature is. This is a complex process. Indeed, is a lifelong process, based upon the examples of present life and also taking in account the past and future expectations into that same present (Salmon, 2004).

Pedagogy of online learning and the online environment must be part of training. The success of the e-tutor cannot be achieved by doing what teachers always did in the classroom. It is not reasonable to expect experienced face-to-face teachers to magically begin to function well in the online environment. Few teachers have themselves learnt online. Salmon (2004) argue that even the teachers have an excellent record in conventional settings it is difficult to predict who will do well in online teaching. Paloff and Pratt (2001) assert that “online tutoring necessitates moving beyond traditional pedagogy to adopt new, more-facilitative practices” (p. 20). The

authors also opine “not all faculty are suited for the online environment” (p. 21). Furthermore, they believe that “faculty cannot be expected to know intuitively how to design and deliver an effective online course” (p. 23) because, even though courses in technology are becoming more available to students, “seasoned faculty have not been exposed to techniques and methods needed to make online work successful” (p. 23). Levy (2003) concurs, asserting that although the principles of designing online and traditional classroom courses are similar, “tutors need training and support to be willing to adopt this new teaching paradigm [and] need to be cognizant of how the details of their course will be implemented in the new environment” (p. 12). According Salmon (2004) for staff development to be successful, training needs to be rooted in the peculiarities on the online itself. It needs to engage staff in the experience of working with others online and to be focused on the usefulness and relevance of online learning. Oliveira and Frazão (2004) suggest a new form of training organisation, based on learning communities of practice, with institutional support and resources that allow tutors and trainers of tutors to develop adequate training curricula. The participation of tutors and trainers organised in Learning Communities of Practice (LCP), reinforces the need for training based on multidisciplinary and inter professional teams with different life experiences and strongly commitment to learning success. To respond to these challenges tutors and trainers have to give up isolation, individualism and privacy and even move beyond simple collaboration activities into creating real and authentic learning communities centred on practice. The interdependence between members of the learning community of practice is also creative. Interpersonal relationships are developed through the negotiation, the maintenance and the sustenance of relationships. They are also shaped by the nature of the dialogue and communication among the members of the community. The e-tutors who deal with the unbelievable complexity of learning and the challenges of e-learning can themselves be motivated to learn in practice in settings where they can have space and support to develop specific competencies.

Any initial e-tutors training program needs to cover technological aspects of the institution’s learning management system (LMS) and a selected written materials. The training may be facilitated by online delivery using the selected LMS, with the possible inclusion of one or more hands-on face-to-face lab sessions to assist e-tutors in the initial

exploration of LMS capabilities. Online training also provides opportunities for prospective e-tutors to gain insights regarding the anxiety, uncertainty, and other challenges that new online students frequently experience. Training facilitated by an experienced trainer in e-learning, enables the future e-tutor to engage in collaborative learning through online discussions, begins to form a mutual support community, furthers strategic development of existing trainers communities (Smith, 2003), and facilitates communication among all e-trainers, some of whom may not be located on the same campus. The forum may also be a vehicle for conveying and discussing suggestions for improving the LMS and for clarifying and modifying institutional policies, procedures, and curriculum. As sessions commence, e-tutors should shadow new e-tutors and be available for consultation as instructional management issues arise.

There are certain key stages in the progression of the e-tutor training. First, the crucial understanding that gradually increasing the comfort of online learners will increase participation and completion rates. Secondly, appreciation that the design of online activities and interaction is an important as sophisticated, but non-dynamic, design and delivery of content. Thirdly, that the role of the e-tutor, who is much more than just a facilitator or responder to questions, will make or brake the experience for the learners. Fourthly, recognition that there is considerable evidence that people became more independent and more responsible for his or her own development as they move through the stages, whether in structured or informal learning settings.

Conclusion

Present day society is characterised by deep social, cultural, technological and scientific challenges; accelerated scientific development; technological modernisation; facilities to access knowledge; long life learning; competitiveness; globalisation; mobility; multiculturalism and recognition of the value of each culture; social and personal diversity; the need of an inclusive society; increase of the social conflicts and the growth of unemployment. All the characteristics of present day society, with a dramatic range of contextual and sociocultural variability, imply challenges to organisations and to society, innovation, and research about training methods, teachers and trainers new roles (Oliveira and Frazão, 2004)

For the e-tutors and trainers as well as for the training institutions the e-learning is a new challenge and innovative situation. It is necessary to promote new approaches to learning and to training. That is to say e-tutors and trainers need to fulfil several roles such as, mentor, counsellor, mediator, facilitator, motivator, counsellor, coach, administrator, assessor, and even a technical support person. Thus, it is very important to create a suitable training conditions in order to these “actors” provide a new professional challenges.

For the success of the e-learning courses is necessary to clarify, make explicit, elaborate and consolidate the theoretical foundations of the course that will guide decisions about essential features related to the course design, structure, scope and delivery and about operational aspects involving; the statement of aims, objectives and outcomes; the content organization in relation with the aims and objectives; the definition of didactic approaches adequate to the course’s aims and content, and the definition of the kind of support and tutoring that will be adapted. It is also crucial to define the evaluation and assessment procedures adjusted to the nature and scope of the course and to provide clear and detailed information to the learner in the beginning of the course about all the operational aspects. Knowing about what the course offers and about what it is expected from them will have an impact on motivation, participation and responsibility. Revise all the materials and produce needed new ones based on the theoretical framework previously constructed in order to make them a coherent and meaningful assemble (Chagas, 2004).

In the world of training, diversity has come to be viewed as an important dimension to be addressed by all (institutions, trainers, and tutors). The question is of how to prepare e-tutors for a culturally rich and economically diverse learning environment. e- Tutors need specific training and institutional support to adopt new teaching paradigms as well as develop competencies adjusted to all the different phases of the e-learning courses; Specific training programs addressing management, technical support, communication tools and competencies synthesis in written language and selected materials is required; It is important developing e-tutors’ competencies in synchronic and asynchronous communication in order to enable the participants to be engaged in collaborative learning through online discussions

Multidisciplinary teams help e-tutors and their trainers to train for new professional roles and rotate their functions when necessary. The

creation of multidisciplinary teams through learning communities of practice is an important way of decreasing the constraints of the e-tutors training. In e-learning initiatives the concept of learning communities of practice is adapted to teaching, to training and to the learning process. Participation within learning communities of practice “is not itself an educational form, much less a pedagogical strategy or a teaching technique. It is an analytical viewpoint of learning, a way of understanding learning” (Lave and Wenger, 1991, p.40).

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FOR STUDENTS

Learning Strategies in a Virtual Learning Environment – Towards Meaningful Adult Online Education

(Hanna Torp)

Introduction

A lot of progress has taken place since the days of the early 1980s when computers' role in education was well in accordance with behavioristic views on teaching and learning. As cognitive psychology has gained popularity, the essence of computer mediated learning has gone through drastic changes. Now that the technological hype that accompanied electronic learning until recently has also started to diminish, more and more pedagogical thought is being put on the meaningfulness of electronic learning.

Having been actively involved in designing online education for university-level students for several years, I have a natural interest in the pedagogical quality of web-based courses and the practical ways of improving it in a virtual learning environment. I am interested in getting insight in the ways the learning strategies typically used by adult learners can be taken into consideration in designing web-based courses in order to facilitate learning. I will introduce a real-life student case to illustrate how the learning strategies work in practice. The interview with the student reminded me of Jonassen's eight criteria of meaningful learning which serve as a good basis for general guidelines for developing better quality online education. However, to be able to draw the guidelines, the concept of meaningful learning should be thought over.

Meaningful learning

There are many views, opinions and definitions on what brings meaningfulness to learning. The conversation that has been evolving around the topic for quite some time has started to spread from the classroom context to online learning. Whereas the earlier direction of dialogue was more from the technology towards pedagogy ("how could we utilize this technical invention in education?") it nowadays is increasingly directed the other way round ("these are our pedagogical

needs, which technology will meet them?”). Anne Nevgi and Kirsi Tirri (2003) cite David Jonassen (1995) and share his view on the role of technology in the learning process: technology is a tool that can enhance learning but it should remain in a supportive role and not become the target of learning and attention.

As Eija Mannisenmäki (2000) points out, fashionable terms like self-direction and collaborative and cooperative learning are often heard in online learning developers’ speech. The question is, however, what measures could be taken in order to better realize these ideas in new virtual learning environments.

Self-direction as a starting-point

According to Knowles (1975, 1980; in Mannisenmäki 2000) self-direction is a natural characteristic of adulthood and must thus be taken into consideration as a starting-point in educational planning. In self-directed studying individuals take initiative in defining their aims, applying learning strategies and evaluating their results. Knowles (1975, 1980; in Mannisenmäki 2000) points out that there is strong evidence indicating that students taking initiative and responsibility of their own learning will reach better learning results than students who fail to do this. The nature of this kind of studying with individual commitment leads to meaningful learning. A self-directed student is willing and motivated. She also evaluates and observes her own learning process and along with progress becomes increasingly aware and responsible for her work.

The importance of self-direction becomes especially emphasized in online learning. Compared with a traditional lecture, on a web course the student is forced to do things actively. Unless they do this, nothing happens. The student might be sitting in an auditorium where a lecture is taking place, but without paying attention. The lecturer is speaking and showing her visuals, regardless of the attention of the individual student. The student might even get a false feeling of self-satisfaction (“I participated, I did at least something”) for attending, even if no learning had actually taken place. Horton (2000) believes that a web-based course activates learners. He points out that the students “cannot just sit back and listen to a lecture or passively watch a video, they must think and respond” (Horton 2000:22). Horton reminds that

although it is possible to design a web course that allows passiveness, it is just as easy to include meaningful interaction and interactivity.

Cooperative and collaborative learning

Self-directed studying must not be mistaken with independent studying that the student does on her own without supervision or contact with fellow students. Moreover, a clear distinction needs to be made between using the Internet as a channel for distributing material and teaching an online course. One of the clear strengths of an online course is the opportunity for adding the element of social networking to distance learning. The teacher has got an essential role in this, but also ways of interacting with other learners should be provided. Gilly Salmon (2002) points out that groups of learners always tend to exchange views and ideas, and that people enjoy learning from the experience of others. She emphasizes that to offer these benefits to learners, a considerable amount of group work needs to be included within any learning programme.

Salmon makes a distinction between cooperative and collaborative learning – whereas cooperation involves a group helping each other towards individual goals, collaboration refers to a group working together towards a common goal. She strongly emphasizes the significance of this type of learning:

Collaboration requires an active sharing of information and intellectual resources amongst the participants. The best experience of collaboration by participants for learning purposes enables them to experience both personal, individualistic, useful learning whilst contributing to a community of learners and the support and development of others...participants can comprehend, evaluate, debate, question, integrate and synthesize information online, with suitable e-tivities and ongoing support.

Salmon 2002:144

It could thus be suggested that teaching online at its best can combine the finest features of both classroom teaching and independent

studying. It frees the student from the strict constraints of time and place and thus enables studying also for those who, for one reason or another, could not attend a schedule-tied course. However, the student is not left alone with the course book – the support and resources of the group are constantly present, and in addition to that, the teacher is there to answer questions and give advice.

Criteria of meaningfulness learning

Jonassen introduces a model with eight criteria of meaningful learning, based on constructivist approach (in <http://www.coe.missouri.edu/~jonassen/courses/CLE/>). According to Jonassen learning environments should keep students 1) active, 2) constructive, 3) intentional, 4) collaborative, 5) complex, 6) conversational, 7) contextualized and 8) reflective.

Activeness means that the student is in a key role in her own learning. She is actively engaged in the learning process, processing information. Activeness leads to students taking responsibility in their learning.

Constructiveness refers to the process in which the student integrates the new information with her prior knowledge in order to make sense of the content of .

Collaboration comes from the students' natural tendency to form communities in which the members can benefit from each others' skills and social support.

Intentionality refers to the learners' active attempts to achieve a cognitive goal. Striving to reach the goal makes the learner think – and thus also learn – more.

By **complexity** Jonassen means avoiding oversimplification of problems. He believes that the students need to be engaged in solving complex and ill-structured problems, otherwise their view of the world becomes oversimplified as well and they remain in a lower level of thinking.

Context refers to teaching knowledge and skills in real life instead of abstracting ideas in rules that need to be memorized. Jonassen points out that this method leads not only to better understanding, but also to more consistent transfer into real-life situations.

Conversation takes place when students become members of a knowledge-building community and seek for ideas and opinions from each other. As a result of this process the students learn multiple ways of viewing the world and solving problems.

In **reflection** the students articulate what they have learned and reflect on the processes. By doing this they will understand more and become more capable of using the knowledge that they have constructed in new situations.

Applying the aforementioned characteristics in the design of a virtual learning environment seems to provide tools for achieving the realization of self-direction together with collaborative and cooperative learning. They can be taken into consideration at all stages of designing a web-based course. E.g. the navigation of the course can be designed to promote activeness, the learning tasks can include many ways of collaboration and conversation, tools for reflection might be provided in the form of a learning diary or equivalent, the questions can be formed in such a way that there is a sufficient amount of complexity, simulations can add real-life context and learning environments can be designed to support learners in articulating what their goals are.

Learning strategies used by adult learners

Being aware of the learning strategies typically used by the target group and taking them into account in designing web-based studies give the designers tools for considerably improving the learning results. As Irene Kristiansen (1998) points out, better learning requires that the students are able to employ effective learning strategies and thus develop their metacognitive skills. Jackie Dobrovolny (2003) lists learning strategies used by adult learners and suggests how these can be taken into consideration in designing a web-based course. According to Dobrovolny, adult learners use metacognition – the

process of self-assessment and self-correction - to learn. Learners engaged in metacognition think about

- § implementing their preferred learning strategies
- § assessing their progress by answering self-assessment questions or practice questions, and determining the degree to which the instruction meets their needs or expectations
- § implementing remedial learning strategies such as re-reading instructional information.

(Dobrovolny 2003:

<http://www.learningcircuits.org/2003/oct2003/dobrovolny.htm>)

The design of the virtual learning environments affects the learners' ability to employ these strategies.

Self-assessment and self-correction assumes the ability to easily navigate a self-paced, technology-based course. If the navigation is difficult or confusing, a learner's self-assessment is "I'm lost!" Even when the content is interesting, accurate, and relevant to the learner, if the interface or navigation is confusing, the learner can't get to the content. It's like having a box lunch but the food is sealed inside a locked box and you don't have the key!

(Dobrovolny 2003:

<http://www.learningcircuits.org/2003/oct2003/dobrovolny.htm>)

The techniques Dobrovolny suggests for helping the students to effectively self-assess and self-correct include frequent embedded questions, self-checks, practice exercises and hands-on simulations. She also emphasizes the importance of providing feedback and correct answers to enable the students to correct their mistakes and learn from them. The usability of the virtual learning environment and the structuring of information should also be designed to facilitate re-reading the content. A table of contents, a searchable index, a site or content map and a user-friendly navigation system are crucial in this.

Dobrovolny mentions that in addition to metacognition, adult learners typically use strategies like reflection, prior experience, conversations

and authentic experiences to learn. Reflection includes techniques like visualizing the use of the new information to solve real-life problems, attempts to fit the instructional content into the big picture, comparing one's way of using the new skill with someone else's way of doing it and recalling sections of the course by frequently thinking about the practical applications of what has been learned. Designers can help the students use this strategy effectively by exemplifying how the learner might use the content, how the content fits into a larger framework, and alternative ways to apply the content. The examples should vary from simple to more complex, enabling the students to gradually improve their knowledge and skills. The students might be asked to create their own examples. Moreover, learning diaries, rhetorical questions, visualization of the relations between the pieces in the big picture and analogues are techniques that can promote reflection.

Building on prior experiences is the core idea of constructivism. Prior experiences might either cause confusion or validate the new information, depending on whether the new information seems to be in conflict or consistent with the learner's previous knowledge. According to Dobrovolny, the web-based course should be designed to help students create links between the course content and their prior experiences or it should provide solutions to problems they have faced in the past. Learner analysis is a useful tool – however, it is not always possible to arrange. In such cases the designers might e.g. create practice questions that are based on a common experience the students are likely to have had.

Conversations are an important learning strategy for adults, and as Dobrovolny points out, the critics of online training tend to blame this type of training for lack of face-to-face contact. However, as it has already been pointed out, there are effective ways of creating good opportunities for conversation on a web course. In addition to online discussion with fellow students and the teacher, adult learners also discuss their training with other people, like friends, colleagues and family members.

Learning with the help of authentic experiences involves attempts to integrate the new information into one's day-to-day responsibilities. Learners are disappointed if the contents of the course are not applicable in authentic situations. Once they finish the course they are

usually eager to use their new skills in real-life situations. This motivation can be enhanced by providing learners with a list of possible situations they might encounter in which they would need to apply what they have learned. Another alternative is, of course, to ask the students to create the list themselves.

Adult learners' metacognitive learning strategies in practice: Antti's case

The case introduced in this passage gives insight into the question on the metacognitive learning strategies used by adults in a virtual learning environment. Antti Laitinen is a 25-year-old car mechanic from Lahti, Finland. He has recently completed the basic studies (1,5 years) in social psychology at the Open University of Helsinki. The studies took place entirely online.

Antti's motivation for starting the studies derived from his dissatisfaction with his socioeconomic status. He had previously qualified from a vocational school as a car mechanic and worked currently at a car repair shop. Antti's social network consisted largely of people in a corresponding situation and thus he had very little knowledge about university studies. He had, however, a strong willingness to find out if academic studies would, after all, be possible for him. Doing shift work and having such little experience in studying he found this quite a challenge, but after finding out on the Internet about the possibility of taking the basic studies of social psychology online he decided to give it a try. Learning online seemed to him like an excellent option as it would have been impossible to attend in studies that require schedule-tied attendance because of the shift work. Moreover, he felt that the online environment saved him from the awkwardness of corridor conversations regarding previous studies and career.

The beginning was not easy. It was not only the virtual learning environment that was new, but the entire idea of academic studies was even more so. Antti describes it as follows (translations mine):

At the beginning of the studies a lot of energy and time went to getting used to academic language and learning

strategies. At first I didn't even know what I was supposed to learn.

In spite of having no previous academic learning experiences and no awareness of learning strategies that he could have consciously applied, Antti naturally utilized the strategies introduced by Dobrovolny. The following extract from his interview illustrates how he used metacognition, reflection and conversation to help him to learn.

Reading a lot, over and over again, helped me in getting used to academic writing and of course in learning about the content. The discussions were very useful, there could have been even more of those. The good thing about the discussions in the virtual learning environment is that the conversations are saved there. If you got a brilliant idea you could always return to that later. In face-to-face conversations things are often forgotten afterwards. The learning diary was maybe the best tool, it helped in summarizing things can staying on track with what you had learned.

The web course contained many collaborative activities that were conducted in the discussion area of the virtual learning environment. In some cases the teacher also participated by moderating the discussion in order to lead it towards the desired direction and to keep it on track. Antti felt that the discussions moderated by the teacher were more educational and beneficial than the free discussions with other students. In the beginning he found it quite difficult to express himself in the discussions - which he believed was partly because of his lack of previous experience on the field, partly because the participants were still unfamiliar to each other and no sense of community had developed yet. He found the situation quite similar to a classroom situation at the beginning of a course when socialization has not yet taken place. However, the participants' personal profiles in the learning environment enhanced the sense of belonging to a group, and as discussions continued, the learning community became stronger.

In addition to the online discussion with fellow students and the teacher Antti also frequently talked about his studies with friends, colleagues and family members and sought the company of other university students to discuss the content of the studies in order to fit the new things into a wider context and to broaden his perspective. He pointed out that explaining things to others made the picture clearer to himself.

Antti was able to complete the studies remarkably successfully despite of his unusual starting-point that caused him a lot of extra work. Moreover, he now has a strong urge to continue his academic studies and later on graduate with a university degree. This brings up another interesting aspect of online adult education. Students with less experience in academic studies and applying effective learning strategies might feel insecure about attending lectures at a university. Antti mentioned that the certain facelessness of the web environment facilitated his stepping into the academic world. In the virtual learning environment students do not have social roles and thus get stamped in the same way as in a classroom context. According to Antti's experience, personal characteristics and other students' expectations did not affect his learning results the way they had done in his previous studying situations.

In the personal profile everyone could determine themselves how much they wanted the others to know about them, or in what kind of light they wanted to be seen. It didn't matter if you were a single parent or a pensioner. Everybody was on the same line.

Participating in online education provides students with little or no prior experience in academic studies a chance of starting their studies in a familiar environment. Especially in a country like Finland where the use of the Internet is very widespread within all socioeconomic groups, the net is a familiar environment to almost all young adults. The university auditorium, on the other hand, is not. Web-based open university education has long been easily accessible to everyone, but virtual learning environments brings noteworthy additional value to it

by providing outstanding conditions for learning to learn and practice the use of effective learning strategies.

Conclusion

Although the term meaningful learning cannot be comprehensively defined, it could be suggested that in order to increase the meaningfulness of learning the learning environment should provide the students possibilities to utilize effective learning strategies in order to achieve better learning results. Neither is there one right answer for how this should or could be done, but having a clear picture of what meaningfulness in education consists of will help the developers of online education in the design work and give a good basis for the course. In a more practical level the learning strategies and supporting them in the virtual learning environment become a question to be thought over. There are many ways of taking this into consideration in the design of the web-based course and thus facilitating the learning process of the students.

The online environment can also function as an environment for learning and practicing more effective learning strategies. The web brings many new aspects and possibilities to education – the above discussed issue of equality being one of them – and investing time and thought in good design is certainly worth the effort.

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e-Learning Strategies

(Gyula Gubán – László Kadocsa - Péter Ludik)

Introduction

According to the recent survey of the European SchoolNet, the Virtual Learning Environments (VLEs) have increasingly been propagated in the education of Europe. It is interesting that two thirds of VLEs, used in the education of Europe at present, is of home-development or of open source, and altogether only one third of these products is commercial ones. „Of the 17 national institutions involved in the survey, in 10 cases the development and localization of VLEs are carried out at a national level. 60 percent of the institutes regarded the introduction of VLEs as of high importance” – says the expert’s report, which was prepared at the order of the Ministry of Youth, National Education and Research in France.

In the course of the survey, more than 500 European schools answered the questions of the European SchoolNet between September and December in 2002, and through these questions they wanted to know how Virtual Learning Environments are used in the education on the Continent. 17 national ministries and institutions were also questioned with a view to get to know what part they assigned to Virtual Learning Environments in the national education policy and plans, and what initiatives they have for training infocommunication and for other e-Learnings.

According to the survey, teachers use VLEs more than students themselves. It is not by chance, since teachers perform administrative tasks as well by such means, as well as they communicate with their colleagues working in the same school and in other ones through these means. In many cases, VLEs are used as a result of international cooperation in projects involving several European countries.

However, the survey shows that VLEs are not able to meet all the expectations yet.

Advantages of electronic learning

In the frame of the traditional classroom training, it is very difficult to update the existing learning materials at a proper speed, and the additional costs of education is also high: rent of classroom, instructors’ fee, travel, accommodations, and at last but not least the

drop-out of students' working time. The e-Learning (electronic distance learning), an up-to-date education form aided by means of information technology can provide a solution to these problems.

Of course, that is not the question that this new form of education will take the places of all methods used up to now and it will cover some demand on education at a low cost by no means. E-Learning can be effective means only if by mixing the existing traditional form of classroom training and the electronic distance learning form, we can successfully create an optimum harmony, where speed and cost saving do not reduce the quality of the training and the content of knowledge transferred. There are a lot of instructional areas where personal contacts between instructors and students are essential.

The distance learning itself as a method is not a new invention; universities and colleges have been applying it for very long time. The electronic distance learning is a novelty in the sense that students access learning materials through computers, local area networks or even through the Internet, and they learn with the aid of computers and they practice the acquired knowledge by means of computers. This technology allows students to time learning according to their possibilities and requirements and not to travel to the spot of the training and to go through lessons again at any time.

CD or Network

The solution forms of e-Learning can be grouped from a lot of points of view. One of this forms, for example, is based on CDs (students receive learning materials on CD, and they can start learning after installing them on the computers of their own) or another form when the e-Learning is based on a network (students access the learning materials on a central server through a network (intranet or Internet).

In both cases learning materials to be learnt are available in electronic form, and the main difference between them lies in the tracing of learning. While in the first case, it is hard for the person co-ordinating the learning to get up-to-date information about the progress of individual students and the results of examinations and what questions they have got etc, in the second case, these data can easily be retrieved from the server.

Essential Requirements of e-Learning Systems

On the basis of international and our own experience, we have got together the most important points of view, on the basis of which we evaluate these systems. Of course, this list is not complete.

- § Suitable for synchron and asynchron communication
- § Independent of systems – Web-based
- § Compatible with multimedia editors in general use – here I can utilize what I have learnt on developing learning programs of multimedia.
- § Its system of means is of modular design – modules can be used several times and they link to each other
- § Equally usable for communication with and without centre of teacher
- § It can easily be used by both instructors and students
- § There is a need for basic computer skills only
- § Easy maintenance, flexibility
- § Cost-effective
- § It includes a set of means for knowledge assessment

Higher education institutions have learning management systems that have the usual functions, e.g. independent registration, search in catalogues, approval dependent enrolling, individual timetables, collaboration opportunities, examinations, marking possibilities, registration book of student, instructors, accounts and notices based on working processes. Resource management functions can also be found here, e.g. allocation of classrooms and instructors, conflict management, timetable preparation, recording of enrolling and handling of waiting lists. VLE systems do not need to perform these functions but they have to be able to co-operate closely with these systems.

Study systems also develop continually. Several instructional aids have already been built into the latest versions. In the future, an integrated administrative and instructional framework can develop from these systems.

E-learning systems

The functional model of e-Learning systems consists of two main parts:

There is an e-Learning Management System (LMS), which ensures the administrative interface and rights. These are platform-independent, (solutions of Internet on HTML, XHTML, JAVA, PHP basis)

The other main component is the electronic learning material and object database, in which objects of text, multimedia and other learning materials can be found.

In general, a Learning Content Management System (LCMS) is also attached to the system (but it is not the part of the system). This makes the learning material developers' work easier, and in most cases, it works independently, in off-line mode of operation.

Those that are missing mostly or there are only partial solutions:

§ Evaluation and feedback systems.

In general, a MULTIPLE CHOICE question system is built in.

This can well be programmed and provide acceptable results when paper knowledge is examined.

§ Multifarious question systems are missing, the different practice-oriented exercises can be evaluated with the assistance of instructors only.

§ The lack of a simple development environment.

If the learning material development environment is simple, the system is able to do a little, for more complex solutions, it is the learning material developers who have to learn a lot.

§ The methodological elaboration of eLearning learning materials is overdue.

Only a few methodological auxiliary materials have been prepared for the application of the totality of the new system. In the lack of this, it is difficult to develop well functioning efficient learning materials.

The establishment of a system that is unified but still flexible seems to be almost unachievable. The development and implementation of a system answering every requirement are difficult, even at the level of College of Dunaújváros.

The integration of databases comes up against difficulties from important as well as legal points of view. Higher education institutions already use some system (e.g. NEPTIN or ETR), with which the administration system has to communicate. For this there are attempts and results as well. Recently an interface has been developed for the distance learning system of Coedu to link to the NEPTUN system.

Standardization

Standardization would increase the use of systems of many kinds, in consequence of which the individual systems would have gateways. Analysts expect that if the introduction of some uniform standards is successful, the Web-based area of education can go through an exponential evolution. The enterprises and institutions that introduce the standards can give a wider offer for users, with negligible additional costs and consequently their economic efficiency index can significantly improve.

In connection with the implementation of LMS, efforts to unification and standardization came up in a relative early stage. The first organizations of this kind, the AICC – Aviation Industry CBT Committee (<http://www.aicc.org/>)-, came into being in 1988, and it formulated directives in order to assist the compatibility of CBT (Computer-Based Training) and, later on, WBT (Web-Based Training) systems with CMI (Computer Managed Instruction). In connection with this, the AICC published standard proposals and recommendations, as well as it conducts authentication processes, involving independent test laboratories. In the second half of '90s, new force was given to the process, new organizations came into being with similar goals, including ADL (Advanced Distributed Learning – in 1997, <http://www.adlnet.org/>). In close co-operation with each other, these organisations (and more organisations and institutes of less significance) are working on the development of new standards of LMS systems, taking into consideration the challenges of our age.

The goal is to create a collection of standards that establishes the basis of the compatibility of learning materials, ensuring a unified interface for users, independently of where the given learning material can be found, and whose property it is, and what software was used for its development. The requirements of new systems are as follows: they have to use objects that can be reused;
have to be suitable for accommodating personalized learning materials
have to be interoperable, i.e. a given learning material should be suitable for the use in another learning environment as well with small modification.

SCORM

The SCORM stands for Sharable Content Object Reference Model, however this standard, recommend for everybody, means much more than simple modeling of sharable content objects. The SCORM is the reference model of web-based learning materials. This is a language that includes the structure inside learning materials, denominations, the place and names of pictures, animations and texts from headers to footers. This standard is the linking chain, or process sequences, if you like, between the technologies to be used and the complete implementations, which will finally be „commercialized”.

The SCORM standard is made up of three main parts:

- § XML specification, which shows the structure of learning materials, or it helps matching of matters server by server.
- § Run-time environmental specifications, the description of the realation from content to learning material, as well as tracing the evolution of the content.
- § Specifications of the creation of metadata on the basis of the IEEE standard.

The SCORM standard was developed by the organisation of the ADL Network, further details can be found on the official website of the organisation: www.adlnet.org

At present, this standard is the most popular and accepted by the professional. Almost every VLE system is able to receive matters of SCORM and to handle them as its own.

Comparison of VLE systems

The College of Debrecen, and first of all, its Teachers' Training Institution led in the elaboration and introduction of the credit system. At present, several researches are in progress for the development of a new versatile electronic learning system. There was an increasingly urgent need for the introduction of a unified system, which provides a satisfactory solution for the whole College. This was, and it is even now, among the priorities of the College. I would like to present our experience obtained in the course of searching for possible solutions. We studied four systems completely independent of each other.

Asymetrix Librarian, Macromedia Authorware and others

These are the expansions of a good, efficient and widespread Internet environment of multimedia development. They require programming, and in consequence, everything can be found in them, but each learning material has to be programmed separately. The most various, interactive learning materials and question sequences can be developed in this system, however there is a need for an expert and a programmer for the development.

Platform independence is ensured by building the complete program with the aid of XHTML, JAVA or plugins. The use of plugins provides the developer with the most possibilities, however it results in a slow program execution and it is to be installed.

Their disadvantages are that acquaintance with the system is required even for the learning material development, and learning material developers can develop new material with considerable programming work only.

The price of these systems strongly hinders their widespread general use mainly in the branch of instruction.

WebCT

This system is among the VLE systems developed first, which is continuously developed and has considerable developer and applicator background. There are regular conferences with its users. For the WebCT, several big companies of information technology and education (e.g. Macromedia) have developed interfaces and add-ons, so learning materials developed by means of this system can easily be built in the WebCT environment.

It consists of four modules:

- § learning material organizer and content provider;
- § administration tasks;
- § means assisting communication and learning;
- § appearance editor.

Its disadvantage is the lack of a separate learning material developer. It is the developer who has to prepare the complete material, and this system does not provide a unified interface for the development. It is only the particular developer who can develop any learning material that is developed in this way afterwards.

The basic evaluation system (we can make choice from question types of Multiple Question, and some other Fill-in The Gap and Crossword-making questions) is built in, however it accepts several other platforms, so there is a possibility for almost any kinds of solutions.

In short, it is a well operating system with continuous development and worldwide support. We cannot intervene in the system and adapt it to the requirements of our own. It has a lease fee, which is, unfortunately, rather high. Additionally, it requires a learning material developing system and, for the utilization of its multifarious nature, several utility programs. In Hungary, this system is used by several big companies and by the Centre of Distance Learning of the Eszterházy Károly College, in Eger,

SchoolNet Digital Knowledge Base (SDKB)

In the framework of SchoolNet Program, several competitions were launched in Hungary, first of all, for the development of learning materials of secondary schools with the support of the top management. Its essential components are learning objects, and modules can be organized from these objects. Its main goal is to establish a considerable database, which consists of the objects of the learning material of secondary school. Teachers can use these components to plan individual lessons, and complete learning material can be made up from these morsels. Its environment of learning material development is very irksome in its present state. Almost a dozen of programs have to be installed if we would like to run the environment of learning material development consisting of templates. These templates have to be filled in, and all the links have to be given. This environment looks like an object-oriented developer system (Visual languages). For the development of individual learning materials, proposals of learning material development are invited for teacher, and these components of learning materials are turned into an adequate format by a team of programmers.

Creation of question sequences is not possible yet; their development is in progress. For the questions completed, there is no feedback towards teachers and learning materials.

I have not found any operating and completed learning material in this system, the start of the complete system is expected by September.

In short: The essential components of the system are the learning objects filled up with XML-based metadata. The principle is the

same as that of the SCORM standard, but compatibility is not marked anywhere. Because of its irksome system of learning material development, there will be a few developers only, however it is hoped that there will be numerous users.

As this system is suitable only for education in secondary schools, the development of a system suitable for higher education has been promised.

Coedu Knowledge Net

The Coedu Knowledge Net is an application developed in Hungary for the transfer and storage of learning materials and expertise. Its use in the framework of educational programs of higher education institutions is of strategic significance, and it can be an important factor in getting advantages on the market of education and training.

For e-Learning courses, on-line and off-line (CD-based) learning materials can be produced, which are made up by designated learning material designers in computer based authoring system integrating Internet-based multimedia means as well, named as “Coeditor” in the Coedu system.

The course editor application is, in fact, an XML editor program. With its use, we can build up a tree-structure, in the „branches” of which we store the appearing data. We can fill up learning material in a defined structure by means of the course editor. We can make up our electronic courses by using the given objects. Authors or operators have nothing to do but put the proper object of learning material in the editor tree and to fill it up with the proper content.

Courses can also be downloaded from servers, so courses can be run on home computers, and there will be no need for downloading in the future.

Lessons are interactive, as soon as questions have been answered, correct answers can immediately be seen, and the system stores the users’ results. These results can be reviewed during listening the course.

In short: This is a Hungarian developed system, the greatest asset of which is that the team of developers is available, and the program can be shaped and upgraded at any time. The upload of users (strong in numbers at the same time) and examination have not been solved yet.

Moodle

The Moodle (Modular Object-Oriented Dynamic Learning Environment) is an LMS system of open source code, which realizes the learning environment and allows users to be identified, and it is responsible for the control of the access to learning materials.

The official website of the program is <http://www.moodle.org>, from where we can download the latest version, language components and we can become acquainted with the wide family of Moodle users.

Its technical features are as follows:

- § low resource requirements;
- § only a browser program is required on the client side;
- § it supports international standards (SCORM, IMS etc.);
- § there is a considerable team of developers in the background – a new module or correction of new versions comes out almost from week to week;
- § at present this program runs in 3048 registered copies in 114 countries and it is available in 50 languages.

The greatest advantage of this program over other systems having the same capabilities is that it can easily be adapted to the Hungarian language environment, and this adaptation is already in a very advanced phase, and it is carried out in a rapid pace even today.

The installation of Moodle is very simple and takes place by means of a browser with continuous communication with the installer.

In the system, there are five kinds of users having different rights:

- § Students – Users the strongest in number, each with an individual profile, which can be managed by both the particular student and the administrator.
- § Teachers – Teachers can be assigned to courses, who control the process of learning, evaluate the exercises submitted etc.
- § Authors – Authors of courses can make up new courses, and they can take part in them as teachers.
- § Administrators – Administrators can do anything and go anywhere on the portal. They can „step into any user’s shoe’, so this right has to be managed carefully.
- § Guests – They have very limited rights (they might as well be disabled) and they are users without identification.

The authentication of users raises several problems, such as the great number of users, continuous exchange of students, problem of

adaptability to the existing 2 to 3 record systems (electronic study system, library database, mailing system). To solve this problem, we have several possibilities in the system, which make the use very easy.

- § There is no authentication: In case of this solution, anybody can freely access to the contents in the system.
- § There is only manual account handling. All the details of each user have to be enter manually into the system.
- § Authentication on the basis of of e-mail: Students give all the personal data of their own and the system „activates” a new user if she/he visits the URL indicated in the mail sent to the given e-mail address by the system.
- § On the basis of external database: The Moodle is able to take over the users’ details from an external database. The advantage of the method is that if we have got already a user’s datbase properly filled up and well serviced (e.g.: Neptun), we can get users to enter into our framework of e-Learning automatically and in a controlled way.
- § Identification on the basis of other network services: It is able to take over data from either a Novel network or servers of Windows or Linux, or mail servers.

The structure of learning materials

In the Moodle system the placement of learning materials begins with the definition of training structure.

The Moodle system makes three categories for the implementation of courses.

- § In the forum format, the role of the Moodle is to keep a „loose” contact with the participants in the training, but the whole content palette can be used.
- § In the thematic format, we can assign independent content modules to the range of subjects existing in the given subject.
- § In the weekly format, we can define content modules broken down to weeks.

During the filling up of learning materials, teachers have the opportunity to prepare learning objects belonging to the given learning material. They can prepare extenal HTML links (to the existing learning materials), or they can upload files or exeternal document links (.pdf, .doc, lxls, .ppt , .pps).

In addition to the learning objects, teachers have several other opportunities:

- § Chat: In addition to the opportunities of collaborative exercise solving/discussing, chat can also be used for consultation between teachers and students in a real environment of distance learning.
- § Assignment: The assignment creates an interface for the evaluation of one activity. This activity can be an off-line (carried out outside the framework) or an uploadable file (homework, paper etc.). It provides an interface for uploading by students or for marking or textual evaluation by teachers.
- § Glossary: It allows glossaries, indexes, vocabularies and FAQs to be created.
- § Forum: Joint projects can be defined by assigning it to its solution, and evaluation can also be assigned thereto.
- § Survey: Surveys are a good feedback opportunity for us in the evaluation of students' performance.
- § Lesson: It creates one kind of raising or explication of problems and a form of prove.
- § Workshop: It creates one kind of evaluation activity by teammates, to which an extremely large number of options belong. It allows participants to evaluate projects and model projects of each other in a lot of different ways. Additionally, it co-ordinates the collection and distribution of these evaluations in several ways.
- § Quiz: Teachers have the opportunity to define a question database in the Moodle. One of its main characteristics is that test questions can be assigned to several tests, i.e. the defined questions can be reused. The evaluation of the sequences of questions takes place automatically.
- § SCORM module: We can easily fill up any standard SCORM package with the SCORM module and integrate them into a course.
- § Wiki: It allows us to jointly create documents with the aid of a simple marking language by using a browser. The term „wiki wiki” means „quick as lightning” in Hawaiian, so referring to the speed of the development of editable and upgradeable sites. In general, prior to the approval of modifications, their revision is not carried out, and most wikis are available by anybody or at least by persons having access to wiki servers.

In short:

Instead of investing several millions of HUF, institutions currently getting acquainted with e-Learning can test a framework of open source code free of charge, which can provide the majority of services they need. The website <http://www.opensourcecms.com> can be helpful in finding such content management systems, which can help us in choice with its link collection relating to the subject and with its concise evaluation of the individual systems.

We have picked up Moodle system from this site, which is usable and which can be upgraded and meets the essential requirements of an LMS system. Its developers took the WEBCT system as a basis, and they upgraded it and made it simpler. Its main strengths are its simplicity and easy handling. The tasks of administrator does not require knowledge of information technology better than average either, and for the sides of teachers and students, the use of Internet has to be familiar with.

Logging covering everything can be mentioned as another advantage. During courses, it stores all the activities of users in details, which can be retrieved through different filters, even in a graphic form.

To overcome language difficulties, the Hungarian localization is continually upgraded, however we can overwrite the vocabulary of the system of our own with the aid of a simple website.

We can also access to the complete documentation (unfortunately in English) from the administration side.

The Moodle is an easily installable and operable learning framework that we can recommend to everybody, who makes her/his first move on the development of an e-Learning system.

Evolution of Electronic Learning Materials

In addition to frameworks, the other significant element of e-Learning solutions is the electronic learning material itself. In many cases, people think that if a learning material or textbook belonging to an existing classroom learning is integrated into a framework, the electronic learning material is already completed. Electronic learning materials have, however, a feature, by which they are more and other than a digitized textbook. This is that no teacher is present on learning, so it is the learning material that, in fact, fulfils the teacher's function. The function of a real teacher is of supporting nature only. Students get learning materials via e-mail, and they can consult with teachers

via forums. In the course of development, several important points of view have to be kept in mind in order that a traditional learning material should be an electronic one that can be well learnt.

- § Well-constructed training phases. Learning materials present essential information to students and lead them along model exercises, make students solve exercise and examine them.
- § Problem-oriented training. In the course of solving exercises and practices, students meet problems that frequently occur during their everyday work as well.
- § Properly elaborated structure. Students clearly comprehend through what steps they obtain the learning material to be learnt.
- § Modular design. Due to being divided into several modules, learning materials concerning training allow every student to go through modules that are necessary for her/him, and on the basis of which she/he can solve problems arising during her/him everyday work.
- § Theoretical explications. Unambiguous and concise wording of notions by textual descriptions, and, if possible, completed with figures on the screen.
- § Presentation of processes. Presentation of notion-based operations in details. Exact description and demonstration of steps necessary for the execution of operations by means of animations and simulations.
- § Exercises. They have general operation executions practised by making students do exercises. By solving exercises step by step, students learn how they can use the knowledge attained earlier to learn new conceptions. Practical exercises help the participants of e-Learning recognise correlations and draw conclusions by comparing exercises with their everyday experience. Knowledge acquired in the course of a learning process enable students to confidently and independently use the means learnt in the course of their everyday work.
- § Preliminary assessment. The level of students' knowledge relating to the given subject can be assessed at the beginning of each module. On the basis of answers to questions put up during the preliminary assessment, this assessment can decide whether a student has to go through the given module.
- § Examinations. With the aid of examinations, the level of acquirement of learning materials can be measured.

- § Use of multimedia means at an adequate level and in proper quantity. Students's attention can be kept at the desired level, and students of different types (visual and verbal types) can be served.

Aspects of Learning Material Development of eLearning

Pedagogical Aspects:

- § Learning materials have to include precise requirements formulated in an adequate and measurable form. These have to be given as lessons.
- § Learning materials assigned to the precise requirements and the recommended learning works have to ensure the acquisition of experience, skills and competence.
- § Learning materials have to allow students to learn according to their individual timetable and timing.
- § Users have to be able to independently work on learning materials with the aid of the learning guidance.
- § A user-centric design provides proper navigation within learning materials: it chunks learning materials into modules and modules into lessons.
- § The possibility of feedback has to be ensured by self-check questions at the end of lessons and by module closing questions at the end of modules.
- § Instructors can analyse and evaluate students' performances. by the services of the framework (LMS).

Psychological Aspects:

- § If we prepare a programmed learning material, it has to be of branching type, if possible, as the small extent of steps of linear programs makes adult users nervous.
- § It has to have a motivation effect: it has to arouse and maintain interests.
- § Integrated navigational possibilities and exercises to be solved have to ensure interactivity.
- § Learning materials have to render help in every possible way (solved exercises, learning guidance, optional levels of difficulties etc.).

- § Individual lessons have to be suitable for being solved within an hour in order that early tiredness can be avoided.

Content Aspects:

- § Learning materials have to be up-to-date and perfect concerning the profession.
- § Learning materials have to include multimedia elements and simulations.
- § Learning materials do not have to include logical contradictions.
- § Learning materials do not have to include sequential errors.
- § Learning materials have to be well structured and of modular design (structures of course, module and lesson).
- § Each learning material has to include learning objectives, recommended works, summaries of lesson end and self-check questions.
- § Let's strive for concise and precise wording.

Editing Aspects:

- § Learning materials have to include as much media (text, sound, picture, videofilm and animation) as possible.
- § Icons applied in learning materials have to be easily recognisable and of organised arrangement.
- § The colours of information and the background of the screen have to be in harmony (a good background highlights the information.)
- § Learning materials have to ensure quick orientation by means of built-in navigational possibilities.
- § Learning materials have to indicate the visited paths for users with the aid of colours of hyperlinks.
- § Display of texts
Let's use the different ways of division (paragraph, emphasizing, enlisting and arranging under headings).
Let's avoid the use of screens longer than $\frac{3}{4}$ page and with texts only.
- § Voice quality
The voice of the narrator has to be audible, texts have to be clear and the speed of speaking has to be acceptable.
The volume has to be even throughout the whole learning material.

Voices have to complete and cannot disturb the transfer of information.

§ Use of pictures

Let's use pictures of high quality only.

Let's take care of the aesthetic layout of pictures.

§ Hyperlinks and animations

Let's apply live hyperlinks only.

Return to the learning material always has to be simple and unambiguous.

Animations have to be suitable for easy replay.

We need a scenario for the preparation of learning material. With the exception of specific contents, a scenario has to include all the information – descriptions, drafts – that concerns the components of the learning material.

A scenario has to include the followings:

§ table of contents of the learning material (titles of lessons and modules as well as their sequence);

§ the position of the individual content parts (text-picture-multimedia) and the relationship to each other (how do they link to each other);

§ relationship between tests (if any) and the learning material;

§ screen designs and descriptions concerning the individual lessons;

§ the designation and type of desired interactions;

§ the list of links to other content components (e.g. pictures);

§ the plan and short description of the planned explanatory figures, illustrations, videoclips and animations;

§ the conditions necessary for learning the learning material.

The structure of a lesson or a module

One module cannot be longer than 4 to 5 screen pages, because users are not able to listen to more.

The following parts can belong to the planned individual lessons of learning materials:

§ introduction;

§ instructions/proposals assisting in learning the particular lesson;

§ titles and sub-titles, paragraphs;

§ multimedia components: pictures, illustrations, replay of videofilms, sound recordings etc.;

§ summarizing questions and exercises for practice in the course of progress;

§ at the end of the lesson, a concise summary of the knowledge learnt and the introduction of the next lesson;

It is not advisable to regard a lesson of electronic learning materials as the same as a lesson held in a school or as a private lesson, since these lessons take 45 to 60 minutes, and the work on a lesson on the Internet takes optimum 10 to 20 minutes. It is advisable to design the structure of a lesson in such a way that it together with its end should constitute a completed whole. A lesson should process one subject (notion, event) from the point of view of its content.

Pieces of Advice to the Development of e-Learning Materials

§ The estimated value of the processing time of materials of text-picture, sound and videofilms has to be of 60 to 40%, optimum ratio is 50 to 50%.

§ A screen with texts only can be maximum $\frac{3}{4}$ page.

§ Learning material has to take into consideration the requirements of target users (accent, style, activities have to suit them)

§ Learning material has to include exact and clear instructions for learning a particular learning material.

§ Let's take the opportunities provided by interactivity, if possible, however it cannot have a purpose in itself ever.

§ Your learning materials have to be precise, valid and updated!

§ Strive for concise wording with simple sentences.

§ The minimum preconditions of learning are to draw, maintain and direct the attention, which allows the reception of information. In case of training of Internet, the drawing and maintaining of attention can be achieved with the aid of visual and acoustic techniques and by inserting games, tests and quizzes as well as by applying content processing means differing from each other.

Evaluation System of e-Learning materials

The evaluation system of e-Learning materials is the part of the learning materials, currently available, that is the least developed, so that the learning materials do not reach one of the most important goals, the support of independent learning.

The types of the Computer Based Evaluation are the same as those of the evaluation carried out by using the conventional means.

Accordingly, we can speak about formative, summative, qualifying and diagnostic, standard-based and criterium-based evaluations as well as self-assessment.

The Computer Based Evaluation can also fulfil many kinds of functions on the basis of its placement in time

The formative evaluation is interim, it allows students to evaluate their knowledge and to reveal the imperfection of their knowledge during a course.

The summative evaluation rates the work done by students into mark categories at the end of a course. The summative evaluation is always of qualifying character.

In respect of its goal, the Computer Based Evaluation can fulfil many kinds of functions.

The diagnostic evaluation serves to assess the students' preliminary knowledge before the beginning of a course in order that the course can be adapted to a particular student if there is any imperfectness of knowledge.

The qualifying evaluation means the rating of the students' performance into mark categories. It can also be applied during and at the end of a course. The mark given is taken into account in the judgement of the work done by students. The students' attention has to be drawn to the measurement of performance in advance.

In the Computer Based Evaluation the most difficult task is to make up the questions themselves and to word them, since the examination and the evaluation of results are only a technical question. The task of instructors is to make up a good sequence of questions, because an all-knowing test system is worth nothing if it is not filled up with proper content.

Advantages and Disadvantages of Computer Based Evaluation

It is reasonable to use Computer Based Evaluation for e-Learning material, together with all its advantages and limits.

Advantages:

- § Tests written well are objective, and their scoring does not depend on the subjective judgement of the person carrying out the evaluation.
- § Tests can easily and quickly be corrected.
- § Tests can measure several kinds of performance of students.
- § Different media can be integrated in tests.
- § Online performance measurements ensure fast feedback.
- § Guidance can be integrated into test questions.
- § On the basis of test results further learning activities can be ensured.
- § By means of question banks random selection of questions can be attained.
- § Test results can easily be handled and stored in databases.

Disadvantages:

- § Due to the frequent use of multiple-choice tests, it is linked with the measurement of knowledge rather than that of understanding.
- § The preparation of good test sheets requires paper knowledge and experience, so in the beginning it is a time consuming task.
- § The realisation of a Computer Based Evaluation system is costly.
- § High attention to hardware and software is required in order that breakdown can be avoided during examination.
- § In case of web-based systems, safety problems can arise.
- § Students need skills and experience in the operation of computers.
- § There is a need for organisation of high level for the staff taking part in the evaluation (instructors, assistants, computer experts).

The most important methodological expectations of evaluation systems:

- § A sequence of checking questions should be at the end of each content unit – first of all to check paper knowledge.
- § There should be questions to be answered at the end of each content unit – to measure practical knowledge.
- § At the end of every main content unit, there should be an opportunity for self-assessment – to provide students and instructors with feedback of the level of knowledge.
- § Answers and feedbacks should be given to every question. - if I do not know the answer, it gives references where it can be found.

- § On the basis of questions there should be a possibility to go on to the next step or step back under control - if I know the learning material well, I can make a faster progress, or if I do not know it, the program prevents me from stepping forward.

Recommendations for preparing questions

- § Questions have to represent the expectations (learning outcomes) defined in the system of requirements.
- § They have to cover the most significant parts of the examination material. Of numerical data, only the ones in the most frequent use have to be applied.
- § They can be neither too easy nor too difficult, they have to adapt to the students' knowledge reasonably expectable.
- § Let's choose question types corresponding to the learning material.
- § Let's put aside textbooks and manuals, if possible, when we prepare questions.
- § The wording has to be concise, precise and unambiguously.
- § Examination sheets have to be easily understandable.
- § If our goal is that students should learn facts, definitions and correlations, questions have to measure the students' ability to recall facts, definitions and correlations. If we intend to help them think in a correct way by using the learnt facts, definitions and correlations, test questions have to measure the students' ability to apply facts and principles in the course of solving problems.
- § Questions examining memory performances differ in content from ones measuring application. The header of questions measuring applications consists of two components: data unknown by students and questions to be answered. If data are known, the question will measure the memory performance.
- § Distractors based on typical failure by students or on misconception are very effective. The simplest way to collect them is to use open questions requiring short answers in the course of formative evaluation. Of them we can make the most of the most frequent ones as distractors of multiple choice questions.
- § In general, statements correct for themselves, which do not give any answer to the questions raised, are very efficient distractors.
- § Do not use distractors that slightly differs from the correct answers only. This misleads students, who, in fact, know the correct answer (and do not make a guess only).

- § In case of questions having several correct answers, in the header of the question we have to refer to that there are several possible answers. We can also give the exact number of correct answers.
- § In case of certain CAA systems, there is a possibility for students to pick out the correct answer from a drop-down menu. In this case this question type can be used for qualifying evaluations.
- § On the basis of general experience, it is practical to use choice questions on examinations. The correction of these questions is automatic and no errors of mistyping occurs.

Particular Realised Systems

Let's see some particular evaluation systems applied.

Coedu Knowledge Net

Coedu Knowledge Net is a complex VLE system developed in Hungary, to which a learning material developer and a question editor also belong.

Applicable question types:

- § Choice question
 - s Simple choice
 - s Multiple choice
- § True-false question
- § Relation analysis question
- § Fill in the gap question (In case of fill in the questions, texts have to be typed in, selection from a drop-down menu is not possible. This inevitably leads to mistyping.
- § Essay question
- § Sequencing question
- § Fill in the table question
- § Error correction question

At the end of each course, a sequence of questions can be found. Additionally, so-called stop tests can also be created. Students have to pass these tests in order that they can start to study the next learning material.

The Functions of the Quiz Faber System

Quiz Faber is suitable for preparing multimedia tests, and it is a freeware suite. Tests can be displayed as HTML documents by the aid

of a WWW browser program. The test editor program is an application running under Windows

It is capable of handling the following question types:

- § Multiple choice questions with one or more correct answers;
- § True-false question;
- § Essay question;
- § Fill in the gap question;
- § Matching question.

In case of filling in the gap questions there is also a possibility for choice from predefined key words enlisted in a drop-down menu. This makes an errorless answer entry possible.

The person preparing tests can comment on every answer. Students can see these comments on the HTML page if they have chosen the pertinent answer. After the completion of the test a mark calculated on the basis of the number of point of questions can be displayed.

After the completion of the test an evaluation page can be displayed with the number of the correct and incorrect answers and the mark can also be displayed. The result of the test can be sent to a given e-mail address or it can be stored in a preset web server as well.

The Possibilities of Moodle

Instructors have the possibility to define a question database in the Moodle. One of its main characteristics is that test questions can be assigned to several tests, i.e. the defined questions can be reused. The evaluation of the sequence of questions takes place automatically. The types of the questions are as follows:

- § Choice question;
- § Short answer in text (a word or a term)
- § True-false question
- § Matching question;
- § Fill in the gap question
- § Numeric question (e.g.: giving allowable values in a range);
- § Descriptive modules can be put in.

The sequences of questions are randomly selected from the given questions (to which medium elements can be linked). There is a possibility to set whether the computer gives the correct answer during or at the end of the test or whether correction can be made. Detailed statistics of the test results is available for instructors and students.

The developers of the Moodle have prepared several supplements to the evaluation system and these can be downloaded from the web site of Moodle.

Finally, an in-house developed application

The multiple-choice method, which was developed from different written examination forms, is, possibly, the mostly usable evaluation system and it is increasingly coming in general international use, too. It is also an important fact that an exact key to correction can be given to this question system. With the aid of this key we can easily teach the computer how the given sequence of questions should correctly be evaluated, so that the whole process of examination can be automated.

The function and general characteristics of the program:

We have developed the program in such a way that it should allow the simplest but versatile use. Its important features are as follows:

It is of Web-based program of multiple users.

Anybody can access it from anywhere.

It can be built in learning materials of distance learning already existing.

In this way, a student can immediately check at what level she/he succeeded in learning the learning material just after the study of a particular part of the learning material.

It does not require knowledge of information technology at a high level, and neither the person filling in the test nor the person preparing the questions needs to install the program previously.

Questions are gathered at a central site, and they can be reused, so that test sequences in any number can be created.

The server programs protect our database against unauthorised visitors with the aid of allocation and monitoring of proper rights.

The program can simultaneously be used by several users, and everybody can protect her/his sequences of questions with the aid of a username and a password. One server might serve even a complete institution. The person uploading questions can decide when she/he makes the sequences of questions public or disables their filling in.

We can log in the system from home, school and anywhere and any time without installation of any program on our computer. For example, if we want to prepare our sequence of questions at home

(only an Internet access is required), it can immediately be displayed at any point of the Internet just after the completion of the work.

Evaluation of tests

The most important elements of the test programs is the evaluation part, which gives the results achieved, on the one hand, and shows the correct answers, on the other hand.

After the completion of tests, the program evaluates the answers given. It displays the total number of questions to be answered, and how many were correct of them, and the percentage of the performance and finally the mark it proposes.

We have possibility to ask for a detailed evaluation, where questions and answers given are displayed. Next to every answer, there is a marking indicating whether the answer given was correct, and if not, the correct answer is displayed. The comparison of these can give us a detailed picture on our knowledge.

If, on editing a sequence of questions, we mark that whether the sequence of questions requires logging in and the program should store the results. After logging in, the editor of a sequence of questions has the opportunity to look at the results of the filling in and the data of the person having filled in the test and the date of filling in at the functions of the sequence of questions filled in with the same fullness of details.

In short:

From the completed question bank, we can easily make up sequences of questions, and we can look at and test them. If we do not want to start the completed test from the menu of sequence of questions view after the start of the program, but we would like to attach it to a learning material of distance learning, we have the possibility to do so. It is enough for us to insert a link into the document, and users can fill in the given test by clicking on this link. We might get the data of the person having filled the test and her/his results via e-mail as well, if we set this option in the editor of the sequence of questions.

Summary

As a summary we can say that there is no perfect system. The advantage of home developed systems is that everybody can adopt it to her/his requirements, but as an ultimate solution there should be a unified system well usable at the level of the whole higher education. A central VLE system would be an efficient instrument for this,

however there is no example for this in the world. Genarally, every more considerable education institution applies a system developed on the basis of their conceptions, and serious efforts are made towards compatibility.

Resources

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Experience with common VLE usage

(Péter Tóth)

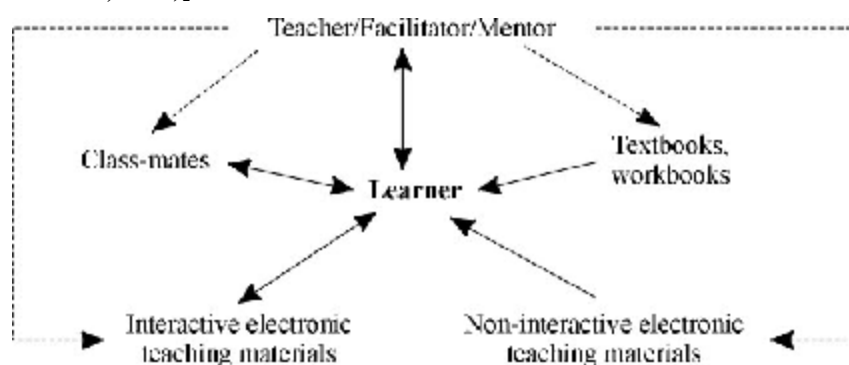
Introduction

Within the project of Virtual Electronic Learning for Vocational Initial Teacher Training, students of teacher training from Hungary, Great Britain, Finland and Portugal jointly elaborated with the help of electronic communication two subject modules, namely Basic Teaching Skills and Computer Mediated Skills. Tutoring the students' work made it possible to explore important cognitive activities, to model the learning process in VLE, to examine the communicative efficiency of the electronic learning environment, to see the advantages and disadvantages of the application of discussion board and the criteria for its efficient application as well as the basic types of participation in electronic communication.

A model of communication based learning environment

In my present study I examined communicative activity in VLE in connection with the modules Basic Teaching Skills and Computer Mediated Skills. First I drew an outline of the effects of a particular electronic learning environment and I gave an interpretation of the role of the teacher in regulating this system.

Figure 1 The communicative effects of the electronic learning environment (Komenczi, 2004)]



The creation, preservation and development of the system of conditions of personality developing communication have immense

significance in the organisation of the learning environment. In this model the role of the teacher/facilitator/mentor is, for the maximum efficiency of the learning process, to arrange into a system of developing effects the various personality forming and cognitive developing effects of different media, means and modes of communication.

The learner is in the focus of the system. Considering his cognitive activities (communication, knowledge acquisition) he is in one- and two-way relationships (solid line) with the basic sources of information acquisition. Interactive and non-interactive syllabuses are particularly new sources of information acquisition in electronic learning environments. The role of the teacher/facilitator/mentor is to organise the learning environment as well as to re-regulate and make precise the communicative system of effects (dotted line). The forum provided by VLE (discussion board) proved a useful means in this activity.

Blackboard offers the following communicative means and opportunities to teachers/facilitators/mentors and students:

Table 1. Basic learning and communication forms in VLE

Learning and communication forms	Virtual Learning Environment	
	Computer Based and Integrated Learning	Computer Aided Communication
Online learning / Real-time communication	Web based learning, Browsing on Internet	Electronic forum, Discussion board, IRC
Offline learning / Non-real time communication	Downloading or uploading files	E-mail

Besides the cognitive activity of electronic communication and knowledge acquisition, in the course of processing the modules Basic Teaching Skills and Computer Mediated Skills and as a result of Blended Learning, students had an opportunity to try the following types of face to face cognitive activities: classroom practice – between students and the teacher/tutor (4 times 2-2 classes per term), tutorial – between the student and the teacher/tutor, or between the student and a student, school teaching practice – between the student and the comprehensive school mentor (Table 2). These traditional forms of communication created an opportunity to debate in detail the syllabus to be processed, to discuss the questions arising during the solution of problems as parts of the portfolio, and to exchange experience gained

during the teaching practice and relevant from the point of view of the module.

Table 2. Achievement of the common module in Hungary – Blended learning

Week	Classroom (Face to face) Training	Virtual learning
1	Introduction of VLE and content of given module	-----
2	Presentation of module aims, learning strategies and assessments Introduction of the content and format of the expected portfolio Talk about electronic based communication via discussion board	-----
3	-----	Active participation in debate in discussion board Discussion about lesson planning
4	-----	
5	-----	
6	Discussion about connections between chosen teaching methods and learning styles	-----
7	spring holiday	
8	-----	Active participation in debate in discussion board Discussion about lesson planning
9	-----	
10	Individual consultation about lesson planning	-----
11	-----	Active participation in debate in discussion board Discussion about lesson planning
12	Evaluation	-----

Basic teaching methods in common module - Blended learning a combination of classroom-based training with self-paced e-learning):

a.) Classroom-based training

§ lectures with explanation and interpretation,

§ seminars,

§ discussions,

§ group-work() (e.g. analysing and comparing a given VLE system),

§ individual working with teacher leading/under teacher guidance (e.g. first steps in given module).

b.) Self-paced e-learning

§ participation in email and discussion board communication,

§ leading the debate,

§ uploading new reference.

The most important teacher instructions in the virtual teaching-learning process are the following:

§ Interpretation of blended learning,

§ Giving viewpoints for analysing VLEs in general and the given module,

§ Assistance in theme choice,

§ Analysing the chosen theme from the point of view of knowledge elements (e.g. concepts),

§ Interpretation of the domains of learning (e.g. cognitive, psychomotor and affective),

§ Thinking about possible teaching methods, teaching materials, didactical tasks and constitutional forms,

§ Giving information formats and contents of portfolio,

§ Adding new questions to the discussion,

§ Encouraging non-communicative (“shy”) students to participate in debate,

§ Calling students’ attention to adequate articles,

§ Bringing relevant learning materials to students.

The discussion board as basic communication platform in VLEs

In this chapter online communications will be introduced by focusing on text-based computer communication, e.g. via discussion board. Discussion board is commonly provided in VLEs, such as Blackboard, WebCT or Moodle. They provide the facility for students and tutors to hold discussions and contact each other in the same group. This method is similar to the regular e-mail system, but there is a difference. Discussions are threaded, in other words, the relationship between the message and the responses posted to it are displayed graphically on the screen in a way that gives a meaningful structure to a discussion or activity (Fig. 2). Discussions are also recorded,

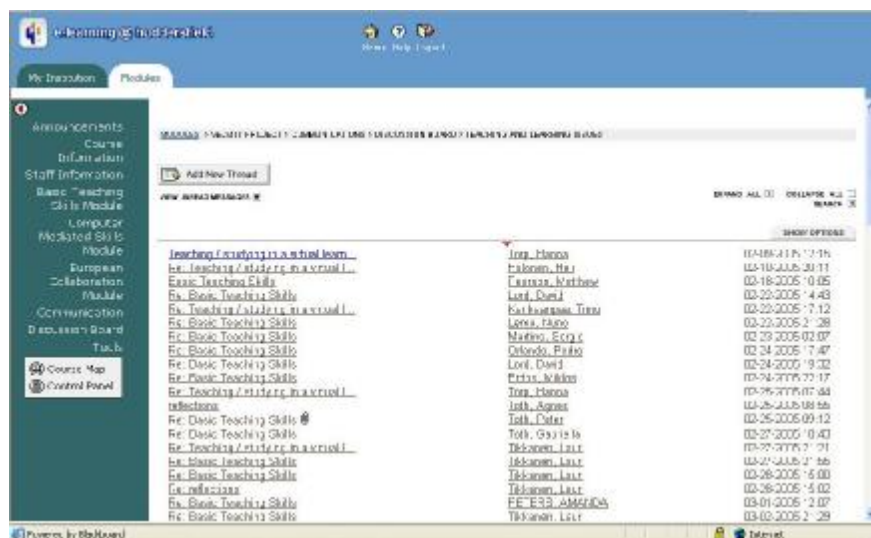
enabling students and the tutor to return to them. The discussion board is a “virtual office”, which shares individual student questions with the whole group. (O’Leary, 2004)

Evaluating the role of discussion board in electronic based communication we can notice that there might be new roles of students and teachers/facilitator/mentor/tutor.

Summarising these, discussion board allows students to:

- § contact tutors on an individual basis,
- § collaborate on and share tasks, including the exchange of files,
- § provide each other with feedback,
- § raise questions,
- § participate in open discussion,
- § share experiences, ideas and resources.

Figure 2. Example of a discussion board from Blackboard



It allows teachers to:

- § contact students individually,
- § provide an answer to an individual question to all students,
- § facilitate collaborative discussions and activities,
- § upload electronic teaching materials,
- § provide reminders and information.

On the evidence of our experience the benefits of using discussion board in virtual learning are as follows:

- § the flexibility of participation in learning any time, any place,
- § The disadvantage of this flexibility is a lack of immediacy, since students may have to wait for responses and feedback, which might result in loss of motivation.
- § discussions/contributions are recorded, which enables students and tutors to return to review activities or access answers to queries by others,
- § the development of important transferable skills
- § For example, discussion boards may facilitate the development of “virtual” written discussion skills, potentially linking to key skills for would-be-teachers.

Efficient learning and teaching by using discussion board

According to our experience in using the discussion board of VLE in the teaching-learning process it may be absolutely necessary to discuss the following questions and comments carefully:

- § It is important to consider why the online discussion board is used within a course and how it relates to the learning outcomes. E.g. to develop students’ written and discussion skills, collaborative or group working skills, etc. or to extend their contact time in face to face courses (blended learning).
- § It is well-known that would-be-teachers have an increasingly higher level of IT skills and the ability of searching for available and appropriate information on the Web. But it is important to establish and plan how future teachers will be supported throughout their engagement with online learning, such as with induction ongoing support, and to deal with any assessment issues that need to be addressed.
- § By teaching online we will not have the same feedback that we get in face to face teaching to indicate how our students are progressing in knowledge, understanding and abilities. In every pedagogical situation there are some students with highly or less developed verbal or non-verbal communication skills. Because of this we need to encourage our students to seek feedback, guidance and clarification proactively, both from us and from each other.
- § The students (now would-be-teachers) with different first languages may have communication problems in English, which

leads to misunderstandings and lack of motivation to participate. So it is very important to help overcome misunderstandings and ensure that learners have a shared approach to communicating online as well as to make sure we devote some time and support to encouraging a common use of language.

- § The composition of the student group plays a very important role in electronic communication similarly to the face to face one. Many factors, such as the abilities of the group members or group size, define the efficiency of our common work. “Too large groups may lead to free-riding or ‘lurking’, and too small groups may suffer from the lack of different views or particularly in an online situation, a critical mass for a lively discussion.” (Goodyear, 2001)
- § The social dimension of learning is particularly important when considering online communities of blended learners. In this dimension of discussion board mentors need to recognise learners as creative and active producers, and to realise that learners control of the structure of their learning environment is important for both learning and effective socialisation. This is difficult to achieve in some discussion board systems, e.g. in Blackboard or WebCT, so it might be necessary to allocate an alternative discussion board for students to chat to each other without any tutor involvement. (Ponti - Ryberg, 2004)

Structured debates on discussion board

Structured debates using discussion boards can be a useful way to develop students’ analytical and academic discussion skills. Each student can be assigned a role in the debate: (illustrated by examples of Basic Teaching Skills module)

- § The moderator’s role is to set the overall scene for the discussion, to encourage initial comments on the proposer’s and opposer’s messages, to encourage “shy” students to contribute and to keep the discussion on track.

<p><i>Date: 02-18-2005 10:05</i> <i>Author: P., M. (UK)</i> <i>Subject Basic Teaching Skills</i></p>
--

<p>If you've had a chance to read through the module specification and think about the issue</p>
--

of "basic teaching skills", why don't you post a message here listing what you personally think are the most important basic teaching skills which are needed. Like so many things we deal with, definitions and interpretations of what we mean by "basic teaching skills" are never set in stone and always open to interpretation. So **post a message with your perspective, perhaps dealing with your personal ideas on the topic and also thinking about the national context in which you work. Basic teaching skills may actually vary from country to country according to pedagogical systems, traditions and the needs of learners, and it would be great to hear people's views on these topics...**

Regards, M. P.

Date: 02-22-2005 14:43

Author: L., D. (UK)

Subject Re: Basic Teaching Skills

Yes, it will be interesting to see if people from different countries have different perceptions of what makes a learning experience (or a teacher) effective.

First of all we should make the link between teaching and learning. There is an old joke in teacher training in the UK:

A man walking his dog meets his friend.

Man: "I have taught my dog to whistle."

His friend: "Well, I can't hear him whistling"

Man: "I said I had taught him to whistle; I didn't say he had learnt"

Perhaps our success as teachers can be best measured by how effective are the learning experiences we provide for our students. We need to bear this in mind when we think about "Basic Teaching Skills"

You can contribute to the discussion by responding to one or both of these two questions:

1. As a student, or in life generally, what has been your most effective learning experience?
2. What are the qualities of a good teacher?

D. L.

§ The opposer's role is to counter the proposer's message by posting a message arguing for the opposite point of view, again in such a way as to encourage further comment.

Date: 02-24-2005 22:17
Author: E., M. (HU)
Subject Re: Basic Teaching Skills

Hi Everyone!

...

Now for the questions:

1. As a student, or in life generally, what has been your most effective learning experience?

Doing something is the best teacher, I guess. I mean when I do system administration like installing a server for a specific task for me it's like finding the way in the forest. I know where I head, but I usually don't know much about the specifics (OK, I can do the basic installation even when I'm sleeping). I have to read several documentation, installation guides etc., and this way I find shortcuts, realise that something I thought is complicated in reality is very simple and so on.

To learn something I prefer that I am left alone to figure it out and realise the different aspects of the problem/new knowledge (though some help if I'm stuck never hurts). It's not necessary for me that the information is useful immediately if I can see it is usefulness in the future. But if I can't see it's usefulness, then I have a real problem... (^_^); (I can easily get lost on wikipedia.org) That said, I believe the teacher I remember most fondly was an American engineer who taught us many subjects (chemistry, informatics, programming, electronics, American history etc.) in secondary school (it was a bilingual

one). **There were several factors why I liked his classes:**

- a. **His classes were in the areas I'm generally interested in.**
- b. **His knowledge about the did not come from books only, but he had experience** (ok, not in the 1800's American history :)) **He always entertained us with stories from his previous jobs.**
- c. **He taught us from the preparatory year until we graduated.** It's a really great thing to go to a class where one knows the teacher even at the beginning of the year. **Even the air/mood of the class is different from when some 'nameless', 'faceless' teacher is with the class.** (I know there are always first times)
Unfortunately as far as I know since we have graduated no American teacher has stayed for more than a year.
- d. **The American teaching method greatly differs from the Hungarian ones.** It really was new for us.
- e. The relationship was also different compared to the Hungarian teachers. **It was much closer, like in the preparatory year we have had several 'parties' with them baking brownies or some other stuff. They were organising softball teams too.** I know that my points are pretty subjective, but I think there is no all-rounder teacher who can win everyone's sympathy.

2. What are the qualities of a good teacher?

I think **I've pretty much summed it up in the previous paragraphs.** Of course my description reflects my taste and there is someone just can't stand a teacher with one or more qualities I prefer.

...

Best regards,

M. E. - Hungary

Date: 02-27-2005 21:55

Author: T., L. (FI)

Subject Re: Basic Teaching Skills

>You can contribute to the discussion by responding to >one or both of these two questions:

...

1. As a student, or in life generally, what has been your most effective learning experience?

Most efficient learning for me takes place when **I actively start doing something new which requires me to find out about things on my own.**

Usually, I don't enjoy at all regular lectures and such kind of traditional stuff. But when I have to do something my self it's a whole new story...

For example, I registered Renoise (<http://www.renoise.com>) about two weeks ago and started learning tracking (FYI, which is a specialised way of making electronic music) with it. I had previously been doing tracking with ModPlug Tracker so I wasn't a complete newbie though. Anyway, Renoise has a very different GUI and approach and of course all hex codes for the special effects are different. I simply started writing a new song from scratch with Renoise finding out about things from the docs as I faced something I couldn't figure out by myself. Of course I had to start by printing out the hex codes of the different effects first to have something to begin with but apart from this **I basically learned the program by using it, trying out things. This was a very rapid and effective learning process with a lot of inspiration involved within.**

2. What are the qualities of a good teacher?

The most important quality is the ability to plan well. Also it's very important **to have a clear voice.** (Nothing can be more irritating as a lecturer whose speech is nearly unintelligible.) You have **to be quick in**

responding to different emotional hints you may be getting from different persons in class. You must make note of those students who aren't responsive to your current methods and make a shape shift according the new information. This is of course very difficult if the group is very large.

Have to go now, perhaps later I'll write more..

- § The proposer's role is to post a short message to the discussion board, making a case for the proposition in such a way as to encourage comment from other group members.

Date: 04-07-2005 11:09

Author: T., L. (FI)

Subject Discussion about teaching a musical instrument

This is something I should have started a while ago but kind a forgot..

Currently I'm giving lesson in piano for three pupils privately (60min a person). I'm also working as a music teacher in elementary school where I'm teaching classes from 3rd to 9th grade, i.e. 7 lessons (7x45min) every Friday. The last class is a combined group of 8th and 9th graders and lasts for two lessons (2x45min). Music is not a compulsory subject for this last group so **I have to work real hard to keep them interested in.** I've incorporated a lot of playing with musical instruments into my lessons in school so this job too consists of teaching a musical instrument although for a larger group rather than for an individual pupil.

In my work I have noticed how selection of musical programme is critical for the success of the lesson plan. You see most of the young persons don't like the music we 10 years older guys are used to listening to. Also, **young persons need a lot of personal support from the teacher in achieving goals. That's why I find it at times difficult to manage with very large groups, as I cannot physically split apart into**

several locations at the same time. Luckily the school I'm currently employed in has a special employee for aiding with the slower pupils. I've found it handy having her at hand with the largest groups. This way I can for example issue her to the group of girls fighting over a glockenspiel and at the same time continue with what I was doing before.

With individual pupils I have found it beneficial to begin right on with reading musical notes. Some authoritative people (like Schinizi Suzuki) say that you should begin with playing just by ear but I think this method can have more drawbacks than actual benefits. The most obvious of these drawbacks is the difficulty to learn to read notes later on and also a very underdeveloped prima vista or "sight reading" skill.

I also like to give pupils assignments both in classical music where everything is written on the sheet and in pop music where you have to improvise the accompaniment for the melody by translating in real-time the chord symbols. This is something that is still very much neglected even by the most professional teachers. The reason for this is that these teachers belong to the older generation of classical musicians who don't know anything about harmonies or improvisation. All they can play is the stuff written on the sheet music and nothing else. This is however changing slowly as the conservatories are putting more and more effort into these things in teaching musical instruments.

*Date: 04-11-2005 19:28
Author: H., A. (HU)
Subject Re: Discussion about teaching a musical instrument*

Hello!

You are fully right. I'd like to share my views about teaching a musical instrument for you. I

must make it absolutely clear that classical music and jazz/pop/etc. music are very different from many point of view. My field is the second but I've learnt classical music too for two years. The main features: playing classical music means you are familiar with one's composition, you've learnt it's from note to note, the tempo changes, the dynamics etc., and you are playing from score. Whereas playing jazz means you've roughly learnt the composition's main melody and the harmonies and during the performance you are playing from your heart: this is called improvisation. So, there are many ways to teaching music, but never forget the differencies between music styles. Indeed the ability of sight reading is indispensable in classical music but in jazz/pop/etc. it isn't anyway (but very useful and recommended). ***In spite of this to my mind teacher must begin with reading musical notes in all styles. In classical music without doubt this is the only way to learn an instrument. Classical artists are as familiar with reading notes as with alphabet.*** But besides in other styles students must learn playing by ear. ***Reading notes fluently -so called "sight reading"- isn't necessary. Much rather the perfect knowledge of the harmonic theory.***
...
A. H.

§ The documentalist's role is to summarise one or more of the set readings for the topic, picking out the points relevant to the proposition, and contribute the summary to the discussion thread.

Date: 05-11-2005 11:10
Author: T., P. (HU)
Subject: main topics in discussion

Analysing all speaking on our module I can classify 8 topics:
T1: the most effective learning experience
T2: the qualities of a good teacher
T3: to test the learning abilities of the students
T4: Internet in teaching practice

T5: teaching in practice - technical drawing
T6: personal aspects of teaching and learning - making interest and motivation
T7: teaching in practice - musical instruments
T8: teaching in practice - economics and others.

Tutor's questions (threads):

Q1: As a student, or in life generally, what has been your most effective learning experience?

Q2: What are the qualities of a good teacher?

Q3: Can we test the learning abilities of our students? How can we develop ones?

Q4: How can we take these facts into consideration in development of electronic teaching materials and planning of virtual courses?

Student's answers to second question:

- good communication skills (Lema Nuno),
- "establishing a bond with the young generations providing a non-conflict environment in the classroom" (Lema Nuno),
- showing what students can't see and by that pointing to new questions and new discoveries (Lema Nuno),
- personal relationship between students and teacher (Pedro Orlando),
- speaking with emotions and humour (Gabriella Toth)

...

§ The researcher's role is to go out and find other relevant readings and resources, from the Web and from the set books, and bring them to the attention of the group.

Date: 02-25-2005 09:12

Author: T., P. (HU)

Attachment pp_tp_velvitt.doc (347136 bytes)

Subject Re: Basic Teaching Skills

I think David's joke symbolises the complexity of the teaching and learning process. Teacher apt to concentrate on applied teaching methods which depends on syllabus. Sometimes he does

not think of aspect of the student. Is the explanation clear for him or does this figure demonstrate e. g. the structure of this machine well? So on. I teach something, e. g. for my dog. :-) Is this "teaching method" efficient? I think the achievement is reflected in the knowledge of the student, from the point of the side of the quality and quantity. Saying with David's joke my dog can whistle or not. **But I think it should be emphasised the teacher ought to have some information about the way from non-knowledge to knowledge. So the teacher should get into student's clothes.** With David's examples getting into dog's coat. That is the real problem each student has different learning style.

So **I have just written some of my ideas about connection between applied teaching methods and learning styles and I send a paper about these topics.** My colleague and I tried to summarise the main theories of these questions.

...

I think the real questions are these: Can we test the learning abilities of our student? or How can we develop ones?, and How **can we take these facts into consideration in development of electronic teaching materials and planning of virtual courses?**

Learning styles come from three theories: perceptual modality, information processing and personality patterns. My colleague and I demonstrate these paradigms, but I would rather concentrate on a complex model, in which I examined the connection of learning styles and the indirect teaching methods in attached paper.

P. T.

§ The rapporteur's role is to prepare a summary of the overall debate and post it to the discussion board for comments by the group, at the end of the debate.

Date: 05-15-2005 16:42

Author: T., P. (HU)

Subject: general aspects to summary of discussion

The first question focused on learning effectiveness. It is important to emphasise that is the result of use effective teaching methods. The following factors are key elements of that: engaged academic learning time, positive reinforcement, cues and feedback, co-operative learning, positive learning atmosphere, high-order questioning, motivation, advance organisers.

Teaching elements can also be grouped into general models of teaching. In 1st model the emphasis is on the transmission of knowledge. Use of advance organisers and direct teaching methods are the main features. The 2nd model involves inquiry or discovery-based teaching. It emphasises the indirect methods of open-ended questioning and of building on student ideas. The focus of 3rd model is the quality of interpersonal relations. A positive classroom atmosphere is a central component of this model.

We should emphasise the need for a variety of teaching models. Instead of relying exclusively on any single model, it is suggested synthesising methods. Teachers thus need to practice the different skills involved with each method in order to achieve teaching effectiveness.

§ The commenter's role is to comment on the ideas put forward by all of the above and help keep the discussion going.

Date: 03-03-2005 12:35

Author: P., A. (UK)

Subject Re: Basic Teaching Skills

I agree with you. ***Some pupils I have taught seem to be naturally gifted and learn how to play their instrument without any problems. Others really struggle and have to put considerable y***

I have also noticed this on my placement. Some immediately grasp what is being taught, but others always seem to be behind or forget

certain features such as which button to press to exit Microsoft Word. I find asking questions e.g. when giving a demonstration helps, as it gets them thinking, i.e. for the Internet 'what button do I press to go back to the homepage?' It also makes it more interactive for them.

Summary

The basic forms of electronic learning are Web Based Learning, Computer Based Training, E-learning and Virtual Learning Environment. A form of the application of electronic learning under traditional (face to face) teaching circumstances is Blended Learning. It is the form of teaching we selected while doing the modules Basic Teaching Skills and Computer Mediated Skills. Students got acquainted with the basics of VLE, the system of modules' objectives and requirements, the contents of the portfolio to be prepared and the rules of communication on discussion board within the framework of traditional education. Opportunity presented itself here also for a more extended consultation about the teaching plan to be prepared. VLE made it possible to process the electronic "background material" and to discuss it together with the teaching plan to be prepared.

Discussion board proved to be an outstanding platform for communication. It is independent of time and space and it makes a flexible exchange of communication possible thus contributing to the further development of students' written communicative abilities.

Resources

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Lancaster University

<http://csalt.lancs.ac.uk/jisc/advice.htm>

Ponti, M. - Ryberg, T. (2004):

Rethinking virtual space as a place for sociability: theory and design implications.

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(Models for Information Technology-based Educational Learning Environment – School – Information technology - Innovation)