Implementing Virtual Learning Environments: Looking for Holistic Approach

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**Discussion Schedule**  
*Discussion:* 29 May - 7 June 2000  
*Summing up:* 8 - 9 June 2000

**Pre-discussion paper**

The implementation of innovative pedagogical/educational practices is a response to the social needs for educational change. Such needs emerge from the massive request and access to post-secondary education, the necessity to increase competitiveness mainly through the increase of the human potential and the need to take into account new approaches to learning in a world highly mediated by technology where becoming a democratic, tolerant and responsible citizen is proving to be more difficult than becoming a highly trained worker or professional. The recent technological developments and the possibilities they offer provide useful tools in the introduction of educational innovations. With the same token however the implementation of technology in educational environments and in the learning process, in formal education or in more informal learning structures, poses a real challenge for the education and training institutions undertaking it.

As a result of the new ICT systems, there are emerging experiences where most of the traditional universities (as well as traditional open universities) are in the process of restructuring by introducing new "virtual campuses" (VCs). Participants are experiencing new ways of learning and communicating with peers and teachers by organising the learning environment in a different way, based on several technological configurations. "Virtual Learning Environments" (VLEs) are based on different combinations of telematics tools and multimedia. Traditional universities and training centres see this as an opportunity to widen access to their courses while improving the quality of education, as well as a future source of income. Training companies are also very interested in reaching new potential by approaching learning to people's homes.

Although VLE might be triggered by socio-economic factors, these processes will only mean an education and training improvement if we consider those elements related to the teaching (pedagogic effectiveness) and institutional sphere (institutional restructuring, resistance to change, etc.). Furthermore, if we do not respond to the academic, linguistic, and cultural diversity of today's world, we are taking the risk of creating systems of low social, pedagogical and economic efficiency. This is the reason why the situation needs a holistic perspective of study and discussion.

In this paper we present some of the preliminary results of the study undertaken by the Thematic Network IVETTE (Implementation of Virtual Environments in Training and Education). IVETTE is a consortium of nine European Universities funded by the Targeted Socio-Economic Research Programme (European Union, IV Framework Programme). The goal of the IVETTE Thematic Network (1998-20009 is to investigate the institutional, cultural and learning issues involved in the implementation of innovative Virtual Learning Environments (VLEs) in post-secondary public educational institutions, as well as in training institutions. For
We summarise here major issues and questions on the implementation of VLEs in traditional educational institutions. These concerns and pending issues have been defined primarily on the basis of nine European case studies. We start by the findings and pending issues on "What are VLEs?", we look into "To whom" they are addressed and what questions have to be dealt with there. Next we deal with "Why" implement VLEs and we finish with the issues concerned with "How" to implement VLEs.

**What are VLEs**

In attempting to answer to the question we have underscored the notion that virtual learning environments have first and foremost to be thought of as learning environments. The "learning" aspect drives the activity, virtuality rather refers to the technology that is brought in to support learning. The definition we chose to employ for VLEs is "any combination of distance and face-to-face interaction, where some kind of time and space virtuality is present".

The reader might argue that this definition is quite broad. However, our experience and analyses looking into the what of VLEs justifies this. Indeed, we observed significant variance between the different VLE activities studied with respect to: the objectives and reasons why for introducing VLEs, the audiences targeted, the chosen technology, the prevailing pedagogic arrangement, the scope of orientation of the initiative (local or international) with consequent cross-cultural issues and the implementation process at the institutional level. Clearly, this feature of VLEs renders the making of general conclusion on when, why and how to adopt and implement them in higher education quite difficult. Future research may want to identify clusters of related parameters identifying the learning context that warrant a particular implementation approach.

We can also conclude that the undertaking of VLE development within institutions of higher learning requires:

1. the attention of a variety of institutional actors. These range from developers to administrators and institutional factors. Designing and using VLEs requires fundamental changes in the role of academic and technical staff. Academics have to acquire or develop new knowledge and skills to become teaching materials designers, tutors, facilitators, etc. Additionally, and more importantly, they have to cope with essential changes in the conception of time and space introduced by these technologies. On-going experiences on VLEs provide evidence of substantial transformations in the work carried out by teachers.
2. a transdisciplinary approach engaging a multiplicity of disciplines ranging from subject matter specialists to instructional designers to system administrators.
3. a careful consideration for the integration of socio-cultural elements. The apparent accessibility and time and space flexibility of most VLEs are used by market oriented agents to sell this "educational technology" as "the panacea" for educational problems and equity issues. However, a closer and more rigorous approach to implemented VLEs makes evident new forms of colonisation (English language, pragmatic culture, etc.), new forms of exclusions (the need of more expensive tools) and new forms of frustration (everybody can have access to quality courses, the only thing they need is: money, time and the required background).

**Why learners, teachers, institutions might wish to implement VLEs**

The research done reveals a multiplicity of reasons. We summarise here by giving some illustrative examples, depending on whose perspective is taken.

<table>
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<th>in favour</th>
<th>wish to avoid</th>
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<tr>
<td><strong>Students</strong></td>
<td>lack technological skills and/or money to buy equipment,</td>
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<tr>
<td>to experience on-line learning for its own sake, to access education and training courses that otherwise wouldn’t have taken to participate in a distributed learning environment which they feel is richer than a traditional one, to get the opportunity to discuss their own professional situations with other learners and with their colleagues while staving close to the</td>
<td>have had bad experiences using new technologies and are reluctant to renew the suffering.</td>
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Clearly, the merits of VLEs for learners, teachers and institutions identified in this research need dissemination within the educational world. For those who are reluctant to engage in VLE activities because of too many "unknowns" and uncertainty, this review of (potential) benefits might function as a catalyst for the adoption process. More research seems required, however, into the delineation of the precise conditions under which potential advantages are transformed into real benefits.

We feel that special attention should be devoted to a further investigation of the reasons why actors in the education field might not want to adopt a VLE approach as a way of delivering education and training. Here the question arises how the issues put forward in our analysis should be dealt with:

- Is there a need for additional valid research so as to establish which elements/ issues are to be considered justifiable reasons for avoiding VLEs, preferably broken up into nature and type of learning context, and on the other hand to determine where avoidance behaviour is based on erratic perception or beliefs and reasons that can easily be overcome?
- Should the relevant national bodies engage in efforts to overcome and lessen resistance? If yes, there is a need for deciding on appropriate approaches, ranging from sensitising and awareness raising campaigns, pointing out prejudices or widely held but mistaken beliefs, carefully designing possible solutions to perceived problems to eventually preparing necessary changes in laws and regulations to support further adoption of VLEs.

### How VLEs can be implemented

The next line of research concerns how VLEs can be implemented into traditional higher and continuing education. Throughout the analysis into the "how", it was observed that it is fairly difficult, and to a large extent undesirable, to engage in a prescription of the procedural steps to follow when implementing VLEs. This is primarily due to the fact that VLEs are defined within a very specific learning context (in terms of technology, learning paradigm, target audience, type of institution embedding the VLE etc. – cf. supra) and hence, procedures cannot be generalised over different conditions. Therefore, rather than providing vague procedural descriptions, the "How" question deals with important issues to be taken into account when implementing VLEs.

This inventory is made according to the three main dimensions used in the project:

1. teaching and learning issues

<table>
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<th>Teachers</th>
<th>Institutions</th>
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<td>to experience teaching in a VLE,</td>
<td>they can promote the use of a particular language,</td>
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<td>to gain professional standing by teaching with VLEs,</td>
<td>learning materials created in one language can often be converted for use by speakers of another language at relatively low cost.</td>
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<tr>
<td>to offer the possibility of learning to those learners who would not find it possible to participate in a traditional face to face experience, etc.</td>
<td>they can be used to bring people from different cultures together in a single learning experience.</td>
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In the European Union context:

- they feel that they lack the necessary technological and didactical skills to facilitate learning through VLEs,
- they are convinced that the best way to teach their discipline is through face to face teaching

- the power structure in the institution is such that traditional ways are rewarded and innovation is not rewarded,
- the lack of technological infrastructure within and around the institution is such that it is not feasible to consider using VLEs,
- they fear the damage that could result from a well-publicised failure.

In the European Union context:

- the danger that it can be swamped by a dominant culture or a dominant language grouping with the consequent suppression of the others.
The major findings are summarised in accordance with these dimensions. Analysis of these questions from the perspective of implementation, reveals that there are major factors to be taken into consideration.

In the discourse on teaching and learning issues, the project faced issues such as:

- The emergence of new educational paradigms.
  Education currently faces a period of transition in which old paradigms are opposed to new ones. Whereas the old paradigm is based on the concept of knowledge transfer (knowledge from person A to be transmitted to person B) the new paradigm relies more on constructivist principles. The IVETTE project demonstrated that VLEs develop primarily within the new paradigm. However, it was observed that the implementation of VLEs within the older paradigms occurs as well. From a teaching and learning point of view, the first case of innovation seems the most challenging; two novelties are faced simultaneously:
  - the introduction of learning technology
  - new concepts on teaching and learning.
  Nevertheless, we consider the adoption of VLEs in the context of the traditional paradigms a very important phenomenon as well. It implies for the institutions involved a step in the evolutionary transition from traditional teaching environments towards newer models of education.

- The context of teaching and learning in VLEs.
  The central players in a learning environment are the learners and the teachers. Classrooms, which are isolated from real life, can only simulate reality to a certain extent. This is also true of virtual classrooms constructed by technological means (e.g. video conferencing). Based on the IVETTE evidence, it seems essential that learning in open learning environments is closely connected with learners’ real-world activities, situations and social relations.

- The changing nature of the learning materials
  Some cases studied have shown that teaching situations can also be considered as resources of learning in a similar way to ready-written learning materials. The availability of teaching situations can be improved through access to multimedia materials such as video or audio (including video-on-demand) resources of lectures and archived discussions as part of the learning materials. It then becomes difficult to distinguish between interactive learning materials and teaching situations.
  Depending on the concept the most important learning material can be the outcomes produced by the students themselves during the learning process.

- Key issues for pedagogical design and teaching in VLEs
  To analyse key issues in the implementation of teaching and learning in VLEs, we refer to pedagogical functions as being the practical activities and methods in the learning environment that make learning possible.
  When teaching and learning take place in VLES it should be kept in mind that there is already a didactical concept incorporated within the environment determining the scale of pedagogical functions. It could also be observed that there are pedagogical barriers to overcome and compromises to be made when standardised products are chosen which are increasingly available on the commercial sector.
  A trade-off has to be made between bottom-up and top-down strategies for implementation. When a top-down strategy is chosen, the variety of pedagogical functions is reduced to the tools offered by the predefined and standardised environment A bottom-up strategy, however, can entail other problems such as technical instability, incompatibility of the software developed by different actors, etc.

- Planning and development issues of the VLE
  It should be noted that that teaching and learning always takes place in a specific context. Teaching in VLEs means that there are a lot of organisational aspects to consider. By implication then, being a good teacher means that in addition to being a good educator you have to be a good organiser and designer of information, communication, didactical implementation and media integration. Teaching becomes a much more complex process during several stages than traditional educational situations.
  If education takes place on an international and inter-cultural level there are even more aspects to be considered related to the organisation of communication, the basic language to be used and the taking into account of cultural particularities. It becomes clear, that teaching issues in virtual environments are multi-dimensional and directly inter-linked with other crucial aspects of activities within and without of the environment.

- New strategies for teaching.
  Within the context of new educational paradigms the new functions can be characterised by the shift from traditional teaching as a content provider and "transmitter" towards a mentor guiding and supporting
learners through the process of knowledge acquisition. In an open learning environment, learning can be largely directed by the learners themselves. There are many "open questions" concerned with online teaching which are still being widely discussed in the field of computer-mediated communication (CMC) as to how and to what extent moderation must take place in settings where learners work collaboratively on the assessment of contents. Special technical tutoring might become necessary in open learning environments in order to avoid student frustrations. Tutors can use an increased range of alternative channels to provide efficient tutoring (telephone, e-mail, tutorials, etc.) either at a distance or in a face-to-face context. Whatever kind of techniques is being used it becomes clear, that pedagogues need special training for online-education. Implementing teaching in Virtual Learning Environments needs competence in technological and organisational aspects as well and new skills in applying relevant didactical methods. Future teachers must be introduced to technology and its application in the educational area in order to be enabled to measure the whole range of possibilities available for organising education and teaching in this virtual context. Even when a sharing of work takes place within a team of specialists a minimum competence of knowing what the others do is required. Some soft skills like working in inter-disciplinary teams become more important too in this context and are to be considered as well in teacher training.

In the discussion on opportunities, problems, leverage factors and pitfalls at the institutional level, we addressed concerns such as:

- What is the institutional perspective to the undertaking of VLE implementation?
- What are the factors that led institutions to consider using VLE?
- Do all institutions regard VLE as the best approach to meet social and in some cases market needs?
- What type of networks/collaborations are being formed for VLE undertaking?
- What type of institutional change is being sought?
- What is the management approach to institutional change?

Firstly, it deserves emphasising that the majority of the case studies analysed pertain to pilot activities; a few concerned well-established VLEs, albeit in non-mainstream activity. In all, we can conclude that at present there is little evidence of consistent moves – or of the willingness to do so – from an experimental and piloting stage to embedding VLE activities into mainstream education. Universities, as yet, have not embraced this new avenue of education delivery wholeheartedly.

Hence, we must remain aware of the fact that focusing on the small scale implementation of VLE reveals important factors, but unless the wider issues are addressed, the ability of traditional HE institutions to respond to any opportunities or threats that VLEs pose for these institutions will be inhibited. We summarise issues that were derived from the pilot experimentation and that warrant further investigation in order to develop an implementation policy for mainstream learning activities:

a) Issues regarding the mediation system (the capabilities and limits of VLE themselves):
- The capability of the new technologies to deliver the quality of service that the actors require.
- The optimal scale of the innovation: is it to be the whole institution or does it involve just the work of one tutor or what?
- The best rate and pace of change and transformation (how soon will we introduce it, over what period of time, how will it grow?)
- The quality of the education or training delivered.

b) Issues arising from the management and governance of Higher Education:
- What are the rules and regulations regarding the delivery and award of degrees etc. that an institution can offer?
- Are there limitations to do with time, attendance etc.?
- What are the rules governing external accountability?
- Are there limitations on the financial structures which determine the running of courses?
- Are there laws, pertaining to the organisation of education, that apply?
- Are there laws/government policy that encourage the development of VLEs?
- Is there government inducement to encourage participation in developing VLEs?
- Is there other legislative activity which makes "some form of change" necessary?
- Is there other financial activity or inducement that makes "some form of change" necessary?
- Are there issues in the style and contracts of employment of University staff which enable/inhibit change?

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Finally, the research looked into **cross-cultural issues** that arise when implementing VLEs that involve co-operation between institutions, teachers and learners belonging to different cultural and/or linguistic environments.

Indeed, a strong feature of VLEs is their potential (technology wise) to operate at an international and even at a global level. VLEs allow institutions to extend their reach beyond local and national geographical borders. However, it deserves mentioning here that most of the cases studied did not optimise on the advantage of this challenging possibility. The element of collaboration turned out to be stronger at the intra and inter university (national) level than it is at the European level (independent of whether it is university-university or university-industry collaboration). It seems that it is only upon a level of maturation – one could call it the "post pilot study phase" - that some of these initiatives envisage the establishment of collaboration with other European and international institutions and markets.

Clearly however, the presence of an international component in the virtual learning environment asks for appropriate tools, methodologies and management. The IVETTE cases addressing cross-cultural audiences identified that international VLE activities demonstrate problems of legal and economic nature as well as problems that emerge from the differences in the learning patrimonies of the audiences. It was also observed that the implementation of virtual courses depends heavily on the financial situation. Since the course offer is not limited to students of the particular university, the sharing of cost for the other has to be discussed. Although high international participation lifts the quality level, limitation of participant numbers have to be considered, and also the question of where to find additional resources. The discussion of on-line courses, and consequently the 'virtual university', automatically touches the ongoing discussion within the societies of some countries on how education should be financed and accredited.

The issues of **language** and **cultural differences** constitute perhaps the two most important elements for consideration. Indeed, one of the main characteristics of the European continent is its linguistic and/or cultural diversity. This diversity should be taken into account in any educational and training programme that is organised in each European country or Europe-wide.

Although there have been legislative resolutions referring to cultural diversity at the level of the member-states and Europe, we observe that these have not been embraced by the educational policies of national educational authorities.

This fact gives rise to a number of questions, such as:

1. Is it necessary for the relevant European bodies to formulate further more strongly worded supplementary resolutions and recommendations to national governments referring to the necessity of implementing concrete measures in the field of intercultural approaches in their educational and training system? Also, should these resolutions and recommendations contain some concrete measures that will facilitate their implementation in the various member-states of the European Union?

2. Is it really of crucial importance for the various member-states of the European Union to take the necessary measures which will allow them to immediately implement already existing and forthcoming recommendations of the relevant European bodies (such as the European Commission, the European Parliament, the Council of Europe etc.) referring to the intercultural approach in education and training? If this is the case, why have they not been implemented so far? In this respect is it not the responsibility of the national Ministries of Education, the national educational institutions or public opinion? Furthermore, will the implementation of the intercultural approach in education and training have some serious negative consequences for the education of the majority of the learners in the national educational systems, i.e. the learners who do not belong to the linguistic and/or cultural minorities?

Educational and training programmes organised on a Trans-European (or Pan-European) scale by various European institutions, organisations and enterprises, mainly with the use of VLE, face intercultural problems related to: the calendar and curriculum of the course, the methodologies to be used for overcoming the language barrier problem, the methodologies to be used for enhancing the intercultural communication among tutors and learners and the design and production of the learning materials for the course. This gives rise to a number of questions, such as:

i. Which methodologies should be used, in order to overcome the language barrier problem?

ii. Which methodologies should be used, in order to enhance the intercultural communication among tutors and learners?
iii. Which methodologies should be used for the most cost-effective design and production of the learning materials to be used in these programmes?

iv. Which special measures should be taken when fixing the calendar and/or the syllabus of these programmes?

It is our hope that the above analyses, laying bare a series of interesting and challenging issues to take into account in the further discourse on VLEs in higher education, will elicit a stimulating and fruitful exchange of ideas during IFETS discussion. Although the cases we have been analysed belong to the European context, we think that the constellation of issues apply to other countries around the world. We encourage you to share your opinions and experiences in IFETS discussion.

Discussion

Summarising the questions for discussion, we will like to schedule this discussion in three phases, each one concentrating in one of the main issues we tackle in this paper. This does not mean that you can discuss the issues separately. In fact we propose to look for a holistic view of the problems and solutions of implementing virtual learning environments in traditional higher education institutions; We encourage you to look for synergies among the thematic areas proposed. Among others you can consider, we pose the following questions for discussion:

1st. Phase: Teaching and learning issues

- What are the new strategies and methods applied for teaching in VLEs?
- What are the new “soft” and “hard” skills tutors/lecturers need in multidimensional and inter-cultural VLEs?
- What are the best assessment methods in VLEs?
- How do we manage lecturers’ overload in VLE?
- Can we think on the emergency of a new conception of learning materials in VLE?

2nd. Phase: Institutional issues

- Is there a need for additional valid research so as to establish which elements/issues are to be considered justifiable reasons for avoiding VLEs, preferably broken up into nature and type of learning context, and on the other hand to determine where avoidance behaviour is based on erratic perception or beliefs and reasons that can easily be overcome?
- Should the relevant national bodies engage in efforts to overcome and lessen resistance?
- What are the institutional perspectives to the undertaking of VLE implementation?
- What are the factors that led institutions to consider using VLE?
- Do all institutions regard VLE as the best approach to meet social and in some cases market needs?
- What type of networks/collaborations are being formed for VLE undertaking?
- What type of institutional change is being sought?
- What is the management approach to institutional change?

3rd. Phase: Cross-cultural issues.

- Which methodologies should be used, in order to overcome the language barrier problem?
- Which methodologies should be used, in order to enhance the intercultural communication among tutors and learners?
- Which methodologies should be used for the most cost-effective design and production of the learning materials to be used in these programmes?
- Which special measures should be taken when fixing the calendar and/or the syllabus of these programmes?

Post-discussion summary

The discussion on “Implementing Virtual Learning Environments: Looking for Holistic Approach” took place on May 29th till June 14th. Following the discussion proposed plan, we divide this summary by the themes related to the three discussion areas: teaching/learning, cross-cultural, institutional issues in VLE.
Why Higher education institutions are planning VLEs?

L. Mavridis points out that the implementation of the Virtual Learning Environments (VLE) was not a decision taken by some people who were just interested in introducing changes or innovation in the existing educational policy. This was, on the contrary, the necessary response of the existing educational system to new, urgent and very fundamental societal needs. He justify this statement by the following arguments:

1. One of the main characteristics of the traditional face-to-face educational system is the necessity for the learners to be physically present in the classroom (PLE) during the educational process.

2. This necessary condition creates very serious disadvantages: Numerous citizens cannot fulfil the condition of physical presence in the classroom for various reasons: because of health, family, economic, professional problems etc. Therefore, these citizens cannot benefit from the traditional face-to-face educational system, both for their initial as well as for their continuing educational and training and lifelong learning.

3. Contemporary societies, however, cannot afford any more this exclusion: They are obliged to make the best possible utilization of the totality of their human resources for their economic, technological, scientific and cultural development. Therefore, the need for a solution which would enable this disadvantaged group of citizens to make the best possible use of the educational system for their initial and continuing education and training and lifelong learning. This can be done effectively only with the modern methods of Flexible and Distance Learning, i.e. with the utilization of the Virtual Learning Environments (VLE).

4. There is another very important reason, which makes also necessary the widest possible utilization of the VLE in the continuing education and training and lifelong learning: Science and technology are changing very rapidly in the last decades. A high percentage of the knowledge that students acquire during their studies in the tertiary education institutions is not any more useful for their professional activities a few years after their graduation. Therefore, there is an urgent need for systematic and intensive continuing education and training of the workforce in all industrial societies. As an example we could mention that U.S. enterprises spend yearly 80 billion U.S. dollars for the continuing education and training of their staff. This amount is equal to the total annual budget of all U.S. universities. In other words the U.S. spend the same amount of money for the continuing education and training as for the initial education and training of their citizens. The corresponding figure for the continuing education and training in Europe is much smaller: hence, the great difficulties of the European industry to become competitive with the American and Japanese ones. The problem is how we can respond to this ever-increasing need for continuing education and training of the workforce. It is obvious, that this cannot be done with the traditional face-to-face education and training institutions.

The staff members of the enterprises cannot leave every year or so their home and workplace, in order to follow face-to-face continuing education and training programmes in the traditional educational institutions. Hence, the need for the widest possible utilization of the modern methods of Flexible and Distance Learning and the VLE.

5. The implementation of the Information Society creates another important need for the use of VLE. It is well known, that one of the main characteristics of the labour market in the Information Society is the need for flexibility of the workforce and adaptability of the enterprises: The members of the workforce will be obliged to change two times or even more their professional orientation during their career. Hence, the need for professional reorientation of a high percentage of the workforce. Again the traditional face-to-face institutions cannot respond to this need. This can be done in a cost-effective way only with the modern methods of Flexible and Distance Learning, i.e. with the utilization of VLE.

From the above discussion it becomes evident, that the implementation of VLE is not a free choice of some educators who were interested in introducing educational policy changes, but rather the necessary response of the educational system of the industrial societies to new, urgent and very fundamental needs of these societies. This does not mean, however, that we should not try to increase as soon as possible and as much as possible the cost-effectiveness of the VLE.

Models of Implementation of VLE

A. Holzl suggests a systems model for a holistic approach to the implementation of virtual learning environments into any organisation, but here restricted to universities. His model draws on the metaphor of the "fire triangle". The fire triangle is made up of three sides, or elements. They are fuel, oxygen and a heat source. Without any one of these elements the fire cannot start nor continue. His triangle for implementing virtual learning environments (or any new learning technologies for that matter) consists of 1. infrastructure, 2. training and development and 3. organisational culture. In the case of the VLE, the infrastructure is the IT hardware and software which provides access to the staff and students which have to create/access the environments. The
training and development also includes staff and students to ensure they have the appropriate levels of information literacy. The final and most important and the one always ignored is the organisational culture which includes the policies, attitudes and personal models of learning, organisational climate, staff rewards, assessment and grading systems, etc. All those elements which either reward and encourage staff and students for implementing/using VLEs or create barriers and punish them for participating. Many universities around the world invest heavily in the first two while doing nothing about the last one. In fact they often invest heavily in creating barriers and punishing the participants through outdated and repressive policies which foster research over teaching.

Like the fire triangle, the implementation of VLEs will not succeed without an equal, integrated and coordinated investment in all three of the elements of the model proposed. This is an OD or organisational development approach and although all universities have a staff development department, how many have an OD Department or even recognise that the need for such a function exists or is required? The irony is that OD is defined as the function which assists organisations to cope with change and universities around the world are undergoing the most dramatic changes since the concept of the traditional bricks and mortar university was first born.

L. Bertuzzi has been using a similar approach in non-academic contexts, while impersonating the role of an industrial spin-off entrepreneur for over three years. His model draws on a SELF-LEARNING work experience, as systems and user support analyst, in a number of infrastructure organizations, established by European research endeavours in different disciplines. After that experience he tried to export its worth to an ICT industry working environment and to an international ICT standardization expert group. A number of "Unrecoverable Fatal Errors" guided him to the present role of (still "tentative" and "unrecoverable error prone") contributor to a European RTD and Demonstration Programme on Promotion of Innovation and Encouragement of SME Participation.

In his conceptual framework the three elements mentioned by A. Holzl are in this case
1. what - matches well with the "1" (resource management process)
2. with whom - can be related to the "2" (self-learning process)
3. how - matches well with the "3" (objective sharing process)

With respect to organisational culture, when business objective achievements become increasingly affected by the ability to use technology, the prevailing organisational cultures seem to miss the importance of "sharing" the "what" process, i.e.: they fail to see the importance of making the "how" process and the "what" process dependent from a BALANCED "with whom" process.

Luigi recognises the need for the OD, the organisational development approach. This is a problematic area where an "implementor" (techie/digital) mentality and a "business" (not so techie/analogic) mentality seem to be divided by some sort of cross-cultural barrier.

Teaching/Learning themes

The main themes emerging of the discussion were as follows:

Theoretical models

O. Liber mention a report about VLE commissioned by the UK's Universities Funding Councils' Joint Information Systems Committee (JISC). In this report (http://www.jtap.ac.uk/reports/word/jtap-041.doc) they sought to make use of two models as a means to evaluate so-called virtual learning environments. The first was our interpretation of Diana Laurillard's Conversational Model, concerned with elaborating how conversational interactions underpin academic learning; and the second was Beer's Viable System Model, which they use to expose the "management of complexity" issues involved when teachers organise the learning experiences of multiple learners.

For E. Flescher, VLE are in a virtual simulation mode. He ventures to say that VLEs can help: (1) assess how well students know a topic; (2) provide for additional avenues of discussions about the topics and subjects; (3) have students use higher level thinking skills in a different context; (4) practice basic thinking skills and apply knowledge; (5) can challenge the student beyond being "just engaged" with technology.
For a critical look at various 'learning' and sharing environments: BlackBoard, WebCT and BSCW, see

See also:
http://www.karisable.com/virtualcampus.htm

New skills for VLE

The discussion about "soft" and "hard" skills tutors in VLE might need, brought the opportunity to reflect on
what are the skills needed in VLE. Phil Harrison suggest by hard skills those relating to the operation of any
technology, new or old, (e.g. the use of a program that assists in holding virtual meetings, like NetMeeting, or
hardware such as a Web cam), and by soft skills we mean skills that involve the manipulation of ideas, e.g. the
ability to moderate a group discussion. Nevertheless, E. Flescher venture that the top skills are not necessarily
the "soft" ones, but the "hard" ones.

For phil@computermaster.com, when we say "hard" we mean something that is well-defined and capable of
unambiguous testing. Clearly any technical effort (such as operation of machinery) falls into this category, but so
do unambiguous management processes, such as accounting. The output from such processes can be predicted
based on the inputs and the rules. "Soft" skills, on the other hand, do not rest on rigid rule systems or technical
operating manuals and we are therefore inclined to give them "soft" or flexible boundaries within which to judge
their efficacy.

M. Owen mentions that talking about “hard” and “soft” skills is a historic use of language which clearly derive
from "hardware and software". This dichotomy makes some assumptions about the locus of "thinking" and the
case with which we can dichotomise the ability to physically manipulate a tool and our ability to understand how
the tool is applied. "When pencils are unavailable, not many people write". Even in software design we have had
typologies where a "rationalist" deconstruction of tasks have been applied as the "classical" method of systems
analysis. E. Mumford (see http://www.aisnet.org/award/leo99.shtml#mumford ) in contrast produced a soft
systems approach ETHICS: using technology as though people mattered.

In more recent writing we have the work of B. Nerdi and others (who also draw on CHAT). An easily accessible
source in Nardi & O'Day "Information Ecologies: Using Technology with Heart" MIT Press , although "Context
and Consciousness : Activity Theory and Human-Computer Interaction " provides more practical advice. Both
Mumford and Nardi present work which contrasts with "positivistic" computer science and provides a bridge
between the discussion on the introduction of VLE's and the nature of "understanding" elsewhere in the list.

Talking specifically about new teaching skills, L. Ambrose comment that moderating/facilitating is one of the
new soft skills required in a virtual learning environment and speaking from experience, Lyn understands how
you feel when the discussion "appears" to be slow. It isn't easy to measure success and as moderators we “worry”
when discussion is slow or digresses. A research paper "Keeping Online Asynchronous Discussions on Topic"
by B. P. Beaudin PhD, Colorado State University can be found at :
http://www.aln.org/alnweb/journal/Vol3_issue2/beaudin.htm
This paper is a valuable learning tool as a "new" moderator.

Taken from her experience, J. Nowak suggest the following skills needed for tutors:
1. know and understand the philosophy of distance education by finish some course concerning that
   matters and do a Virtual course as a student before you become a tutor.
2. take part in course designing
3. be excellent at using different virtual teaching and learning software
4. be able to communicate with students using new IT (information technologies)
5. react very fast and properly, and do everything to helping students to complete their studies.

J. McLaughlin points out that VLE can be adequate for certain topics (needing different skills, not for all
students (Different learners react negatively to certain environments and this can adversely affect learning).
Perhaps the students of today who have used computers since preschool will be more comfortable with VLE's.
The VLE design for those already in the workforce perhaps should be different.
Tutors and lecturers overload

With respect to managing lecturers' overload in VLE, L. Ambrose suggest that is an easy one to answer. Recognising and acknowledging the overload is the first step towards managing it. Online support personnel need to keep details of all time they spend supporting online learning. Without data there is no case to put to management. We are not managing teachers overload very well. If we want to use the interactive "potential" of VLE, the only way of doing it is by reducing the amount of courses and students.

M. Harrsch suggests one technical approach to managing the volume of student queries in a virtual learning environment is to view the instructor's knowledge as an expert system and develop tools to capture and dispense the expert knowledge without depending solely on one-on-one contact with the instructor. Some of our instructors have developed online FAQ lists similar to those used by technology companies. Adding a search function further enhances the value of this device. Developing a virtual assistant with artificial intelligence software is another approach that combines both a knowledgebase and search function with a natural language interface and graphics that will not only provide the information students require but engage them in a conversational way providing the illusion of a personal dynamic (See http://128.223.24.66:1035/) for answering questions about research and academic programs. According to Mary this type of assistant could be easily customized to provide answers from a specific body of content. A properly designed agent could "read" e-mail and extract key phrases which could then be used to query the knowledge base and retrieve and e-mail an appropriate response without instructor intervention.

New teaching methods and new learning materials applied for in VLEs

With respect to design of materials A. Bork (University of California – Irvine) suggests that it is a serious mistake to use multiple choice in computer learning material, (including Web-based VLE). So it is a waste of resources, and powerful languages, to "program" them - it has been done many times, and always leads to inferior learning material. This is reinventing an inferior wheel. It is better to develop computer learning programs based on free-form student input - we ask English questions (other languages in other countries), accept English answers, and react reasonably to them. They resemble a conversation with a skilled tutor and a student. This is a human form of interacting with the world, while multiple choice (multiple guess) is not. Only in this way can you find and help with individual student problems, and so assure that all students will learn.. Such highly interactive material also maintains student interests for long times. This was possible on much weaker computers than we have today. More details are in the papers at http://www.ics.uci.edu/~bork

J. Sancho thinks that she has not seen any genuine strategies and methods specifically developed or created for VLEs. What she has seen is that people tend to transfer the way they think is the is "better" to teach into the new way of delivery. Most VLE are developed under the same pedagogical assumptions that face to face teaching. The only difference is that students have to read the stuff instead of listening to it. Nevertheless, in many VLEs that use videoconferencing, the "traditional" model can be even reinforced. On the other hand, any conceptualization of learning materials in VLE (or any kind of teaching milieu) need a deep reconceptualization of knowledge and its representation.

Does VLEs make significant improvements with respect to traditional face-to-face environments?

P. Cohen suggests that if school kids are currently learning with these techniques (and currently not all are), how will they feel when they go to a traditional university environment and encounter the traditional teaching methods? He would venture to say that these three core skills underpin current Knowledge Management/Organisational learning strategies as well, which are a key driver of sustainable competitive advantage in the new knowledge economy. Familiarity with distance based synchronous / asynchronous conferencing tools is now a core skill for project based work in the global economy of today, whatever the industry. They are not a replacement for F2F, but like any technological innovation allows us as a species to extend our operational capabilities, hopefully in positive directions.

L. Hunter points out that VLE, or any other of the emerging educational technologies we are exploring now, needs to be seen primarily as a medium we can all manifest our educational wisdom and skill, and at the same time benefit from, tap into and self-reflect via each others' easily accessible practice. In her experience in CALL Lab (second language learning); she feels the need for a fundamental learner-mentor relationship being at the very center of instructional design.

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L. Ambrose points out that VLE learning doesn't necessarily have to take place through a structured learning program. Lyn is currently moderating an "Online Network" (community of online practice) with a view to sharing knowledge and experiences with each other participants.

Cross-cultural issues

In catering for cultural diversity in VLE, M. Labour prevents against ghettoising people and overstretching resources, and thus creating an inefficient disempowering systems. As to Cross-cultural issues concern, in experimenting with e-mail partnerships between learners from different cultures (in the field of language learning), he recommends partners to negotiate with each other on how they wish to communicate, recommending that partners write in their own language and in the language of the other.

Which methodologies should be used in order to overcome the language barrier problem, and promoting intercultural communication?

P. Cohen suggests to see:

http://www.att.virtualclassroom.org/VC99_E/about/1A.html which relates to J. McLaughlin's point about the children of today being more comfortable with the VLE concept (see also http://www.learningnetwork.com/Dimensions2008/Dimensions2008e.htm). From this article, he quotes: "The VC99 vision (The VC99 competition paired up teams of three schools located in different countries to collaborate on a website) is to empower, enable and connect students around the world using Internet technology. It aims to teach students three essential skills they will need in the 21st century: Cross Cultural Communication Skills, Collaboration (teamwork) and computer skills."

B. Trayner wonder if this kind of question isn't too simple, implying that there are some possible universal solutions to definable problems? Language and intercultural communication are not elements in themselves. Rather, they represent value systems, mindsets and politics at every level from the micro and local to the macro and international. Her approach should be less about having to "overcome" problems and "promote" solutions and more with concerning ourselves with the ongoing process of developing integrated approaches to learning and communication. Interesting and relevant is Wenger's analysis (1998) which places identity and the negotiation of meaning as the primary focus of learning, the dynamics of which become much more complex when talking about international learning communities.

For this participant the question would be this: What happens when participants with different first languages coming from numerous different contexts, and with different historic, socio-cultural and professional identities, meet for moments of a learning experience where they will be negotiating meaning that will become further material for creating their ongoing identity? She see an international learning project as involving new relations of identification, new forms of membership and ownership of meaning and thus changing positions within communities. This clearly needs careful consideration and planning if it is to include all types of students from different cultural learning backgrounds.

Her initial suggestions for going about this are partly practical and partly about developing an approach to course design which considers these factors:

1. View language and intercultural issues as an integral and dynamic part of the whole learning process and not as something separate or add-on representing different methodologies and approaches.
2. View language and intercultural issues as identity factors representing the socio-educational contexts of the course participants which will be interacting and changing throughout a course.
3. View language and intercultural issues as important factors in the ongoing process of negotiating meaning throughout the course.
4. Value and include participants' socio-cultural and educational identities and histories in the course trajectory. The methodologies and approaches that people are accustomed to will help shape their interpretation of and performance on the course. How people have learned will affect what they learn. This needs to be acknowledged (and reflected on).
5. Be very explicit about all parts of the learning process and structure regular reflection about it. Never assume that understanding the words means that someone understands the conceptual thinking behind them.
6. Structure reflection about international and intercultural communication throughout the course. As an example of it an online Education and Training course with the University of London, some of the participants developed some international communication guidelines. An example of one of the guidelines was that native English speakers should use more English Latinate vocabulary (rather than phrasal verbs) which are generally more accessible. Another example was that non-English speakers should consider using translations of key words in the text to give an international dimension to the meaning and to include a different perspective. There was very positive reflection on the process of working out these guidelines by all the participants involved who came from a number of different countries.

7. Consider pre-course language tests to alert students to possible difficulties in participating in the types of discourse of online learning discussions.

8. Account for and make explicit the different discourses (and from different cultures) of a wide range of communities of practice.

Institutional issues

With respect to institutional issues, diffusion of VLE is a concern. Diffusion of new e-learning strategies/technologies in traditional research institutions that also have extensive teaching programs, Paul Cohen suggest that is already severely constrained by the current culture/mindset of the individuals and the institution, despite the fact that they may produce better learning outcomes for the students. Unless e-learning strategies enhance the teaching/research/consulting triad in a scalable manner, the diffusion rate will be low. Possible solutions? Professional development programs and overt institutional support structures.

M.Barajas adds that there is a new status for "research in teaching" (although never higher than "traditional research") emerging in Universities; this can help the diffusion of VLE innovations. It is necessary to break the typical professor's profile of being a very good lecturer working individually. Including in in VLE teams well known professors, and not only new "innovative" staff can help diffusion. Promotion of team work is then a good institutional approach to avoid "academic exclusion" in VLE.

For M. Betz, the building of VLE's, as alluded to above, forces the inclusion of expertise from several different areas: pedagogy, instructional design, software authorship, hardware configuration, networking capabilities, and administration tasks related to enrolment, billing, and crediting. A complete infrastructure must evolve in order for this apparent paradigm shift to succeed. In a few words, Universities need to decide strategically if they want to get involved seriously in VLE, they might need an strategic plan.

These are partly in accord with the IVETTE project outcomes, according to M. Owen. What is clear is that the existing division of labour in traditional Universities is not appropriate for virtual learning environments. As much work in VLE is done as pilot/development/research projects, the additional funding to support such activity creates a new employment structure on a temporary basis to sustain VLE. However in many institutions this is not institutionalised. Typically a new unit may be established to facilitate the development of VLE's, however the role of such a unit in institutional power structure, and the accessibility of such a unit to every/any academic (for innumerable reasons) may be problematic.

The notion we can produce "accomplished individuals" as a solution to the "problem" however is something M. Owen have difficulty with. It solves an issue of fitting the current division of labour in universities where the "lone academic" has responsibility for his/her series of lectures. However this in itself may well be an undesirable state of affairs. The UK Open University has from its inception has always worked on a model of the "course team" without compromising on the integrity of the academic and their "freedom".

The three correspondents all see a need for a link between ability to understand the "mechanics" of the medium, subject knowledge and effective pedagogical skills. These can exist within teams, however the teams need some common language to build meanings (and VLE's) together.

Furthermore, universities are socially, historically and politically constructed institutions, so using micro measure (such as the learning gains of individual learners in pre- and post tests) tells us very little about why VLE succeeds or fails because so many of the ecological factors that influence outcomes are not in the "intramental" activity of learners. In a few words, for the design of VLEs we need frameworks of analysis which set the learner in the total social and cultural context in which they are operating.
P. Cohen comments that there are a number of issues that can be extracted from this article in relation to VLE's and traditional institutions:

Commercial providers swimming upstream to target traditional (eg: MBA courses) via content partnerships with traditional institutions.
- Work/Study integration and time constraints thus imposed
- Use of Problem based learning via simulations
- Optimal class sizes for VLE
- Resource based learning approach
- Move to coaching/facilitating role of lecturer
- replication of the social dimension of learning into the VLE
- Technology infrastructure (broadband, video etc)
- Student click stream analysis for feedback/coaching
- Tutor/Instructor work analysis for quality control
- Cross cultural issues
- accessibility issues

With respect to types of networks/collaborations models are being formed among Higher Education institutions for VLE undertaking, he suggests to see:


in which it is detailed one model, which has similarities to the www.unext.com mentioned in a previous post.

For an interesting discussion of some of the barriers to the implementation of VLE's in the Asian context, M. Peterson suggest to take a look at the following article by E. Brumby:

http://www.nime.ac.jp/conf99/pre/Brumby.paper/Brumby.html

Other information out of the discussion

For a Taxonomy of on-line courses, M. Hennington suggests: The book is published by LERN Books, a division of the Learning Resources Network, P.O. Box 9, River Falls, Wisconsin 54022, USA. The ISBN # is 1-57722-016-1

Technical information sites suggested:

First check out this background report, then see the rest of the links.

Using the Internet for Primary Research Data Collection:


Response-O-Matic Home Page:

http://www.response-o-matic.com/

SurveySuite:

http://intercom.virginia.edu/cgi-bin/cgiwrap/intercom/SurveySuite/ss_index.pl

Wilhelmsen Marketing Services:

http://www.wilhelmsen.com/

Q&D Software Development -- Home of COM-Gen 2000, WebForms, and WebMania!:

http://www.q-d.com/

WebForms - HTML forms generator by Q&D Software Development:

http://www.q-d.com/wf.htm

Harvillo's Finest HTML Help:

http://www.pdcdesign.com/harvillo/

WebJump -- Webmaster Resources -- Tutorials:

Professional Web Design & HTML Tutorials:
http://junior.apk.net/~jbarta/

Welcome to INFOMINE: Scholarly Internet Resource Collections:
http://infomine.ucr.edu/

Designing an Accessible World:
http://parallel.park.org/Guests/Trace/pavilion/world.htm

Perl Scripts:
http://cgi.resourceindex.com/Programs_and_Scripts/Perl/Tests_and_Quizes/

Web / Authoring / HTML / Editors - WebReference.com:
http://www.webreference.com/authoring/languages/html/editors.html

Knnetweaver.org:
http://www.knownetweaver.org/

Allaire: HomeSite
http://www.allaire.com/products/homesite/

Macromedia
http://www.macromedia.com/software/dreamweaver/index_flash_movie.html

Flash authoring tool that allows users with little or no experience to create their own animations and illustrations for websites.

http://web.uvic.ca/hrd/halfbaked/

Learning Resources Network.
http://www.LERN.org

Tools to develop intelligent agents:
http://www.nqlsolutions.com/ by NQL solutions

Adaptive Learning discussion list:
Go to: http://www.trainingplace.com/source/adaptive.html