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Student Mobility and ICT: Can E-LEARNING overcome barriers of Life-Long learning?

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Description of Practices of Knowledge Gaps and Preparatory Knowledge; Dealing with Mathematics
Link-up Module on Mathematics for VWO-6 students

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Abstract: The link-up course was a cooperative venture between the Dalton1 secondary school and the Faculty of Economics and Business, as part of the SURF2 Project "Webspijkeren 23". During the project, the course was offered twice in two years, the last time from November 2007 – April 2008 for 29 students of the VWO4-6 class. After this period, the students prepared for their final school exams.
The course was meant to be a contribution to smoothly link up the move from the secondary school to an academic education, with a special focus on mathematics. For this course a special Electronic Learning Environment (ELE) was prepared (at the UvA, the Blackboard ELE is used), and the faculty's ICT department made accounts available for the Dalton pupils and their teachers. Via Blackboard, the software program Maple TA was used for the module. A take-off meeting was organized at the faculty. During this meeting, students worked in the interactive classroom and familiarized themselves with the ELE Blackboard system and the working of the Maple TA assignments program.
The content of the course was related to the basic topics of mathematics that are required to pass the school exam. These topics are also expected to be mastered by the students as preliminary knowledge when starting the universities programmes. Objectives were to develop mathematic skills and logic without using a calculator. During every school week, the students made assignments and they received feedback from the lecturers of the faculty, via the Blackboard tools, in concerted action with the schoolteachers of Dalton school, face-to-face, during classes and seminars. Students who choose to study Economics at the UvA will get a partly exemption for the first-year course Mathematics 1. At their own school, they will get one point extra for the worst result obtained during their mathematics school tests (not the final exam), on condition that they have managed to pass 80% of the assignments in the link-up module. The outcome of the module will be discussed and described later, when the results of the final school exams are available.

A first evaluation led to the following preliminary conclusions:

- There should be more discussion between VWO secondary schools and the universities on content and skills.
- In that case, deficiencies can be dealt with in an early stage. At this moment, a political discussion on this topic is going on within the Ministry of Education and Science.
- It remains necessary to continue these projects at least for the next years.
- All involved felt that the module was too short.

Therefore, it is recommended to have this module during the entire 6th study-year, parallel with the school programme. The course is meant to be a format for all schools working with the Dalton system in the Netherlands. The model will be added to the models of remedial teaching scenario's

1 DALTON International http://www.daltoninternational.org/ (accessed July 2008)
2 SURFfoundation http://www.surffoundation.nl/ (accessed July 2008)
3 Web-spijkeren 2 http://www.web-spijkeren2.nl/ (accessed July 2008)
4 VWO stands for preparatory academic education and is the highest level of the Dutch secondary school system developed by Wieland et al. (2007) during the Project Webspijkeren 1 5 and published in "Tijdschrift voor Hoger Onderwijs6".

Instructional Support for Learning with Computer Simulations about the “Ecosystem Water”

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Abstract: Computer simulations reconstruct processes or dynamics in a particular system. They offer learners access to experiments that are often difficult to carry out in the classroom. However, for successful knowledge acquisition with computer simulations instructional support is needed, as learning with computer simulations does not typically result in the desired learning outcomes. The main objective of our project “SimInstrukt” (funded by the Deutsche Forschungsgemeinschaft) is to answer the question which kinds of instructional support may improve knowledge acquisition, particularly learning principles in biology, when working with computer simulations. Therefore a computer program on the topic “ecosystem water” containing a computer simulation was designed and particular instructional measures concerning data interpretation and self-regulation were developed and tested with students (N=61) in a pre-/post-test and a 3x2-factoriel design. The students had no academic previous knowledge regarding the topic mentioned above. The study was carried out once in classrooms with 8th graders. Students had to work on four different tasks according to the Inquiry Cycle with the aid of the computer simulation within a processing time of 90 minutes. The computer program recorded logfiles while students worked with the software. For supporting data interpretation two measures were used as there are 1) the explanatory statement for the simulation result was given by the computer program and 2) the students were asked to describe and interpret their results themselves. For supporting self-regulation prompts and a reflective assessment integrated in the computer program were used as instructional measures. After students had worked with the computer program they were asked to reflect their own inquiry. The effectiveness of these instructional measures on students´ learning outcome (factual, procedural, conceptual and intuitive knowledge), the ability to work in a learning environment that offers a high degree for self-control and the ability to interpret experimental data is investigated in a second study (work in progress). The data of this study are raised in an experimental setting using a 3x2-factorial and follow up design with pre- and post-tests. Results of the two studies will be shown and discussed. Pre- and post-tests used in the first study revealed a general knowledge increase on the topic “ecosystem water”; especially factual and intuitive knowledge increased significantly. However, analysis of variance yielded no significant differences on instructional measures and learning outcomes. Concerning data interpretation, highest amounts in the post-tests were achieved when students interpreted their own simulation outcome. Moreover, mean values of the post-test indicate that reflective assessment appears to be hindering for acquiring knowledge. The small amount of time, especially for students describing and interpreting their simulation outcome as well as reflecting additionally their learning process appears to be a reason for these results. Logfiles indicate that no student used the possibility to reflect the own learning process properly. When students were asked to justify their simulation outcome this appears to be improving factual and conceptual knowledge.

Remediating Summer Classes and Diagnostic Entry Assessment in Mathematics to Ease the Transition from High School to University

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Abstract: This contribution describes a program to ease the transition from high school to college, and to improve the success rates in the first year of bachelor studies. The program, implemented in two university studies with a strongly diverse inflow of mostly international students, consists of the administration of a math entry test and the organisation of voluntary bridging education in the format of a summer school. Investigation of the effectiveness of the program requires an extensive research design, to offset potential selection effect caused by voluntary participation. The contribution will focus both on the description of the remediation program, and the investigation into its effectiveness.

Introduction

Remedial teaching has a long tradition in terms of helping underprepared students bridging the gap between high school and college. Of more recent date are remedial courses aiming at a different group of prospective students: students entering bachelor programs with a strong international focus. Those programs recruit students from a large variety of countries and as a consequence, educated in a large diversity of high school systems. International bachelor programs based in Europe provide excellent examples of university education build upon highly diverse trajectories of high school systems. Bridging different high school programs requires far more substantial remedial programs than the remediating underprepared students. But it is not only the size that is different: the combined impact of the need to offer bridging courses before the regular program starts, and the audience of those bridging courses to be highly international, has severe consequences on the mode of delivery of these bridging courses. On site face to face education would exclude many prospective students, so that for a summer course to be accessible for all, the delivery mode has to be based on distance learning.

In this contribution, we describe an example of such a bridging course aimed at international students. The bridging course aims to decrease heterogeneity in mathematics mastery of prospective students of the bachelor programs of the international schools for business and economics of the Maastricht University. Next to the description of the design of the bridging course, we will focus on our attempts to provide an assessment of the effectiveness of the bridging course that accounts for potential impacts of selection effects.

The Maastricht case: Internationalisation

In reviews of remedial programs existing in the United States and Europe (see Brants et al., 2008; Rienties et al., 2006), differences in focus are apparent. In the US, remediation aims at bridging the gap of underprepared high school students. In Europe, with large differences among and even within national secondary educational programs, remedial programs are primarily aim to offset large heterogeneity in mastery of knowledge and skills as the consequence of these curriculum differences. The Maastricht case is in that sense a typical European case. Located in a border region, at a short distance to one of Germany's major industrial areas, the Ruhr area, providing English language programs from the midst nineties, the Maastricht Business and Economics schools developed themselves into schools attracting large amounts of German students.

Dutch and German secondary school systems exhibit major differences, both with regard to school subjects, and with regard to examination. In German language school systems, the subject mathematics is typically offered at two different levels: basic level or 'Grundkurs', and advanced level or 'Leistungskurs'. In German school systems, education and examination in the last phase of the program is focussing on four subjects ('Abitur'), with two subjects educated at advanced level, Leistungskurs, and two subjects educated

at basic level, Grundkurs. As a consequence, three different situations exist for students in German language school systems with regard to their math education: Mathematics at advanced level, and making part of the Abitur (labelled as 'Leistungskurs'); mathematics at the basic level, and making part of the Abitur (labelled as 'GrundkInExam'); and mathematics at the basic level, but not making part of the Abitur (labelled as 'GrundkNotExam'). Especially this last group of students receives a restricted amount of math education in the final phase of secondary education.

Since all UM programs are English language and internationally oriented, both the Business and the Economics School attract a relatively large share of students educated in international high schools. Also in the International Baccalaureate (IB) high school system, the subject mathematics is offered at two different levels: HL, the advanced levels preparing for science (labelled as 'IBMathHL'), and SL, the basic level preparing for social sciences (labelled as 'IBMathSL') (a third level, StudiesSL, preparing for university studies that do not require mastery of mathematics, will be left outside consideration, since SL is the minimal prerequisite for getting access into the studies of economics and business). In the regular Dutch secondary school system, mathematics is offered at two levels, A and B, once again distinguishing the basic from the advanced level, with a further differentiation in sublevels 1 and 2. And again, the level A1 preparing for arts and humanities does not give access to business and economics programs, so that only three relevant levels of prior schooling of increasing level remain: A2, B1, and B12 (labelled as 'VWOA12', 'VWOB1', 'VWOB12'). The large majority of freshmen fall into one of these categories. All remaining students, being non-Dutch, non-German, and not having gone through an IB program, have been asked to qualify their prior schooling into one of the following types; math-major or math-minor (labelled as 'MathMajor' and 'MathMinor'). Figure 1 provides a decomposition of the 796 freshmen of academic year 07/08 that answered the questionnaire informing about prior mathematical schooling.

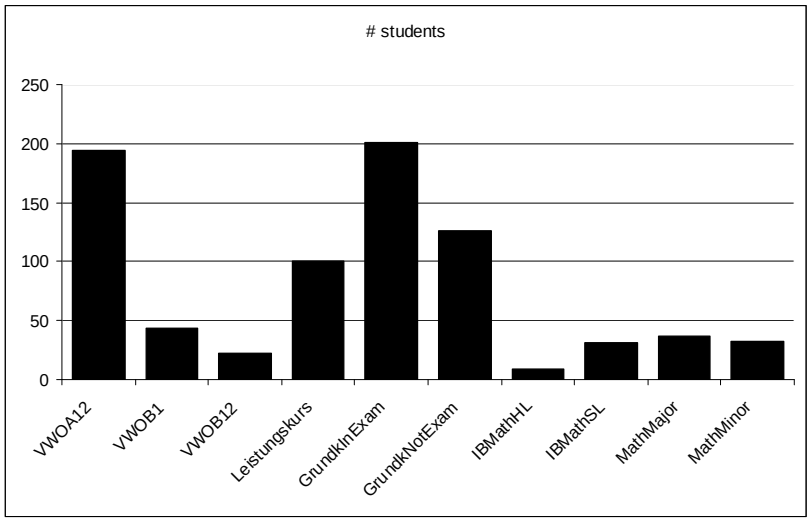

Figure 1. Decomposition of 07/08 freshmen with regard to prior math schooling.

Maastricht summer courses

To even out large differences in success rates in first year courses, especially courses in mathematics and statistics, caused by this huge diversity in prior schooling, the schools started offering optional bridging courses in the format of summer schools in the summer of 2004. To opt for optional summer course as the most appropriate format for bridging the gap between high school and university has several grounds.

- The huge size of the largest differences in prior math mastery requires a bridging course of considerable size: up to a workload of approximately 100 hours for students with the most basic forms of prior math schooling. This size is incomparable with that of most of the existing national bridging courses, which are quite often scheduled in three days of intensive teaching.

- For a bridging course of this size and the strong heterogeneity of students, adaptivity is crucial. Each student should be able to enter the course at the appropriate level.
- To achieve adaptivity, (repeated) diagnostic testing is crucial, and the ability to adapt learning materials to the individual outcomes of the diagnostic tests.
- The size of the bridging course, and the large variation in work load for students depending on their prior mastery, prevents offering such a bridging course 'in the gate' (that is: intra-curricular, during the first few weeks of the regular program), but forces it to offer 'before the gate' (that is: extra-curricular, during the summer the precedes the start of the regular program).
- Since participants of the bridging courses are (in large majority) international students, the bridging course cannot offered at site, but should be offered according the model of distance e-learning.
- Since the period of in which the summer course is offered is also occupied by holidays, jobs, and practical work, the format of the summer course should be very flexible: the summer course should be available over a relative long period (June, July, August), with a maximum of freedom for students to schedule their individual learning around other activities in that summer.

Based on all these grounds, it was decided to organize a bridging course around an existing adaptive, electronic tutorial: ALEKS. The tool makes use of server based computing, and can be characterised as supporting individual, distance learning; se next section for an elaboration.

The adaptive tutorial system ALEKS

The ALEKS system (see also Doignon & Falmagne, 1999; Falmange et al., 2004; Tempelaar et al., 2006) combines adaptive, diagnostic testing with an electronic learning & practice tutorial in several domains relevant for higher education. In addition, it provides lecturers an instructor module where students' progress can be monitored, educational standards can be adapted to a particular college, or course and other administrative tasks can be carried out. ALEKS is a commercial software product.

The ALEKS assessment module starts with an entry assessment in order to evaluate precisely a student's knowledge state for the given domain (e.g. College Algebra). Following this assessment, ALEKS delivers a graphic report analyzing the student's knowledge within all curricular areas for the relevant course, based on specified standards. The report also recommends concepts on which the student can begin working; by clicking on any of these concepts or items the student gains immediate access to the learning module.

Some key features of the assessment module are (see Figure 2 for a sample):

- All problems require that the student produce authentic input.
- All problems are algorithmically generated.
- Assessment questions are generated from a carefully-designed repertoire of items ensuring comprehensive coverage of the domain.
- The assessment is adaptive: the choice of each new question is based on the aggregate of responses to all previous questions. As a result, the student's knowledge state can be found by asking only a small subset of the possible questions (typically 15-25).
- Assessment results are always framed relative to specified educational standards. The system allows instructors to customize the standards used by their courses with a syllabus editor (part of the instructor module). Both the assessment and learning modules are automatically adapted to the chosen standards.

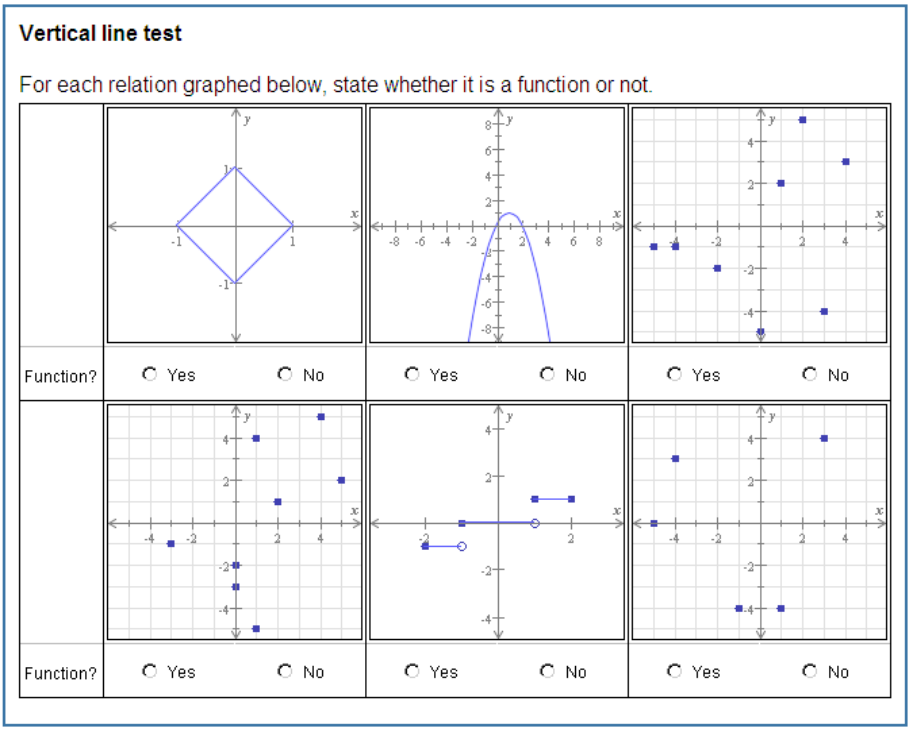

Figure 2. Sample of an ALEKS assessment item.

The learning report, of which Figure 3 shows part of, provides a detailed, graphic representation of the student's knowledge state by means of pie-charts divided into slices, each of which corresponds to an area of the syllabus. In the ALEKS system, the student's progress is shown by the proportion of the slice that is filled in by solid colour: if the slice is entirely filled in, the student has mastered that area, if it is two-thirds filled in, the student has mastered two thirds of the material, and so forth. Also, as the mouse is held over a given slice, a list is displayed of items within that area that the student is currently "ready to learn," as determined by the assessment. Clicking on any of these items gives access to the learning mode (beginning with the item chosen).

At the conclusion of the assessment ALEKS determines the concepts that the student is currently ready to learn, based on that student's current knowledge state. These new concepts are listed in the report, and the learning mode is initiated by clicking on any highlighted phrase representing a concept in the list. The focus of the learning mode is a sequence of problems to be solved by the student, representing a series of concepts to be mastered. The facilities offered by the learning mode are as follows:

- Practice (that is, the problems themselves);
- Explanations of concepts and procedures;
- Dictionary of technical terms;
- Calculator (adapted to the topic studied, e.g. in statistical items, a special "statistics calculator" is provided).

For example, a student working on a particular problem may "ask for" an explanation of that problem (by clicking on the button marked "Explain"). The explanation typically provides a short solution of the problem, with commentary. After reading the explanation(s), the student may return to "Practice" (by clicking on the button marked "Practice"), where she or he will be presented with another problem exemplifying the item or concept just illustrated. If the student is successful in solving the problem, the system will offer (usually) two or three more instances of the same item to make sure the student has mastered it. In the text of problems and explanations, certain technical terms such as "addition", "factor" and "square root" are highlighted. Clicking on any highlighted word or phrase will open the dictionary to a definition of the corresponding concept. The dictionary can also be used independently of the current problem to look up any term the student may be curious about. A graphing calculator is available for

computing and displaying geometrical figures in analytical geometry and calculus. Other, related features of the learning mode are Feedback, Progress monitoring, and Practice. Whenever the student attempts to solve a problem in the learning mode, the system responds to the input by saying whether or not the answer is correct and, if it is incorrect, what the student's error might have been. More generally, ALEKS follows the student's progress during each learning sequence, and will at times offer advice. For example, if a student has read the explanation of a problem a couple of times and yet continues to provide incorrect responses, ALEKS may suggest -- depending on the circumstances -- that the student looks up the definition of a certain word in the dictionary. ALEKS may also propose that the student temporarily abandon the problem at hand and work instead on a related but easier problem. The capacities of the ALEKS system to monitor and guide student learning is flexible and multi-faceted. When a student has demonstrated mastery of a particular item by repeatedly solving problems based on it, ALEKS will encourage the student to proceed to a new item.

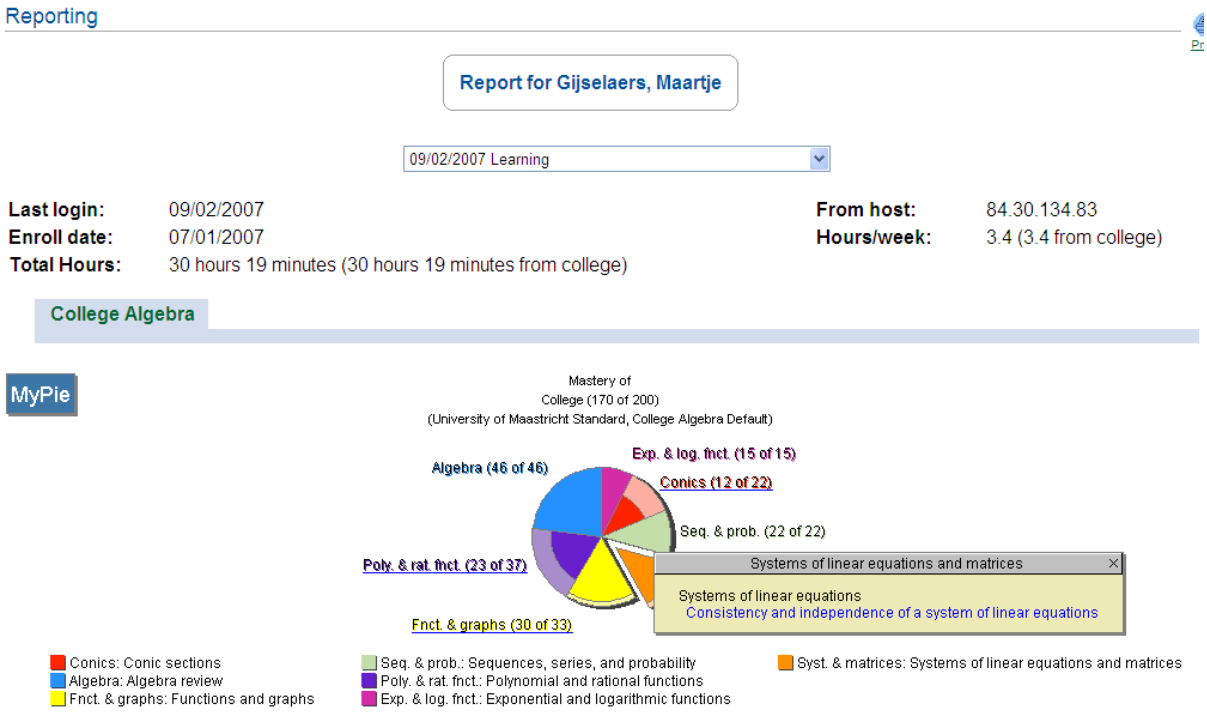

Figure 3. Partial sample of an ALEKS learning report.

The instructor module enables lecturers to monitor student progress and achievement; to view and change the standards applied in the generation of assessment reports; and to carry out other administrative tasks. In detail, the lecturer can:

- View and print reports for individual students;
- View and print a list of students, with a summary of information for each student including assessment results, progress in the learning mode, and total time spent in the system;
- View and print synthetic reports for entire courses, giving an overview of the class's strengths and weaknesses;
- View the standards used by default for a course, with the option of editing standards pertaining to that course only;
- Edit student registration data or retrieve forgotten passwords.

Design of summer course and effect research

The design of the math bridging courses for the schools of Business and Economics can be summarized as follows:

- In the period March-May prospective students are informed about the summer course, and are stimulated to participate in a diagnostic test.
- About 50% of all prospective students do take that diagnostic test. Those students get feedback on their test attempt, together with the question if they have any interest to participate in the summer course. A substantial part of those students, for the summer course 2007 about 250, express their interest.
- More detailed information about the summer course is sent to those students, including the preconditions for participation: the willingness and opportunity to work for at least 80 hours in the summer course, and the availability of internet access. In 2007, about 200 students indicate to be prepared to invest such a substantial amount of time in doing a bridging course. They receive a license code for the ALEKS College Algebra module, the most advanced module in a series of math ALEKS tutorials. Of those 200 distributed licenses, 191 have been used in summer 2007, the start ranging from early June till midst of August. Of those 191 students, 181 enter one of the two bachelor studies Business or Economics; the remaining students take the bridging course as an preparation for a MA study.
- The ALEKS College Algebra module contains 200 items. An absolute norm was set to achieve a pass in the summer course: at least 55% of all items should be successfully completed. Not that passing the summer course brought the students any credit: they received only a (unofficial) diploma. 91 out of all 191 participants achieved such a diploma. On average, these passing students spent 59.45 hours in the electronic tutorial (only connect time could be measured, not additional study outside ALEKS).
- Immediately after the last students finish their summer course, the regular bachelor study starts early September for all 800 students in the business and economics programs. In the first half-semester period of eight weeks, students take two integrated courses, each covering 50% of available study load. The first course is an introduction into organisational theory and marketing, whereas the second one, labelled Quantitative Methods I (QM1), introduces students into mathematics and statistics. That QM1 provides a natural standard for assessing the effectiveness of the summer course: if bridging has been successful, students should be able to pass the QM1 course. There is no overlap in the content of QM1 and the summer course: the main mathematical topic in the QM1 course is e.g. differential calculus, which is not part of the summer course.
- During the eight weeks of QM1, some additional activities took place to facilitate the assessment of the summer course effectiveness. In the very first week, all students participate in a diagnostics entry test for math mastery. In several weeks, students fill questionnaires that collect data on their backgrounds. One piece of that data is the e.g. information on prior math schooling, as elaborated before. In the very last week of the course, students write a final exam.

Since participation in the summer course is optional, self selection bias is the main threat in investigating the effectiveness of the summer course. The following remarks with regard to potential selection effects hold:

- In agreement with recent discussions on the search for causal effects in observational studies (see the AERA ‘think tank white paper’: Schneider, Carnoy, Kilpatrick, Schmidt & Shavelson, 2007) we included quasi-experimental features in the study, the main one being the distinction between the several prior math educational trajectories.
- Additional student background data is used as to discover any group differences between students opting for the summer course, and student not doing so, that might direct at the presence a selection effects. E.g., are there any differences between the two groups in terms of achievement motivation?

Differences between participant and non-participants, and between successful and non-successful participants, appear to be large in the statistical sense: nearly all differences are strongly statistically

significant. For that reason, the focus will more on the reporting of several effects, than on the formal testing of the significance of these effects.

Measurement of effect of bridging courses

Figure 4 provides the effects of participation in the summer course on four different main outcome variables. The effects are substantial and statistically very significant: student who successfully participate the summer course, perform much better than students who do not participate. Observed significance levels (*p*-values) are extremely small, but also effect sizes are substantial, up to 0.58 for scores in the diagnostic entry test. The four outcome variables used in this study are (all expressed as a proportion):

- AlgRekenv: the partial score for basic calculus skills in the diagnostic entry test;
- MathProp: the math score in the QM1 final exam;
- StatsProp: the statistics score in the QM1 final exam;
- QMPass: the passing rate for the course QM1.

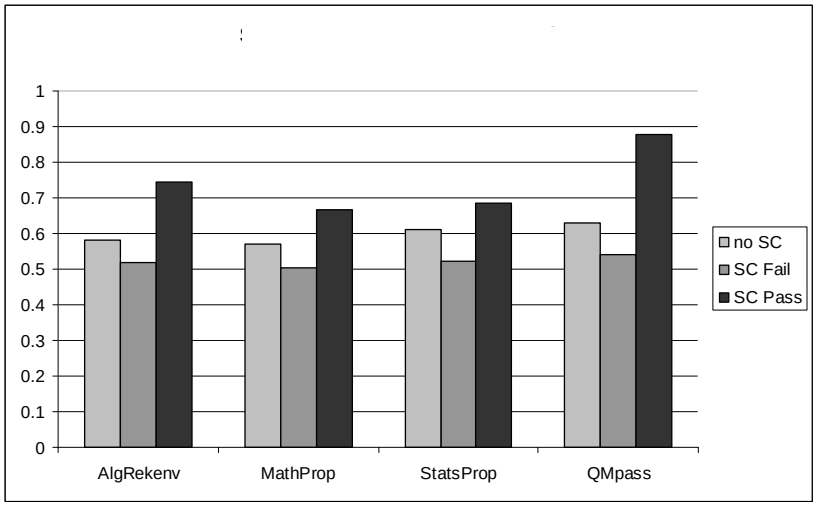

Figure 4. Effects of participation in summer course on calculus mastery, math and statistics score in QM1 final exam, and QM1 passing rate.

The three groups distinguished in Figure 4 are the successful participants of the summer course ('SC Pass'), the non-successful participants of the summer course ('SC Fail'), and the non-participating students ('no SC'). Data in Figure 4 is on aggregated level, and does not distinguish different levels of prior education. Therefore, group differences visible in Figure 4 provide an underestimation of the impact of the summer course, since students with basic prior math schooling are overrepresented in the summer course. Figure 5 provides effects of summer course participation for each of the several relevant prior education groups, focusing on the main outcome variable: passing rate in the QM1 final exam.

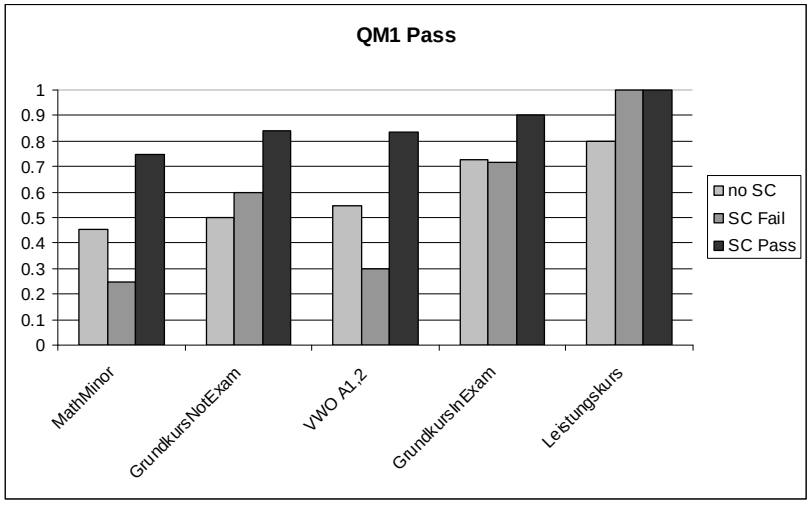

Figure 5. Effects of participation in summer course and prior math education on passing rates for the course QM1.

The two Figures summarize some important findings with regard to the summer course:

- Looking at the three groups on the left hand side of Figure 5: being non-successful in the summer course is a very strong predictor of academic success in QM1. Not less than 75% of 'MathMinor' students and 70% of 'VWO A1,2' students who decided to participate the summer course but failed the remediation, also failed the regular course introducing math and statistics. Therefore, the summer course appears to provide a strong early signal: already before the regular program starts, an important category of students at risk is known by their summer course performances.
- The opposite is true for students with a strong mathematical background participating in the summer course. Failing the summer course has no predictive power for these students. In fact, for students with the strongest preparation, that is the students in the 'Leistungskurs' group, being successful or not in the summer course has no impact at all on QM1 passing rates: all students pass, irrespective of their remedial activities. That does not surprise: the kind of failing in the summer course of these students is the discovery that the remedial program has not that much to offer, so that shortly after enrolling it, these students decide not to spend their holidays in practicing mathematics.

Evaluation

Next to an assessment in terms of effectiveness, the summer course was evaluated by its participants through a regular course evaluation. Evaluations are without exception positive. In specific:

- Students indicate that they regard the didactical format of individual (non-collaborative) e-learning using the adaptive tutorial system ALEKS as the most appropriate format. Since many students in this summer course also participated in a second summer course that used the collaborative e-learning format and was appreciated quite well too, this is a remarkable outcome: apparently students distinguish between academic subjects in their appreciation of the appropriateness of alternative didactical formats.
- Some students indicate that on the basis of their summer course experiences, they decided to unenroll their bachelor study. *"The summer course worked good, told me that International Business is not the right thing for me!"* was the most explicit feedback in this direction. So the signalling function, already addressed in the last section, also works for the students, and might in this way prevent students to start with less appropriate bachelor programs.
- The evaluations do not allow for distinguishing different subgroups, except for one item on the didactical format. Non-Dutch students appreciate the strong steering present in the adaptive tutorial tool much better than Dutch students. Again, this does not surprise: Dutch secondary education has transformed into a strongly student directed learning mode during the last decade.

Apparently, ‘new learning’ works addictive: different didactical formats are not that well appreciated anymore.

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Online Communities During Work Placements in Medicine: How to foster critical thinking on the basic sciences?

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Abstract: To promote critical thinking about basic science topics during work placements in medical education we interconnected students dispersed over different locations with a Computer Supported Collaborative Learning (CSCL) System. The CSCL system was provided with a structured dialogue interface combining the deliberate sequencing of activities and the tagging of messages with labels in line with Garrison's 'Practical Inquiry model of Cognitive Presence'. To determine the effectiveness of this procedural facilitation embedded in the CSCL system the online discussions in two case studies were explored. We evaluated the quantity of the interactions by looking at quantitative data of the discussion 'threads' and we evaluated the quality of the discussion by content analysis of the individual messages. The instrument for content analysis was also based on Garrison's 'Practical Inquiry model of Cognitive Presence'. On the basis of the quantitative and qualitative data we conclude that the CSCL-system was successful in establishing a dialogue among a group of students and an expert during work placements at different locations. The 'Practical Inquiry model' was useful in facilitating a sustained on-topic discourse involving critical thinking. Although the amount of critical thinking was moderate, the results suggest ways to increase integration and resolution activities in the online discussions.

Delivering a Masters: from Paper to Virtual and from Individual to Collaborative

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Abstract: This paper explores the move from delivering a course from a paper-based format to a blended learning one and highlights the role of the virtual environment in this transition. It has been achieved by the development of a Postgraduate Framework. This transition also involves the move from an individually driven course to one where the norm is delivering to a cohort of students, with one start date and one submission date for each cohort. The use of collaborative and peer assessed learning is addressed as a means of satisfying a delivery model which emulates socially constructivist principles of learning. Articulation across a number of Masters programmes is considered, where there is some commonality across such masters.

Introduction

Learning and teaching is central to the existence of most universities and this existence depends largely on demands of the job market. Due to deregulation of the finance sector and the volatile nature of the economic order both at national and international levels, employers have become more exigent in terms of quality and specificity of skills from employees. In this context, universities are aiming to develop and research innovative forms of teaching and learning for a wide variety of students (University of Dundee, 2007). The School of Education, Social Work & Community Education (SESWCE) of the University of Dundee (UoD), for example, is using action research to improve learning and teaching.

In this paper, we present how the policy context at the SESWCE evolves, adapts and connects to the modern world demands and is responsive to the needs of students, employers and the profession. This change is achieved through a blended approach to learning that is supported by a parallel development of the university's virtual environment. This paper addresses, in particular, the postgraduate framework that was suggested by the position paper for strategic vision 2006-2007 (SESWCE, 2005) and that also forms part of the UoD strategic framework (University of Dundee, 2007). The aim of the postgraduate framework is to move the school towards developing evidence based practice and educational development that fits with the demands of the job market. Using action research to improve learning and teaching practice across the school, the framework is underpinned by the social constructivist model for learning. This model embeds innovative approaches to learning and teaching. The implementation of the postgraduate framework has resulted in the re-alignment of delivery of masters degree courses and their evaluation, standardisation and certification (SESWCE, 2008). Among the various changes ensuing the postgraduate framework, two major features that are discussed in this paper are the development of the virtual environment in the context of transition of delivery of master courses and the social constructivist approach to learning where a blended learning format is in operation.

Virtual environment and shift to blended learning

Traditional university courses can be characterised as lecture-based teaching where the modules are delivered in a paper-based format. In order to undertake the transition from paper-based course delivery to a mixed-mode of teaching and blended learning, the virtual environment is used at University of Dundee. It is called VLE-MyDundee and the main webpage is presented as Figure 1. Each student has access to a personalised webpage by logging in to VLE-MyDundee from the university's website. This main and personalised webpage displays the different components of each student's field of study on 'My Modules' webpage. The other pages, for example 'My Campus', 'My Files', 'My Webmail' and 'Student Services' provide a holistic and conducive online environment for students' collaborative tasks and learning, their participation in non-pedagogic activities linked to the university and eventually promoting the wellbeing of each and every student.

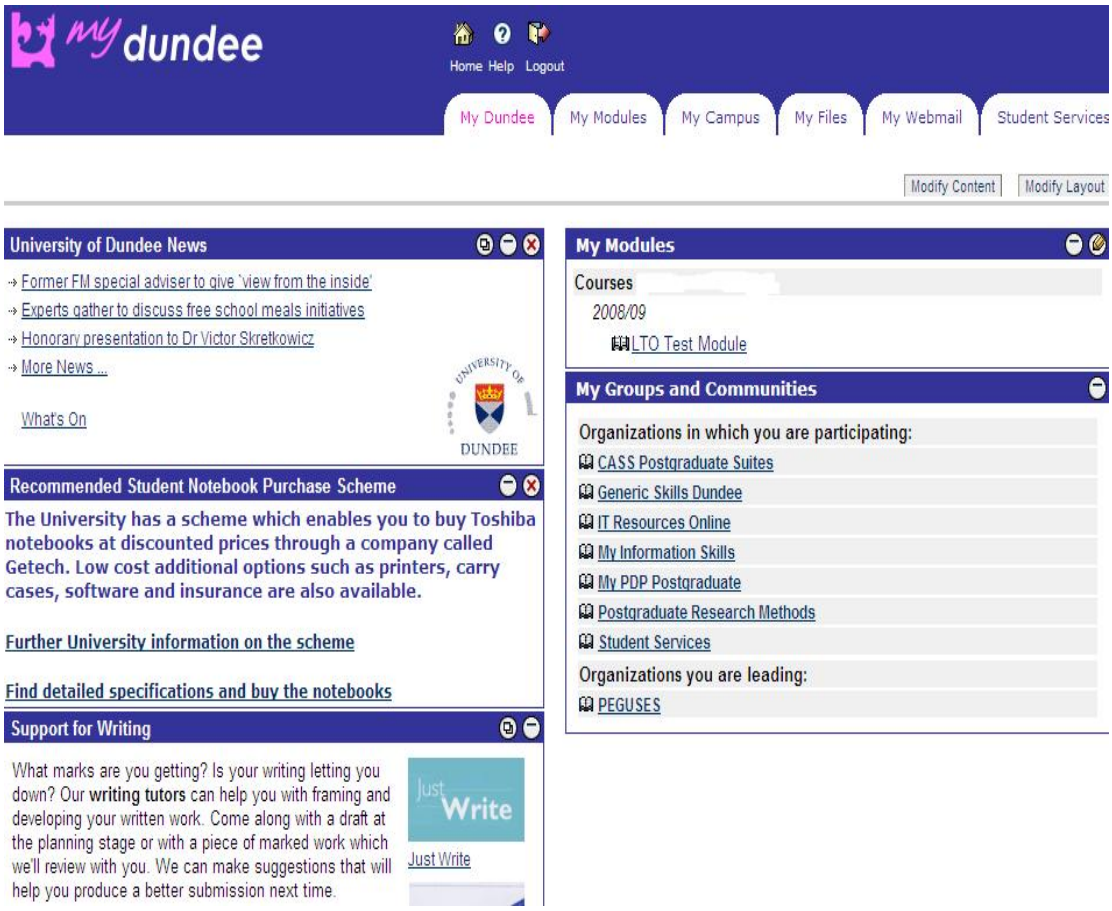

Figure 1 displays the main webpage from VLE-MyDundee
Source: University of Dundee, www.dundee.ac.uk

Master's programmes delivery, blended learning and students' wellbeing have been meticulously designed in the postgraduate framework. Each programme comprises 6 modules and there is some commonality of modules across different programmes. For example, a Masters in Education (MEd), may have commonality with a Masters in Social Work (MSc) in that Child Care & Protection is an issue relevant to both courses. The postgraduate framework has been developed and adjusted such that a common module, say in 'Child Care' has implications for future inter-professional collaborations. Each module unfolds across an average time line of 22 weeks. As the university promotes collaborative tasks and blended learning, the module is characterised as one having a start date, a project-submission date and a summative assessment date for different cohort of students. A representative time line and the various constituting activities that underpin blended learning are displayed as Figure 2.

1 or 2 days of face to face contact	Module materials are loaded on VLE-MyDundee Discussion Forums on Week 3 & Week 6	Formative Peer Assessment Tasks	1 or 2 days of face to face contact	Module materials are loaded on VLE-MyDundee Discussion Forums on Week 13 & Week 16	Summative Assessment
Module starts 9 weeks		4 weeks	Module ends 9 weeks		

Figure 2 displays a representative time line of 22 weeks on the average for a module
Source: Master of Education – Report (SESWCE, 2008)

The chronology of the activities as well as the activities is supported by VLE-MyDundee. Unless exceptional instances, the face-to-face contact between tutor and students has undergone significant reduction. Apart form loading the module materials on VLE-MyDundee, the 'Discussion Forums' scheduled for Weeks 3, 6, 13 and 16 represent major collaborative tasks between tutors and students and among students themselves. Another important collaborative task is the 'Formative Peer Assessed Task' where students undergo peer assessment. The 'Summative Assessment' is the end-of-module activity.

The social constructivist approach and Blended Learning

Learning innovation include rethinking how to prepare students for the workplace.

Blended Learning programmes have been developing in parallel with VLE-MyDundee. As already highlighted in previous section, the postgraduate framework together with VLE-MyDundee supports the development of blended learning programmes at SESWCE. Blended learning programmes are also supported by recent communication technologies. The postgraduate framework addressed both tutors and students by first interrogating the kind of tutor that the school requires and the quality of graduate students that the school projects to inject into the job market. Following a thorough investigation on different models of applied social science and relevant pedagogies, a holistic approach is taken to address teaching and learning.

This approach is presented in Figure 3 and it aims at transforming both the philosophy and the technicality of course delivery. In this context, the following list of pre-requisite features are in operation at SESWCE: situated learning; empowerment, agency wellbeing and resilience; examination of world views; cross-cultural perspectives; non-intrusive forms of intervention; clear ethics and values; and critical competency (SESWCE, 2007). Course developers and researchers at SESWCE have found that these features would impact on participation, sustainability, wellbeing and empowerment of students as well as tutors.

Ongoing brainstorming among the different stakeholders and interrogation of discussion reports and evaluation papers has lead to the following guidelines on postgraduate courses at the SESWCE:

- Flexibility through modularity;
- Calibration against Scottish Credit & Qualifications Framework (SCQF) level descriptors;
- Integration and articulation across associated programmes;
- Response to demand at a local, national and international level;
- Recognition of prior learning and experience;
- Multiple entry and exist points; and

- Named Awards to reflect specialism's and professional standards, (SESWCE, 2008).

These guidelines eventually underpin the design and structuring of the programme for the postgraduate framework. The module structure and time line that are displayed in Figure 2 support blended learning. However, key permeating processes that promote and sustain blended learning are represented in the curriculum map displayed in Figure 3. It emphasises the 'Core Module', 'Optional Module' and the 'Workplace Based Project or Dissertation'.

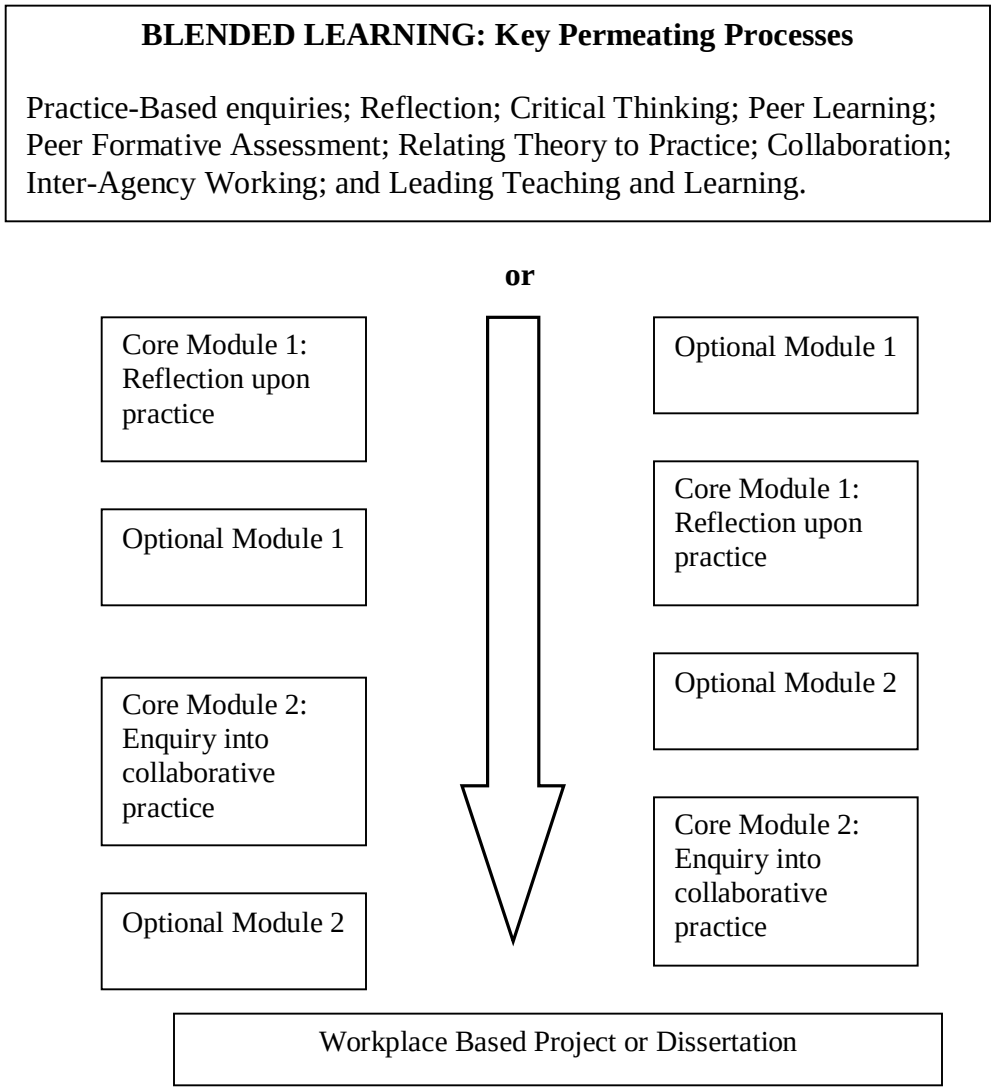

Figure 3 displays the curriculum map and the constituents of blended learning
Source: Master of Education – Report (SESWCE, 2008)

Key permeating processes within the curriculum map representing blended learning are Practice-based enquiries; Reflection; Critical thinking; Peer learning; Peer formative assessment; Relating theory to practice; Collaboration; Inter-Agency working; and Leading teaching and learning. The pedagogy underlying blended learning approach that we have adopted at SESWCE is based on the premises of social constructivist learning. It comprises the different types of collaborative learning tasks supported by VLE-

MyDundee and the different forms of networking methodologies using a range of communication technologies. This implies a shift from paper-based and one-way lecture to a more student-centred approach that is characterised collaborative learning, peer assessment and leadership and ownership of learning. In this context, learning is seen as an active social process in which students actively construct knowledge (Papastergiou, 2007, Vygotsky, 1978) and use the following processes to progress.

Practice-based enquiries: Student face real life situation where, for example, BEd student undertake classroom activities in schools where they are projecting to work after studies. Another example is MSc Nursing students have to organise teaching for trainee nursing assistants. Research across different universities have revealed the importance of practice-based enquiries in promoting effective learning (Mulholland, Scammell, Turnock et al., 2005).

Reflection and Critical thinking: Helping students relate educational theory to practice promote in depth reflection and develop critical thinking. As described earlier, VLE-MyDundee has been designed, especially for this purpose because student become independent learners as suggested by Harrison, Lawson and Wortley (2005).

Peer learning and Peer formative assessment: When student are engaged socially with their peers in learning and assessment activities as promoted by VLE-MyDundee, there is enhanced achievement, progress, trust and socialisation (Topping, 2008).

Inter-Agency working: The postgraduate framework together with VLE-MyDundee has initiated delivery of a common module to a cohort of students from different fields of study. As stated earlier the module 'Child Care' is dispensed to MEd and MSc-Social Work students (SESWCE, 2008).

Leading teaching and learning: For student to lead their own learning and the module they are taught, it is important that they possess organisational skills in order to participate in collaborative learning tasks. We argue that if each student leads by setting example and undertake the four processes discussed above, collaborative learning tasks will effectively promote progress and attainment.

Conclusion

Acknowledging the challenging nature of blended learning as highlighted by Stubbs, Martin and Endlar (2006), the SESWCE has operationalised the postgraduate framework that is supported by a parallel development of the university's virtual learning environment (VLE-MyDundee). The aim is to support masters' programmes delivery and sustain students' learning, progress and attainment. The postgraduate framework is underpinned by the social constructivist approach to learning where collaborative learning tasks, practice-based enquiries and leadership are promoted. Challenging circumstances are addressed through online additional support and telephone tutorials to help the entire cohort of students from a module to participate fully in their collaborative tasks. VLE-MyDundee is the online avenue where students are encouraged and guided to make optimum use of by interacting, sharing e-portfolios, maintaining online discussions and undertaking peer learning as well as peer assessment. Although this paper addresses the implications of the postgraduate framework on students collaborative learning tasks, professional development of tutors form an integral part of the entire process of leading teaching and learning through VLE-MyDundee.

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Unified in Learning – Separated by Space
Case Study on a Global Learning Program

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Abstract: The active growth of available online learning programs has created a wide range of new possibilities for global organizations to effectively train their staff. Previously, global training was related to substantial costs that had to be endured in order to update the knowledge and skills of the workforce. In this context, international organizations appear to be increasingly interested in setting up (virtual) communities of learning, which aid them in the process of workplace practice and training. Based on a global learning program of a large international organization, for over 400 of its staff, from nearly 100 offices world-wide, this article highlights how such a community of learning has been developed and implemented by facilitating the collaborative exchange of knowledge and experiences. Moreover, evidence is provided that the chosen structure and design have produced an interesting and stimulating community. Finally, preliminary results on possible learning effects indicate a positive outcome.

Introduction

As the availability of new online learning programs and tools is constantly increasing, global organizations can choose from a wide range of new options to effectively train their workforce. Previously, global learning programs were very often associated with substantial costs that had to be endured in order to update the knowledge and skills of a workforce. Employees had to leave their workstations, creating numerous direct and indirect costs to an organization. Moreover, with people having to physically travel to training venues for short amounts of time, there has only been a limited scope to really benefit from a truly international exchange of experiences and insights. Nowadays, organizations can readily create online communities of practice (Wenger, 1998) to teach and train their staff. Consequently, there has been a notable increase in the occurrence of workplace practice and training (Schlager, Fusco & Schank, 2002), which has been partly fueled by the growing need to effectively provide new skills and knowledge for organizations to not loose their competitive edge (Bassi, Cheney & Lewis, 1998). Hence, international organizations appear to be increasingly interested in setting up communities of learning, which are related to their potentially already existing communities of practice. Moreover, it has been widely accepted that the creation of such communities can be greatly supported by developing and implementing a context of "situated learning" (Amin & Roberts 2006; Bernard, de Rubalcava & St-Pierre, 2000; Billet, 1996; Gannon-Leary & Fontainha 2007; Lave & Wenger, 1991; Savery & Duffy 1995; Woods & Ebersole 2003). Based on a global learning program of a large international organization (IO), this paper will highlight how such a community of learning has been developed and implemented by facilitating the collaborative exchange of knowledge and experiences from employees from all over the world. The learning program in question has been implemented in 2 consecutive years (2006 and 2007). During this timeframe, more than 400 of the organization's staff, from nearly 100 offices world wide, have collaboratively updated their knowledge and skills. The program employed a blended learning approach, which started off with an e-learning phase and concluded with a face-to-face workshop on location in Maastricht, the Netherlands. The focus of this article will be on the e-learning phase, providing an overview of the structure and design of the course, as well as the fashion with which the content was delivered. This will be complemented by a range of descriptive statistics providing an insight on how the course was evaluated by the participants. This serves the purpose of identifying both strengths and weaknesses, and adds to the work by Stacey, Smith & Barty, 2004, who highlighted possible advantages and disadvantages that staff might be subject to during online training programs. In addition, initial evidence on possible learning effects and successes is presented..

The Learning Program

An overview

Given the global scope of the IO and the very interdisciplinary background of its workforce, there are substantial benefits that can be reaped by introducing a learning program that is not only available online, but also employs a collaborative approach. The IO already has a wide range of training programs that are offered in an electronic environment via CD-ROMs and DVDs. Moreover, it also has a noticeable amount of training programs that take place in a classical face-to-face setting. However, introducing a collaborative learning environment in an online setting can be considered as a new initiative. The ultimate objective of the program was to secure the impact of the IO in its daily practice by enhancing the capacity and skills of its staff. Additionally, as the world is permanently changing and new analyzes and solutions are needed to address the same problems, the IO wanted to embrace these developments by training their middle- and top-management staff accordingly. In terms of content, the learning program specifically focused on updating the participants' understanding of new assessments of the problems and introducing vocabulary and theories currently used to analyze them. Moreover, there was a clear emphasis on diagnostic instruments, evidence based policy analysis and other relevant practices that all rely on a sound and solid analysis. The program as such was offered over a timeframe of 6 months in 2006 and 2007. It built on a blended learning approach and was subdivided into two main phases, namely e-Learning and face-to-face. The e-Learning Phase took place entirely online, with no scheduled real-time meetings. The second phase consisted of residential workshop in 2006 and in 2007. Both events took place at the location in the Netherlands. During their stay participants followed lectures from professors and practitioners, completed hands-on data exercises and followed interactive sessions on specific topics were offered, all taking part in small scaled groups. To conclude the program, participants had to submit a worked out policy paper.

The methodological framework

The point of departure for the e-learning phase of the learning program was the 'online remedial teaching model' developed by Rienties, Tempelaar, Waterval, Rehm, & Gijselaers (2006). This model suggests four aspects that should be considered in setting up any type of online, collaborative learning program. Firstly, participants should be able to access information and actively participate in the program *24/7*. This was of great importance, as it allows the IO's global staff to really participate irrespective of time and place. Secondly, virtual learning environments (VLEs) should allow for an individualized learning path, in order to accommodate for possible differences in participants prior knowledge levels, learning styles and preferences. Thirdly, and in line with concepts like 'social constructivism' (Vygotsky, 1978) and 'situated cognition' (Brown, Collins & Duguid, 1989; Hung & Der-Thanq, 2001), online learning courses should stimulate the interaction between participants via the intensive use of communication tools, such as discussion forums, in order to bridge the geographical distance between them. This will not only aid the dialogue between participants themselves, but also enhance the communication with the academic staff. Finally, students should always receive rapid feedback. As already identified by Vrasidas & Zembylas (2003), this will not only enhance the interaction between staff and students in general, but also increase the overall performance of the students. However, the initial setup of the model was based on the characteristics of regular students in higher education. Given the professional backgrounds of the participants of this program and their regular work obligations, some modifications had to be made, in order to adjust for this target group.

In this context, it has proven to be very beneficial to incorporate concepts and experiences that were developed and made on the topic of 'Communities of Practice' (CoP) and 'Communities of Learning' (CoL) (Amin & Roberts, 2006; Gannon-Leary & Fontainha, 2007; Huang, 2002; Hung & Der-Thanq, 2001; Smith, 2001; Wenger, 1998; Woods & Ebersole, 2003). Originally developed by Lave & Wenger (1991), numerous researches have now identified crucial aspects of Communities of Practice (CoP) that are critical for a successful and effective development and implementation. Summarizing these efforts, Amin & Roberts (2006) have developed a comprehensive overview of the aspects. First, CoPs should allow for an *open dialogue* that is not necessarily constrained by the borders of the organization. Alternatively, they should specifically introduce the possibility to engage into discussion with 'outsiders', who will confront participants with an alternative point of view and challenge them to re-think, or re-phrase their current

views. As the IOs staff has to collaborate with partners from outside the organization on a daily basis, who often have a different vocabulary and a different method to analyze problems and situations, this was also of great importance. By subjecting participants to these differing views, while at the same time teaching them the underlying principles, this can make a valuable contribution to the overall learning outcomes. Second, participants will differ in their *levels of participation* and that participation will change over the course of the program. This is an inherent characteristic of professional participants, as they will remain a vibrant part of their working environments during the program. Consequently, it of crucial importance to design a structure that allows for periods of absence, which neither have consequences on the overall group, nor on the performance of the individual. Third, any CoP should cater for both *public*, as well as *private community spaces*. The inclusion of public spaces will facilitate the overall exchange of knowledge and the creation of a shared repertoire of communal resources and tools. The private spaces, which also stimulate such processes, also allow for more relational communication between participants, but also between educators and participants. This creates a type of 'commonality' (Hung & Der-Thanq, 2001), which can help participants to identify with the purpose of the collaboration in the CoP (Gannon-Leary & Fontainha, 2007), and help to establish and strengthen personal ties and relations. Fourth, and very closely linked to the aforementioned, Amin & Roberts (2006) point out the importance of including *spaces for informal discussions*, where participants can create an 'electronic personality' (Woods & Ebersole, 2003) and engage into 'online socialization' (Smith, 2001). This process can substantially contribute to the success of a CoP, as it creates a sense of belonging and trust between the affected actors (Gannon-Leary & Fontainha, 2007), who should feel comfortable to actively contribute to the CoP. Fifth, participants should be challenged by *real-life and current problems*. It is the task of the designers to effectively combine familiar aspects of the daily routines with the challenges of new concepts, theories and mechanisms. This issue is again highly correlated with the notion of 'situated learning' (Hung & Der-Thanq, 2001, Lave & Wenger, 1991). Moreover, Huang (2002) suggests this to be of special importance for adult learners, who want to apply the new gained knowledge in their regular working environments, while at the same time linking it up with their often vast amount of practical experience. Finally, CoPs should be based on a *clear and pre-defined timeline*. Again, this is especially true for adult learners, as they have ongoing work obligations. For them to effectively plan their already scarce time and consequently to get the most out of the learning program, they need to know the specific timing of activities as much in advance as possible. If this notion is not properly implemented this can actually create an effective barrier to an active participation in the CoP (Gannon-Leary & Fontainha, 2007).

Structure and purpose of the e-learning phase

The e-Learning phase took place entirely online, with no scheduled real-time meetings. The duration of the e-learning phase was 8 weeks in 2006 and 14 weeks in 2007. This substantial increase in length was caused by two main reasons. Firstly, in contrast to 2006, the 2007 programme began with an introductory stage, where participants could get accustomed to the structure, content and online learning environment. This is very much in line with the findings of researchers such as Kelly, et al. (2007), who have also indentified a certain degree of lacking experience in using ICT among adult learners. Additionally, Gannon-Leary & Fontainha (2007) stipulate that many professionals are "strategic users of ICTs", being well capable of using standard text- and data-processing packages, but encountering noticeable difficulties in working with more advanced, mainly online tools. Consequently, it was decided to begin with an introductory stage, where participants could simply get accustomed to the phases structure, content and online learning environment. The second reason was based on the inclusion of a 4 week vacation period to accommodate for annual leaves and vacations. Given the interdisciplinary background of the participants, the purpose of the e-learning phase was really to introduce and possibly refresh the more basic and standard knowledge of the learning program's central topics. In a way, it created a "level playing field" for the second phase, where the participants really got challenged to put all aspects into perspective and implement them in real-life scenarios.

Pre e-learning phase

Before the actual start of the program, participants received all necessary materials they needed for the e-learning phase. This included a structured timeline, a detailed explanation of the program's objectives, a comprehensive overview of required activities, as well as all necessary content materials. The content materials included recorded lectures, context notes, manuals, instructions and readings, and were distributed via various channels, such as DVDs, CD-ROMs, websites and a dedicated VLE, which was

powered by Blackboard©. Additionally, participants were required to complete two online questionnaires. The first questionnaire focused on the participants' expectations, learning preferences and goals. The second questionnaire estimated the participants' prior knowledge on the specified content areas. In line with the 'Online Remedial Teaching Model' (Rienties et al., 2006), everyone who completed the test received their scores, herewith providing participants with a 'mirror' of their current knowledge as well as potentially highlighting areas that would require special attention during the e-learning phase. In 2007, this process was further refined by using the results to suggest so-called 'Fundamental Readings' that would aid participants in their learning process. These readings used an intuitive approach to introduce the main concepts and theories.

Main elements and activities

Given the methodological considerations, the e-learning phase required a VLE that was able not only to host all required 'static' content materials and supporting documents, but also provide the opportunity for participants to engage into active discussions, sharing ideas and experiences. As a result, a Blackboard© powered VLE was chosen, which encompasses a wide range of characteristics that help to foster the crucial aspects of a successful working CoP. More specifically, it allows participants to complete online quizzes, providing automatic feedback on the results (also see Rienties, et al, 2006). Furthermore, Blackboard incorporates interactive communication tools, such as asynchronous discussion forums that can substantially contribute to an open dialogue irrespective of time and place. This also allows for a more personal and informal exchange between participants (Amin & Roberts, 2006). The structure of the e-learning phase differed slightly between the two years, as in 2006 certain content items were further subdivided, whereas in 2007 some of them were combined under a broader heading. Nonetheless, the overall workload remained equal at an estimated 5 hours per week. In general, both years oriented themselves along the 5 focal areas of the entire program. Each area constituted a content module that comprised lecture(s), readings, quizzes and task based discussions. Additionally, during the entire period of the e-learning phase, a so-called '*Help Desk Team*' was at the participants' disposal. This team constituted the first contact point between with the university and the program. It dealt with all technical, organizational, as well as didactical issues. This created a high degree of 'immediacy', which has been widely accepted as an important success factor for a well-functioning CoP (Woods & Ebersole, 2003, Rienties et al., 2006, Vrasidas & Zembylas, 2003).

Self-Study & Quizzes: The literature for the different content modules was subdivided into *Fundamental* and *Applied Readings*. The Fundamental Readings were voluntary and represented a kind of safety net in case participants required a general introduction into a certain topic. The Applied Readings focused on empirical, very practical research that was relevant for the work of the IO's staff. For each module, the readings were complement by a lecture and a 'Context Note'. The lecture featured academic experts and experienced practitioners, who provided an introductory overview of the modules content. The 'Context Note' was a recorded video message that introduces a modules content, how the individual items were related to each other and how they would contribute to the overall goal of the program. Additionally, voluntary, formative assessments, in the form of online quizzes for each of the content modules, were offered. This allowed participants to check whether they had mastered the basic content of the modules. Participants automatically received their scores upon completion of a quiz. Moreover, it was also possible to attain bonus points by successfully completing quizzes, which were then added to the score of the final exam of the e-Learning Phase.

Online Discussion Groups and Tasks: This part constituted the backbone of the entire e-learning phase and was subdivided into a general public space and many private spaces. The public discussion forum facilitated a general exchange of knowledge across all participants. The involvement herein was voluntary. The private forums were part of separate "Learning Communities", each consisting of about 15 randomly assigned participants. These communities also contained asynchronous discussion forums, where participants could openly discuss the content of the modules. In both scenarios, there were two different types of forums available. One forum specifically focused on group building processes, where people introduced themselves and conducted informal chit-chat. By means of this forum it was possible to foster the creation of trust and a common identity (Hung & Der-Thanq, 2001, Woods & Ebersole, 2003). The other type of forums was really content driven. Each forum was based on a practical, real-life task, which was taken from the actual working environments of the participants. The challenge for participants always

was to apply the newly gained knowledge to the supposedly familiar surroundings. This setup also constituted a type of 'neo-apprenticeship style learning' (Gannon-Leary & Fontainha, 2007), which stimulated the interaction between colleagues with different backgrounds. In this framework experts are not necessarily defined on the basis of explicit knowledge, but more along the lines of tenure and tacit knowledge. By providing a forum for such a process, 'spillover-effects' (Hung & Der-Thanq, 2001) could be created where more senior staff shared their knowledge with more junior colleagues, while at the same time the latter group introduced new thoughts and ideas to the organization. To facilitate the discussions a team of academic staff was assigned to each Learning Community. They guided through the discussion and answered content related questions. Moreover, they also acted as a kind of 'sparring partner', challenging participants to re-think their current practices, and implementing the newly gained knowledge to their current environments (Amin & Roberts, 2006). Finally, to accommodate the busy time schedules of the participants and so as to ensure that everyone had the opportunity to actively participate in all discussions, all forums remained accessible throughout the entire e-Learning Phase.

Final Assessment: The e-learning phase was evaluated in equal parts on the basis of the participants' contributions in the discussion forums, as well as a final exam. In 2006 this took the form of an extensive online multiple choice test. Taking into account the limitations of such a summative assessment, the format was adapted in 2007, changing the format to essay questions.

Results

Participants

In 2006, 245 of the IO's staff, from 95 different countries, participated in the e-Learning Phase of the program. The gender distribution was slightly in favor of females (54.3%) and the average age of the participants was 46.5 years. In terms of educational backgrounds, the vast majority of the participants held a Master's degree (54.7%), followed by PhDs (25.7%), alternative degrees, such as apprenticeship diplomas (16.7%) and Bachelors (2.8%).In 2007, the e-learning phase was followed by 174 participants, from 81 countries. In terms of the other main characteristics, the participants were largely similar to their 2006 colleagues, with a female participation of 52.9% and an average age of 44.4 years. When looking at the educational backgrounds, the majority of the participants again hold a Master's degree (68.2%), compared to PhD's (17.3%), Bachelor's (9.2%) and other degrees (5.3%). According to the initial questionnaire the IO's staff, both in 2006 and 2007, participated to remediate potential gaps in their knowledge and skills which were covered in the provided by the learning program. Moreover, they indicated a strong preference to work collaboratively. In terms of the format, there was a wide-spread appreciation that the e-Learning phase could be followed online and irrespective of time and place. Finally, although participants clearly indicated that they liked to work with a computer, there was a clear notion that they would have preferred to learn with a hard-copy book, as opposed to the available electronic media. This provides evidence for the suggestion of Gannon-Leary & Fontainha (2007), who claim that professionals are very selective in their use of ICTs.

End Evaluation

At the end of the e-Learning Phase, an end evaluation was conducted in order to assess whether the participants' expectations and goals were matched, as well as to measure the overall success of the phase. Overall, the e-Learning Phase was very positively evaluated (see Table 1). More specifically, on a scale1 (very bad) – 10 (very good), the overall quality received a 6.64 in 2006 and a 7.07 in 2007. Similarly, the supporting staff was awarded with a 6.27 in 2006 and a 7.11 in 2007. When looking more closely at the evaluations, one can see that, based on a Likert scale from 1 (strongly disagree) to 7 (strongly agree), participants perceived it to be a valuable learning experience (2006: 5.82 & 2007: 6.16) and considered the structure to be good (2006: 5.23 & 2007: 5.44). The goals of the e-Learning Phase (2006: 5.56 & 2007: 5.67), as well as the expectations were well explained (2006: 5.28 & 2007: 5.36). Completing a pre-knowledge test prior to the course was also very much appreciated by the participants, as it effectively showed them possible gaps in prior knowledge on the topics of the course (2006: 5.49 & 2007: 5.55) In terms of the newly gained knowledge (2006: 5.00 & 2007: 5.60) and skills (2006: 4.77 & 2007: 5.34), participants indicated that they were satisfied with both outcomes. Furthermore, as already underlined by the initial questionnaire, they really valued the collaborative nature of the phase (2006: 4.28 & 2007: 4.66).

The tasks, which had been at the centre of the discussion forums, also received good scores (2006: 5.02 & 2007: 5.76), as they stimulated participants to study the applicable materials. However, there remains some room for improvement to formulate these tasks in a fashion which stimulates a more active collaboration and exchange of experiences (2006: 4.21 & 2007: 4.67). The facilitators of the discussions were evaluated quite positively (2006: 4.16 & 2007: 4.95), but participants clearly indicated that they would have liked them to take a more active role in the discussions (2006: 4.19 & 2007: 4.59). Another perceived drawback of the phase was the estimated workload, as participants had to spend more time than expected (2006: 8.01 hrs & 2007: 8.20 hrs) and the readings were perceived to be too extensive (2006: 5.44 & 2007: 4.61).

Table 1: Average Scores (AV) of the Participants' End Evaluation

	2006 (n=154)		2007 (n=101)	
Question	AV	Stdev	AV	Stdev
Phase 1 of this Learning Program was a valuable learning experience.	5.82	1.16	6.16	1.36
The structure of Phase 1 was good.	5.23	1.28	5.44	1.37
The content of Phase 1 was appropriate	4.75	1.44	5.31	1.38
Phase 1 was well organized.	4.59	1.48	5.18	1.54
The quality of the e-learning materials was good.	5.35	1.19	5.36	1.48
The e-learning materials motivated me to keep up with the subject matter.	4.88	1.34	5.53	1.55
It was fun that I could attend Phase I via the internet.	4.56	1.72	4.91	1.69
The allocated time was sufficient to study the subject matter.	2.41	1.31	3.58	1.88
The goals of Phase 1 were clear to me.	5.56	1.11	5.67	0.90
It was clear to me what was expected of me during Phase 1.	5.28	1.24	5.36	1.23
The assignments/tasks stimulated me to collaborate with the other group members (in the Learning Community).	4.21	1.53	4.67	1.55
The assignments/tasks stimulated me to study.	5.02	1.40	5.76	1.26
I am satisfied with what I learned in terms of knowledge.	5.00	1.38	5.60	1.30
I am satisfied with what I learned in terms of insights.	5.18	1.38	5.42	1.51
I have improved my evidence based analysis skills.	4.77	1.37	5.34	1.16
I am more able to cooperate with other organizations.	5.03	1.33	5.11	1.57
I think I have learned more during Phase 1 through collaboration with others than I would have learned, if I had to work alone.	4.28	1.65	4.66	1.92
I participated actively in the online group discussions (within the Learning Community).	4.25	1.86	5.16	1.51
The facilitators were enthusiastic in coaching our Learning Community.	4.16	1.57	4.95	1.93
I expected the tutors to take a more active role in the learning process.	4.19	1.52	4.59	2.22
The facilitators encouraged participation of all group members in the online group discussions.	5.42	1.35	5.07	1.85
The Pre-Assessment was a good test to show me what I did know and what I did not know.	5.49	1.29	5.55	1.69
The online assessments during Phase 1 gave me a good picture of what I still had to study.	5.10	1.46	5.64	1.33
The lectures helped me to study the materials.	5.18	1.35	5.52	1.27
The level of the applied readings was appropriate.	4.85	1.45	5.55	1.19
The applied readings were too difficult.	4.13	1.42	4.07	1.69
The amount of required literature was too much.	5.44	1.48	4.61	1.88

Please provide an overall grade for the quality of Phase 1 (scale 1-10)	6.64	1.62	7.07	1.58
Please provide an overall grade for the functioning of the Learning Program Phase 1 Team (scale 1-10)	6.27	1.79	7.11	1.97
On average, how many hours per week did you work on Phase 1 of this Learning Program?	8.01	5.21	8.20	6.69

Overview of performance indicators

Overall, in 2006 75.80% and in 2007 83.90% of all participants successfully completed the e-Learning phase, which are both very acceptable passing rates. The grades were determined on a scale from 1 – 10, requiring at least 5.5 to pass the phase. When looking at the average scores for the pre-knowledge test (see Figure 1), it is noteworthy to mention that the prior knowledge (PK) of the participants is below the passing threshold. However, this should hardly come as a surprise as the IO already identified the need to update its staff knowledge and skills on the topics of the program. Moreover, participants received comparatively low scores for the quizzes (QZ). A possible reason for this outcome is very likely based on the voluntary nature of the quizzes. When looking at the frequencies with which the quizzes have been accessed and completed, it is apparent that the majority of the participants tried the first one and then, depending on the result and their general 'ICT-mindedness', decided to simply drop this activity. In contrast, considerable more attention has been paid to the discussion forums. Consequently, the average participation grades (PG), in both 2006 and 2007, are significantly higher. It seems reasonable to assume that this is highly correlated with the fact that participants were graded on this activity. Moreover, given the practical orientation of the discussions and the possibility to exchange experiences with colleagues, it might also be that this activity was perceived to be more interesting and useful for the overall learning process. This notion is supported by the findings of the end evaluation (see Table 1), as well as the summary statistics of the discussion forum activities. In 2006, an average of 288 contributions was posted per Learning Community, compared to 221 messages in 2007. Contrasting this to the results of Rienties, et al. (2006) and taking into account the background and the severe time constraints of the participants, this constitutes a very acceptable intensity of usage. Interestingly, the informal discussion forums always had (slightly) higher amounts of contributions than the content driven forums. As for the public discussion forums, the contributions were substantially lower, predominantly covering informal communication, such as personal introductions. Another remarkable observation is related to the scores for the final exams (FE), as well as the final grades (FG) for the e-Learning Phase. As can bee seen from Figure 1, there is a noticeable difference between the average scores for the two items when comparing 2006 and 2007. What the underlying causes for these differences are remains to be investigated. However, as a first approximation it seems likely that they are related to the nature of the final exam, which has been more practical and solely based on open questions in 2007. Next to the well-established benefits of such a summative assessment, this setup is also more in line with what the participants are accustomed to in their every day work and consequently may find it comparatively easy to deal with such an exercise. When looking at the contributing factors to a successful final exam, there is an interesting difference between the 2006 and 2007 cohorts. Using simple correlation statistics, it becomes apparent that the relation between the participation grade and the final exam has been highly significant, but only amounted to 0.273 in 2006, compared to 0.554 in 2007.

In order to conduct a first estimation of the actual learning effect, it was chosen to compare the scores of the pre-knowledge test and the final grade. As the focus of this phase was to introduce and possibly refresh more basic and standard knowledge of the central topics, this can an initial approximation. To measure the possible effects a paired-sample t-test was employed, which yielded quite mixed results. For 2006, no significant difference between the two scores can be determined. In contrast, when conducting the test for 2007, a strong increase in the average scores, which is highly significant at a 0.01 level, was found. Admittedly, this is a very rudimentary estimation of the cognitive learning effects. However, it already provides a cautious indication that the small adjustments that have been made between the two cohorts had noticeable effects on the learning outcomes, even at this very basic level. More sophisticated research is necessary to draw sounder conclusions from the available data.

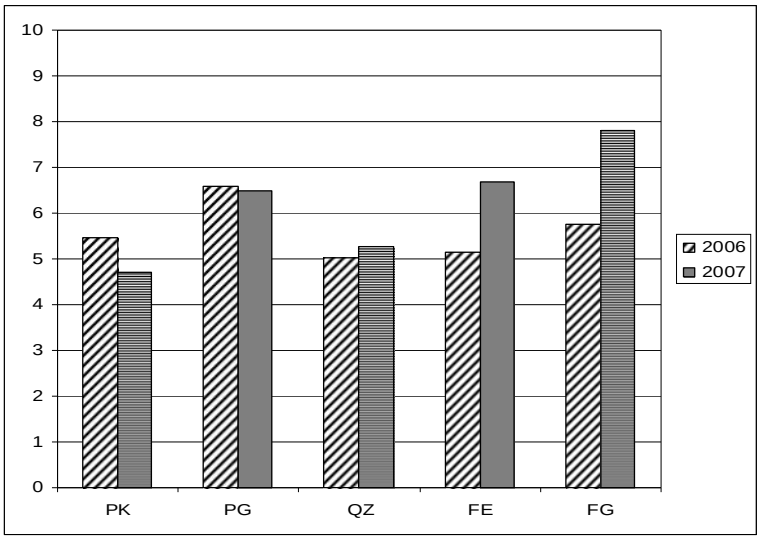

Figure 1: Performance Indicators for Phase 1 in 2006 & 2007 (Averages: 1 – 10)

Discussion & Conclusion

The focus of this article was to provide an overview of an e-learning phase, which was provided for adult learners of an international IO. In terms of a methodological framework it has been argued that the most promising setup should be based on the notion of Communities of Learning (CoL) that build up on possibly already existing Communities of Practice (CoP). Departing from this finding, and building up on an 'Online Remedial Teaching Model', six aspects have been promoted that have a high potential of stimulating an effective and successful implementation of a CoP. First, they should stimulate an open dialogue between all participating parties. Second, adult learners are likely to exhibit fluctuating levels of participation, due to their busy work schedules. An effective CoP should cater for this. Third, participants should be subject to both, public and private spaces, as this will foster fruitful communication flows. Fourth, participants require spaces for informal discussions, in order to create a sense of belonging and trust, necessary to actively share information and contribute to the CoP. Fifth, based on the notion of 'situated learning', adult learners will highly benefit from real-life and current problems to which they can relate to. Finally, so as to assist participants in fitting the activities of the CoP into their regular working schedules, clear and pre-defined timeline should be provided before the actual start of the activities.

The participants end evaluations of the e-learning phase, indicate that the implementation of this framework has been successfully accomplished. Especially the predominant role of asynchronous online discussions and the collaborative work on real-life tasks received considerable appreciation. In contrast, two broad topics have been identified to necessitate some critical adjustments. Firstly, the factual workload and the estimated time to complete all required activities have, according to the participants, been underestimated, which created difficulties in preparing the activities and always finding the time to actively contribute to the discussions. One possible solution to this problem can be to better inform the employer about the dimension of the program, possibly allowing for a more flexible time planning. The other broad topic is related to the facilitation of the discussion forums. Although online facilitators are awarded acceptable scores, they are criticized for being too passive to effectively stimulate the discussions and assisting the participants. One possible solution to counteract this perception is to better prepare facilitators via additional preparatory trainings, introducing didactical tools and mechanisms that have proven to be effective in fostering online discussions.

In terms of the cognitive outcomes and factual learning effects of the program, the results remain mixed at best. For 2006, the preliminary results only suggest an insignificant effect on the learning outcomes, whereas in 2007, the results are more supportive. However, in order to better estimate the actual effects, more research is required on a number of activities and variables. More specifically, this article suggests to investigate the extent with which the different component parts of the e-learning phase have contributed to the final result. Additionally, given its central role in the CoP, a thorough analysis of the

discussion forums promises to yield very interesting and useful insights. As suggested by the model of Garrison, Anderson, & Archer (1999), such an analysis should incorporate three dimensions, namely 'cognitive presence' (What is learned?), 'social presence' (How does a network influence this process?) and 'teaching presence' (How does the facilitator influence this process?). Such an analysis would greatly assist in creating a learning experience for adult learners that will be both interesting to follow and effective in its educational value.

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The Acceptance of eLearning Methods of Extra Occupational and Full-time Students

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Abstract: Meanwhile digital technologies affect our whole life, so it is not surprising that it also changes the practice to teach and learn. The central notion of eLearning is the temporal flexibility, thereby learning will no longer be limited to the time we spend at schools, colleges, and universities.
Due to the internet and web technologies, tertiary educational institutions are exploring the potential use of eLearning technologies and methods to provide the increasing demands of flexible teaching needed in distance education.
The University of Applied Sciences Technikum Wien also offers different eLearning methods to support teaching and learning processes in different course programs which are divided into full-time and part-time.
In the near future, at the Technikum Wien the variety of eLearning possibilities will be increased. One way to decide which methods should be offered increasingly is a check of the acceptance of eLearning methods with particular attention to the different level of acceptance between extra occupational students and full-time students.
For this purpose, a student survey was conducted, the results are presented in this paper.

Introduction

In Austria, as well as in probably most other countries, the pressure on tertiary educational institutes has increased because of the demanding educational needs. On the one side this need is based on the students who, of course want to raise their education and on the other side it is based on the business environment which needs more and higher educated employees. This is not new but in recent years strengthened the demand for flexible learning more and more.

According to Central Bureau of Statistics in the academic year 2003/04 66.5% of the new students of the scientific universities in Austria declared they where not working beside their study (adjusted from those who did not specify). In the year 2004/05 61.6% did not work and in the next year there where only 60.2% of the new students not working. (Statistics Austria., 2005), (Statistics Austria. 2006, 1) , (Statistics Austria. 2006, 2)

Because of the additional occupational stress, the students claim for more flexible and customized learning attractions. Online education is increasingly common in tertiary education and is the answer to growing needs of the student population. (Smith and Rupp, 2004)

Another reason is that someone who already lives in vocational stands can study alongside the work if the teaching and learning time is that flexible that it can be adapted to the working hours. Thereby lifelong learning is possible and people as well as the company benefit.

eLearning at the University of Applied Sciences Technikum Wien

Those reasons where recognized by the University of Applied Sciences Technikum Wien and in the mid-90s it started its web based eLearning supply for students. Since then, this support was constantly improved and expanded.

Today there is a central web based Learning Management System called Campus Information System (CIS). In this system each student can find his course manuals as electronic documents, his class schedule, description of courses, contact information of the lecturers, a community area for each course, information about available books at the library, his grade for each course and even much more.

Additionally to the CIS each course program has its own different eLearning methods and tools adjusted to its special needs which primarily depend on whether they are bachelor or master courses and if they are fulltime or part-time studies.

In the near future, the Technikum Wien will provide online courses, so the existing eLearning support will be extended. Therefore, a survey was conducted to answer following questions:

- How much do students use tools and methods provided from their course program?
- Do extra occupational students have a higher acceptance of eLearning methods than full-time students?
- Which eLearning tools and methods, that are not provided by the university do students use?

Basic parameters of the survey

The survey was conducted online, each active or graduate Austrian student who didn't graduate longer than 5 years ago was admitted. The students of the Technikum Wien were invited to participate by email. Moreover, students from other universities were invited to participate through personal contacts with other educational institutes.

Finally, a total of 374 students participated in the survey. Unfortunately, only 15 students where from other universities so we decided to remove those records from the analysis. So the total number of evaluated participants is 359 with 160 fulltime and 199 part-time students.

Besides the age, the survey asked for gender, field of study, university, the branch of the company if they work, the number of employees, average weekly working hours and if they study part-time beside a job or full-time.

In advance, the eLearning tools used in the Technikum Wien were evaluated and divided into the following categories:

- Computer Based Training
- Web Based Training
- Authoring system (Wiki)
- Simulation
- Teleteaching
- Learning Management System
- Blended Learning
- Communities

The students were asked how often they use tools of those categories, which they are using in addition to their studies and if they are employed which are used in their companies.

In addition, the students had to attribute the different categories, which they best describe. Available attributes were:

- Flexible time learning
- Time expensive
- Performance-oriented work
- Technically complicated
- Timesaving
- Don't advance learning progress
- Easy to use
- Congenial learning
- Unknown method

Analysis of the survey

General use of the different eLearning methods

The evaluation of the general use of the different eLearning methods (see Table 1) resulted in important values in the category Blended Learning where 41.21% of all part-time Students and 20.00% of the full-time students indicated to use Blended Learning what corresponds to a difference of 21.21%.

Another major difference of 11.79% was found in the category Computer Based Training where 17.59% of all part-time students and 29.38% of the full-time students declare to use it at least several times per month.

From these values the conclusion can be traced back to the teaching methods used in full-time and part-time studies. Computer Based Training could presuppose the use of teaching materials which is not freely accessible for the students so they have to be locally in the classroom. Whereas due to lower attendance in the classroom and a higher Distance learning part Blended Learning is more used in part-time classes.

Table 1: Use of elearning methods

elearning category	Student typ	amount	percent	distance
Authoring system	part-time	37	18.6	5.2
Authoring system	full-time	38	23.8	
Blended Learning	part-time	82	41.2	21.2
Blended Learning	full-time	32	20.0	
Communities	part-time	125	62.8	6.5
Communities	full-time	90	56.3	
Computer Based Training	part-time	35	17.6	11.8
Computer Based Training	full-time	47	29.4	
Learning Management System	part-time	140	70.4	5.2
Learning Management System	full-time	121	75.6	
Simulation	part-time	75	37.7	4.6
Simulation	full-time	53	33.1	
Teleteaching	part-time	7	3.5	1.0
Teleteaching	full-time	4	2.5	
Web Based Training	part-time	64	32.2	0.3
Web Based Training	full-time	52	32.5	

A further analysis of the use of the categories subdivided into the use categories “daily use”, “several times a week” and “several times a month” didn’t show any interesting values.

Analysis of sympathy values

As described in “Basic parameters of the survey“, the students where asked to attribute the categories. As a result of this assessment it is possible to anticipate the student’s sympathy for each category.

The data base of this analysis contains all votes pro and contra for the categories, “unknown method” votes where omited. A percent value was calculated for each category and student type combination measured on the votes in the particular group (see Table 2).

Considering the values abnormalities in the category “Authoring system” and “Blended Learning” can be recognized. Both categories are favored by part-time students with a distance over 5% (Authoring

system 5.9% and Blended Learning 10.7%). Especially authoring systems are interesting because with 23.75% more full-time students pro rata use this category than part-time students do (18.59%)

It also singled out the category values of "Simulation" and "Teleteaching", because they are relatively low compared to the other values. Obviously these methods are less attractive than the other.

Table 2: Overview of sympathy values

elearning category	Student typ	Pro	Contra	Total	% Pro	% Contra	Mean Pro	Mean Contra
Authoring system	part-time	129	42	171	75.4	24.6	72.5	27.5
	full-time	112	49	161	69.6	30.4		
Blended Learning	part-time	191	29	220	86.8	13.2	81.5	18.5
	full-time	83	26	109	76.1	23.9		
Communities	part-time	331	56	387	85.5	14.5	84.8	15.2
	full-time	233	44	277	84.1	15.9		
Computer Based Training	part-time	282	48	330	85.5	14.5	85.4	14.6
	full-time	250	43	293	85.3	14.7		
Learning Management System	part-time	371	28	399	93.0	7.0	92.2	7.8
	full-time	318	30	348	91.4	8.6		
Simulation	part-time	161	84	245	65.7	34.3	67.8	32.2
	full-time	156	67	223	70.0	30.0		
Teleteaching	part-time	62	39	101	61.4	38.6	61.1	38.9
	full-time	45	29	74	60.8	39.2		
Web Based Training	part-time	300	48	348	86.2	13.8	87.9	12.1
	full-time	248	29	277	89.5	10.5		

Overview of the low awareness level of each category

The analysis of the low awareness level (see Table 3) shows, that there is not much difference in the awareness level of part-time and full-time students. Outliers are "Web Bases Training" and again "Blended Learning" which are well known by part-time students but not by full-time students.

Also interesting is the value of "Simulation" in relation with the lower sympathy result in the Analysis of sympathy values. Apparently most students know that learning method but still they don't like it that much than other methods.

Table 3: Comparison of the categories measured by the low awareness level

elearning category	Student typ	amount	percent
Authoring system	part-time	122	61.3
	full-time	97	60.6
Blended Learning	part-time	103	51.8
	full-time	115	71.9
Communities	part-time	43	21.6
	full-time	41	25.6
Computer Based Training	part-time	65	32.7
	full-time	54	33.8
Learning Management System	part-time	55	27.6
	full-time	36	22.5
Simulation	part-time	78	39.2
	full-time	62	38.8
Teleteaching	part-time	142	71.4
	full-time	124	77.5
Web Based Training	part-time	58	29.1
	full-time	67	41.9

Analysis of the private use of eLearning methods

The comparison of the surveys result on the question about the private use of eLearning methods (see Table 4) show, that just "Communities" are relatively widely used but there is no major difference between part-time and fill-time students while the other categories are not so heavily prevalent.

Another interesting category is the "Authoring system". 17.6% of the part-time students and just 11.3% of the full-time students use tools in this category.

The analysis has raised another interesting aspect. It has shown that apart from category "Authoring system" and "Blended Learning" pro rate more full-time students use the different eLearning methods than part-time.

Table 4: Private use of eLearning methods

elearning category	Student typ	amount	percent	distance
Authoring system	part-time	35	17.6	6.3
	full-time	18	11.3	
Blended Learning	part-time	10	5.0	0.5
	full-time	7	4.4	
Communities	part-time	77	38.7	3.8
	full-time	68	42.5	
Computer Based Training	part-time	22	11.1	5.8
	full-time	27	16.9	
Learning Management System	part-time	18	9.0	3.5
	full-time	20	12.5	
Simulation	part-time	17	8.5	5.3
	full-time	22	13.8	
Teleteaching	part-time	4	2.0	1.1
	full-time	5	3.1	
Web Based Training	part-time	26	13.1	3.2
	full-time	26	16.3	

Conclusion

The survey shows that there are differences between full-time and part-time students even if they are partially low.

Apparently part-time students are more specialized in a few methods foremost Authoring Systems, Blended Learning and Communities while full-time students use a variety of methods. It is estimated that this is based on the time the students can spend on learning.

Part-time students, who have to economize their time beside their job, rely on known sequences and methods because this saves time, while full-time students in general have more time to try out new methods.

In any case, both groups rely on Communities, probably because of the high interaction with other students which is not supported by the other tools and methods that much.

Further studies should clarify the following questions:

- What makes the different methods more or less attractive?
- Is interaction with other students for full-time and part-time students equally important?
- If it is important equally how can web based cooperative learning be implemented in the available methods?

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MA in ePedagogy Design / Visual Knowledge Learning

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Abstract: The Master in ePedagogy Design has been developed by the University of Art & Design Helsinki as the coordinating institution together with INHolland University and University of Hamburg. The goal was to design a two-year (120 ECTS) Master program covering an interdisciplinary curriculum with specific emphasis on cross-curricular communication and collaboration based on media convergence and media literacy to interpret various forms of visual representation in all scientific disciplines and networked communities. This included investigation of process-oriented, cognitive and meta-cognitive ways of creating, stimulating and visualising new methods of content creation, researching and implementing newtechnologies and didactical models.
The cooperation includes the usage of different virtual learning environments from the participating Universities. From all over the world students now participate in the program. Two times a academic year the master program offers a International Seminar.
This EU CD project seeked to establish a strong network of corporate universities and related organisations, institutions and enterprises to foster knowledge building, transfer and efficiency.

Competence Based Teaching and Evaluation Methods/Strategines Online: Analysis of Intercultural Communication course

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Abstract: In the article the possibilities of the measuring and assessment of the intercultural competence online and the problem of it are discussed. Article analyses possible variations of competence based assessment strategines, techniques and educational tools. The importance of the competence based teaching and learning online in educational context is underlined. The structure, the assessment strategies and methods of the intercultural competence are analyzed (questionnaires, the competence files (portfolio), inventories, the reflective journals, interview, scenarios, the analyses of the critical incidents, simulation games etc.) that are orientated into the social, metacognitive competences, communication skills of the students, interactive communication, reflection, research, professional skill, creativity development and the evaluation at the same time.

The aim of the article - to reveal opportunities of online learning and assessment in intercultural competence development using competence based approach. The aim will be achieved through the following tasks: 1) to describe competence development in online learning; 2) to reveal the role of new assessment in competence-based approach; 3) to disclose the possibilities to support development of intercultural competence in online learning by applying new assessment strategies, forms and tools.

Competence development in online learning

Online learning, the use of electronic media, and information technologies provides new opportunities for flexible course delivery: the emphasis on asychronicity in online learning increase scope for flexibility in study process, meets a growing demand for part time study, continuous professional development and lifelong learning. While providing the opportunities of flexible online learning, challenges arise to support competence development of future professionals, to enable students to take part in specific future professional situation applying knowledge, skills and attitudes. Competences are grounded in knowledge, are constituted through values, are dispositioned through skills, are consolidated through experience, and are realized on basis of will (Ehlers, 2007; Erpenbeck and Heyse, 1999). Competence development in online learning could be full filled by employing a social constructivist approach, combining collaborative learning (McConnell, 2001), activity-based learning (Macdonald and Twining, 2002), resource-based learning (Macdonald et al., 2001) and problem-based learning (Ronteltap and Eurelings, 2002). Competence development could be stimulated through practical, self-organized, situative, emotional, social and communicative learning.

Despite of intentions of higher education to create competence-based curriculum, still current experiences show, that most of the online environments correspond to distributive e-learning model rather then collaborative (Ehlers, 2007). Transition from distributive e-learning model to collaborative e-learning reflects shift from knowledge-based curriculum to competence-based curriculum. Distributive e-leaning model focuses on knowledge and qualification acquisition, orients towards reproduction, problem solving, understanding, stresses authority of teacher, who plays knowledge transfer and demonstration role. Collaborative e-learning model aims to develop competences, by constructing knowledge through social practical experiences, using technologies of collaboration, interaction and communication, defining teacher's role as coach and player instead of authoritative tutor. While assessment in distributive model stresses knowledge and reproduction, which are demonstrated in tests and multiply choice assignments, assessment in collaborative e-learning model is oriented to performance and skill application, collection of evidences and demonstration of competences.

Fostering the liberal paradigm's ideals and principles that correspond to the competence based approach can be fulfilled by applying a new non-traditional assessment, that enables development of competences and encourages self organized study of a student. New forms of assessment, striving reflective, collaborative, experiential, practical approaches, seeks to evaluate knowledge, skills of the students, their attitudes and metacognitive strategies.

The aims, forms and methods of competence based assessment

Many authors notice the changes that take place in the sphere of the evaluation philosophy. (Segers, 2003; Marshall, 1999). Traditional evaluation, which aims to perform the *assessment of learning* is based on the main evaluation of the development of main skills, taking to consideration the aims of the programme. In majority of cases, such evaluation takes place at the end. In that case, the evaluation is becoming a responsibility of the teacher and depends on one evaluator only. The tests that are created by teachers influence the mechanical, superficial studying. Competence based assessment includes the involvement of the student into the activity and the evaluation itself takes place in the activity.

The aims of the competence based assessment are: to evaluate learning effectiveness, achievements of students, to promote communication of learning process participants (students, teachers), to develop reflection and learning skills.

Differently from the traditional assessment a new assessment is student-centered. Students gain opportunity to evaluate themselves and the others, provide feedback and reflect their learning. Race (1993) offers an educational model that becomes a driver of the new evaluation process. This model consists of: 1) a wish to study (motivation); 2) studying in the activity (practice, learning from the mistakes, the learning from the experience) 3) studying with a feedback (to develop positive feeling, views while studying); 4) understanding (the perception of the experience, the understanding of the feedback).

Taking to consideration the constructivist view into learning in the educational process the most important thing is the link between prior knowledge and newly received skills (Birenbaum, 2003; Limon, 2001). One of the competence based assessment's goal is to collect the proves and evidences of their skills, knowledge, ability to *perform or behave* according to the situation.

While performing the student-centered education, besides tutor assessment, new forms and strategies of the evaluation are used - *self-assessment, peer-assessment, group assessment and portfolio.* These forms of assessment enables students to reflect their activity, improve the communication skills, open the way for the productive dialogue between the teacher and the student. The quality of the new evaluation in higher education is connected to the goals to help students to improve, to use the transferable skills including and organizational (time, task, management, skill and problem solving) skills, metacognitive and reflective skills.

Self-assessment can be valuable because of the proves that the student collect while filling in the reflective journals, personal development plans, diaries, that reflect the individual knowledge of the student, that meets the requirements of the course aims and the competences that need to be achieved. Self-assessment involves the student to evaluate the process of studies, achievements and the learning results. (Bound and Falchikov, 1989) Using this assessment strategy, the students should actively take part in the learning process.

Self-assessment using portfolio method was offered by Keith (1996). He suggested the tasks with the help of which the students should reflect the process of learning. There were used different simulation, imitative tasks, that encourages the cooperation of the students, critical thinking, communicative skills and teamwork. Such tasks help the students to be in charge of their studying process. The students are encouraged to assess one another, reflect the process of their studies. That is why the essays, reports, presentations, discussions etc are thought as the deeper means of educational experience. Self-assessment acquires a great importance in the evaluation of competence based approach, because it reflects metacongnitive component's development importance.

Peer-assessment, according to Falchikov (1995), is a process during which the individuals evaluate one another and the members of their group. Somervell (1993) state that the peer-assessment is not only a ranking procedure, but also it is a part of the educational process, during which the transferable skills are taught and improved. Peer –assessment can be the part of self-assessment, where the students learn about the works of other co-students more than the teacher. The peer-assessment is a practice, which strengthens the feeling of responsibility, requires the correct judgment from the students, while evaluating the others, make them be objective and know the true evaluation criteria.

Self-assessment and peer-assessment involves students into the identification and negotiation of the standards and criteria of their work and assessment; creates environment for students to make discussions and evaluate one another; allow to discuss the assessment's objectiveness. According to Brown and Dove (1991) the self and peer assessment that was successfully involved in studies can: 1) help the students to feel that they are the masters of their educational process; 2) to motivate them to be interested more in the educational process; 3) to think about the assessment as the common activity, that does not depend on one person;4) to develop cooperation skills and the change of ideas; 5) to show the way into deeper and more effective studying; 6) to encourage the students to be independent in the educational society, where the students feel the influence and try to be involved in it; 7) students feel that their experience is evaluated and the decisions are valued and respected 8) to develop the transferred and personal qualities; 9) to take part is educational community. Self-assessment and peer-assessment add the novelty to the course. The new evaluation is different from the formal and the student are responsibly involved in it.

One more evaluation form is portfolio assessment. Stiggins (1994) describes the portfolio as the entity of documents, proves, that describe the achievements of the student and his improvement. The evidence of portfolio are not only the artifacts, the works of the students, but also the logical statement that is connected to the aims that were achieved by the student, that correspond with the assessment standards and the expected results. According to Stiggins, portfolio is not only the assessment form but also the way to discuss the achievements of the students, their growth, and development. The filling of the portfolios connected to the personal knowledge, experience and skills, which become the target of the education. Zubizaretta (2004) states that the main point of filling in the portfolio is to improve the process of the education, creating the possibility for reflection of the learning process and developing of the skills that increase due to the critical reflection.

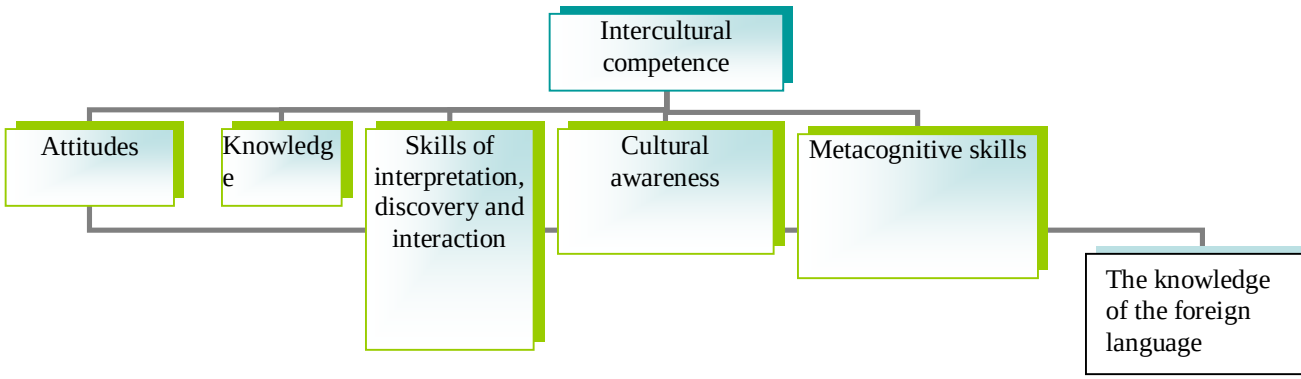
Competence-based assessment strategies and forms for intercultural competence development online

Introduction of new assessment strategies and forms mentioned above is essential for implementing competence based approach. The use of proper assessment forms and tools can be considered as successful strategy for online development of intercultural competence. Evaluation of assessment strategies would allow to draw conclusions on opportunities to implement competence based approach in intercultural learning. Investigating the use of competence based assessment forms the research was made in the framework of Socrates/Minerva programme Project „M.A.S.T.E.R. - Mobility, Assessment, Selection, Technology and E-learning Research" (Nr. 229580-CP-1-2006-1-NL-MINERVA-MPP), which is a joint project from Maastricht University, University of Dundee, Siauliai University and Fachhochschule Lübeck. The results described here are taken from quantitative research made in Siauliai University (Lithuania) with 174 Master students participated in M.A.S.T.E.R. project online course "Intercultural Communication". After the course had been completed, the survey on remedial courses assessment strategies and tools in the M.A.S.T.E.R. project was made. Respondents (students) were asked to evaluate different forms of assessment used in the course (tutor-assessment, self-assessment, portfolio) according to quality requirements of assessment (validity, reliability, transparency).

Baumer (2002) explains the notion of intercultural competence in two way: 1) as the precondition for the successful daily communication of people and as 2) the precondition for the successful communication of people from different cultures(people that speak different language, that live in the different cultural context etc). There also exsist a different scientific opinion that states that the intercultural competence – is the ability to effectively integrate in the different culture group (INCA, 2004).

In definitions of 'intercultural competence' in the professional domain, four dimensions tend to be distinguished: knowledge, skills, attitudes and traits (Sercu, 2004). Chen and Starosta (1996) provide a model of the effective interculturalist, which focuses on affective (intercultural sensitivity), cognitive (intercultural awareness) and behavioural (intercultural adroitness) components. *Affectively speaking*, the effective interculturalist is said to have a positive self-concept, to be open-minded, non-judgmental and relaxed in social interaction. *Cognitively speaking*, the effective interculturalist possesses cultural self-awareness and cultural awareness, which help to reduce the ambiguity and uncertainty that are inherent in intercultural interaction. *Behaviourally speaking*, the effective interculturalist possesses good message skills, technical skill, the skill of appropriate self-disclosure and interaction management, behavioural flexibility, as well as social skills, in both the verbal and non-verbal domains. The *personality traits* that are conducive to intercultural competence are: empathy, respect, interest in cultures, flexibility, tolerance, open-mindedness, initiative, sociability and positive self-image (Kealey & Ruben, 1983).

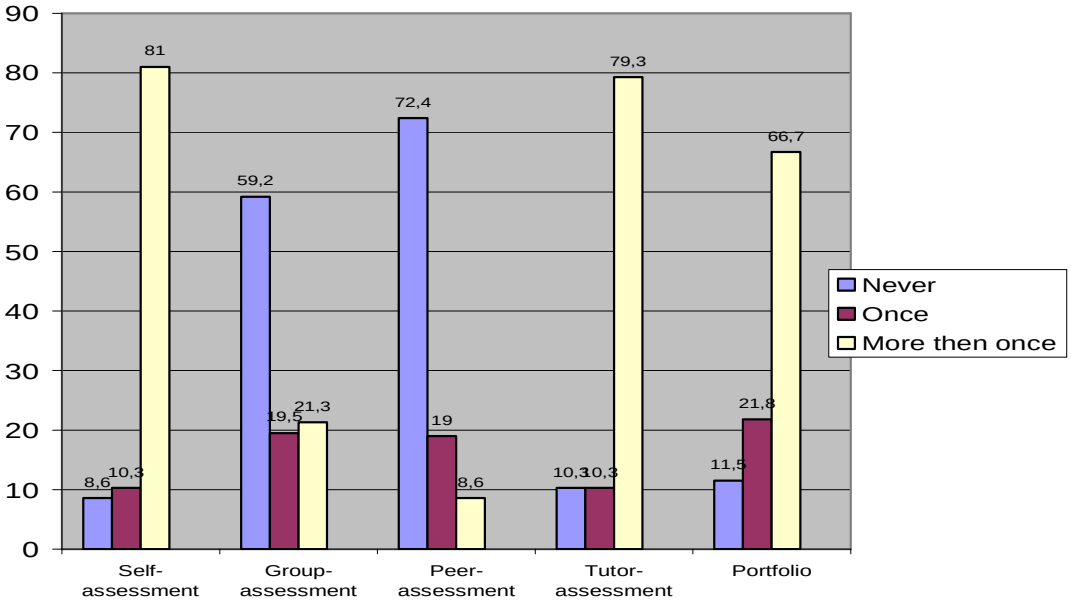
The intercultural dimensions are detailed described in Byram (1997) model that is often referred to by other scholars. According to Byram (1997) the intercultural competence consists of the 4 dimensions such as: knowledge, skills of interpretation, skills of discovery and interaction, and cultural awareness. Some of the authors the skills of interpretation, skills of discovery and interaction connect into one intercultural competence dimension, and call it the cultural skills. Some of the authors point out 5 components of the intercultural competence and add to the Byram model the foreign language skills (Fantini, 2000). Sercu (2004) add to the Byram intercultural competence structure and equalises it with the competence theories. Competence consists of the specific subject knowledge, cognitive strategies, metacongnitive and emotional characteristics (according to Birenbaum, 1996) (Picture Nr. 1).



Picture Nr. 1. The model of the intercultural competence according to Byram (1997) and Sercu (2004).

Developing intercultural competence in MASTER project course "Intercultural communication" different forms of assessment were used: beside teacher assessment, respondents pointed out self-, group-, peer-, portfolio assessment forms frequently used in the course (see figure 1).

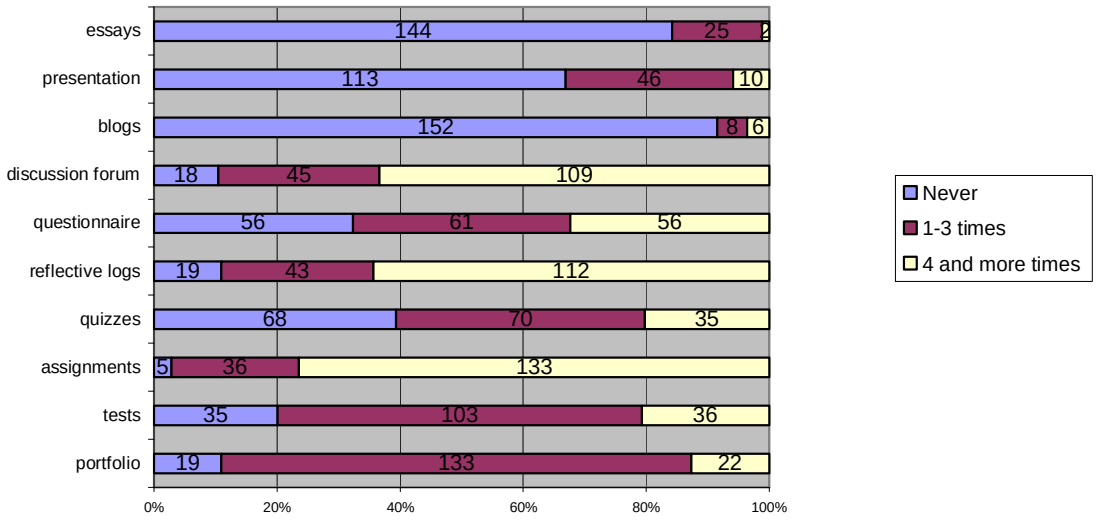
Figure 1. Frequence of use of assessment strategies and tools in Intercultural Communication course (N=174)



Online remedial course of "Intercultural Communication" consisted of 15 topics and assignments for students, each topic had discussion forums and all these activities had evaluation system, which helped in assessing students through the whole study process. Master students had learning task to fill in competence portfolio at the beginning of the course and at the end of the course, which was evaluated by qualitative assessment rubrics.

Frequency of use of assessment tools in "Intercultural Communication" course was evaluated (See figure 2). Reflective logs, discussion forums, portfolio filling and assignments were used more often comparing with essays, presentations, tests, questionnaires.

Figure 2. Frequency of use assessment tools in Intercultural communication course (N=174)



Learning journals, diaries, reflective logs, e-portfolios are some of the most important educational tools, which depend on the collection of the additional evidence. The students think over and collect the documentation of their intercultural experience, culture difference, the peculiarities of the foreign and their own culture. If such documentation is filled in the other intercultural context (for example- if the student takes part in the exchange programme) and lives abroad, that allows to remember and evaluate the experience (thoughts, feelings etc) after he/she is back home. This can be a basis for the discussion with peer students. Diaries are the certain direction for writing, not only the form of evaluation, but also the tool of the organization of the studies.

Portfolio allows documenting and fixating the intercultural experience of the student during the stay in other country, self-assessment in different environment and presenting the evidences of the intercultural competence mastering. Filling in the electronic and paper portfolio helps to form the understanding of the students of how they live and learn, how their communicational and organizational skills improve. The most important goal of the filling in the portfolio is to improve the learning process of students, creating a possibility for reflection of the learning process; develop the skills that grow due to the critical reflection.

While evaluating new forms and strategies of assessment (self-assessment, peer-assessment, tutor-assessment, group-assessment, portfolio) in competence development, the standards of the evaluation quality were taken into consideration in our research. The use of assessment forms and tools should meet requirements of validity, reliability, objectiveness (adds to the teacher's assessment), difficulty and transparency (Race, 2001).

Participants of M.A.S.T.E.R. project "Intercultural Communication" course" were asked to evaluate main quality characteristics of assessment forms and tools used. Survey questionnaire consisted of 31 statements on validity, reliability and transparency of tutor-, self-, portfolio assessment forms. Level of agreement with statements were measured by responses: 1 – "Not really", 2 – „A little", 3 – „Yes", 4 – „Absolutely yes". *Validity* describes whether the evaluation process measures what was planned to measure, taking to consideration the aims and the educational results (For instance, statements "*Assignmets and tasks, which I had to carry out for assessment matched objectives of this course - skills and competences I have to develop and demonstrate", „A wide range of skills could be demonstrated in this course, I could demonstrate adequately what I know, what I am able to carry out in practice and what I feel*

and think"). *Reliability* deals with correctness, logic, the clear statement and the objectiveness of assessment. In our research reliability was defined as fairness, objectivity of assessment and accurateness. Objectiveness of self- and peer- assessment is growing when the final evaluation is not taken by one evaluator only (for instance, statements: *"Teacher looks carefully at exactly what is being measured by each form of assessment", „ Assessment made by teacher was fair and objective", „Teacher facilitated discussion of the fairness and objectivity of the assessment", „Before assessment it was allowed learners to identify standards or criteria to apply to their assignments, make judgments about the extent to which they have met these standards and criteria"*). *Transparency* implies if the evaluator and the evaluated clearly understand and state the goals of the evaluation; the students know what they are expected to do during the educational process, what competences and achievements must be proved during the demonstration (for instance, statements: *„Criteria for selecting and assessing the portfolio content was clear" ,"Assessment tasks of the course were clear defined and they seem purposeful for me", „You had the opportunity to discuss with each other (and with tutors) matters arising from your assessment of your own work or each other's work"*). Learning to learn criteria allows to evaluate quality of assessment forms and tools developing competences (for instance, statements: *„Portfolio filling was effective to learning process, I could record, observe and follow my progress made in the course and could set goals for further learning", „The outcomes of the self-assessment are a basis for action, it will stimulate me to seek for further improvement of my competence").* This criterion of quality was applied to portfolio and self-assessment forms.

Evaluating validity, reliability, transparency and learning to learn in all forms of assessment used in the course respondents emphasized that validity, reliability and transparency were higher in turor- and self-assessment, than in portfolio (See Figure 3, 4, 5). Learning to learn indicator of quality of assessment is relatively high in comparison of other indicators (reliability, transparency) in all forms of assessment.

Figure 3. Validity, reliability, transparency and learning to learn in different forms of assessment

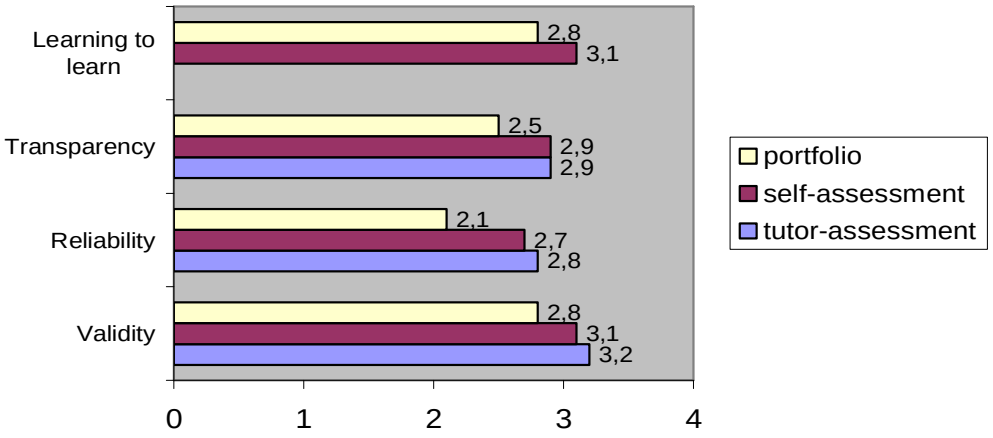


Figure 4. Validity, reliability, transparency and learning to learn in all forms of assessment

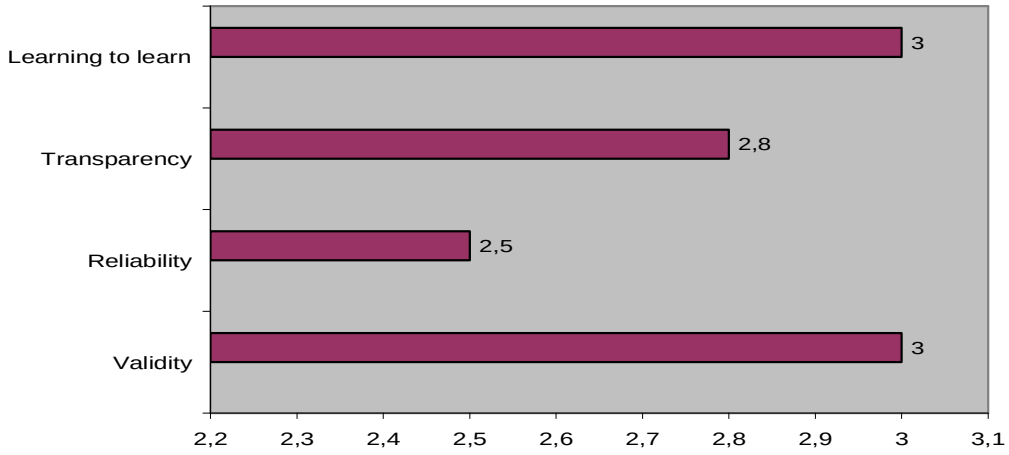
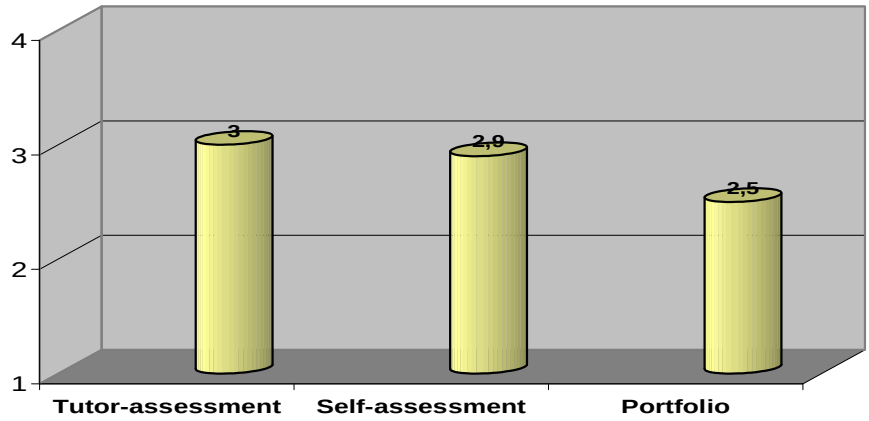


Figure 5. Evaluation of quality indicators (transparency, reliability and validity) of different forms of assessment in Intercultural Communication course



Self-assessment and portfolio are successful to promote learning to learn. If even this forms are not considered by students as having high reliability (accurateness, objectivity), they are seen as promoting further improvement of students competences, allowing to observe and identify their progress. New forms of assessment (self-assessment and portfolio) have potential to stimulate metacognitive and reflective dimension in competence development process. Tutor-assessment matches the idea of traditional knowledge-based approach, which revealed itself in the research as reliable, valid and transparent form of assessment.

Conclusions

The current challenge for online learning in higher education is to support competence development, which could be done by minimizing the importance of distributed learning approach (which implies knowledge transfer) and trying to implement collaboration learning approach (which implies competence development) in study process. Competence-based education, seeks to increase not only

knowledge but also the skills of the students, their attitudes and metacognitive strategies, also helps to insure the educational activities.

Using variety of learning, teaching and assessment methods (information sources, scenarios, portfolio, diaries, assignments, etc.) it is possible to develop several or most of components of competence (in this case - intercultural competence). In the process of intercultural competence assessment there could be used the triangulation of traditional and new methods and techniques, in order to develop all the components of the intercultural competence (knowledge, skills, attitudes, personal qualities, cultural awareness, metacognitive strategies). New assessment forms take into consideration interests of all participants of educational process (student, teacher, organization), allowing to evaluate oneself and the others, ensure the feedback and the constant development of competence.

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Explaining student learning preferences in a blended learning environment for learning statistics on the basis of student characteristics

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Abstract: In the teaching of introductory statistics to first year students economics and business, the Maastricht University uses a blended learning environment that allows students to design a individualized environment by attuning available learning tools to personal preferences. The blended learning environment consists of tutorials based on the problem-based learning principle, lectures, independent learning and an electronic learning environment based upon knowledge space theory: ALEKS. Usage of only the first component is required; the usage of other components can be set according to individual preferences. In this study, we will focus on the intensity of the use of the electronic learning environment ALEKS and investigate the relationship between this and student background characteristics, such as learning style preferences and motivational variables. Data of about 2000 students taking this course is used.

Introduction

In this empirical study, we investigate in a large group of first year university students following an economics or business program, the revealed preferences for using the e-learning component in a blended learning environment for learning introductory statistics. This blended learning environment consists of tutorials based on the problem-based learning principle, lectures, independent learning and an electronic learning environment based upon knowledge space theory: ALEKS (Tempelaar et al., 2006). Except for the tutorial sessions, for which attendance is required, students can set the intensity for each of the components of the blended learning environment according their personal preferences. Some of these preferences become revealed, e.g. by measuring connect-time in the e-learning mode. This study aims to explain patterns in revealed preferences by individual differences in a range of determinants of learning processes: preferred learning approaches, metacognitive abilities, and achievement motivations.

The Inventory of Learning Styles (ILS) instrument, developed by Vermunt (see Vermunt and Vermetten, 2004), has been used to assess preferred learning approaches. Students' metacognitive abilities are operationalised by the recently developed self-report instrument Awareness of Independent Learning Inventory (Elshout-Mohr et al., 2005; Tempelaar, 2006), that presumes metacognition to be a three dimensional construct, comprising knowledge, skills, and attitudes. Expectancy-value models form the basis of an instrument measuring achievement motivations (Schau et al, 1995; Tempelaar et al, 2007). Schau's version of the modern expectancy-value model distinguishes two expectancy factors dealing with students' beliefs about their own ability and perceived task difficulty, a construct expressing subjective task-value, an affective task-related attitude, and the constructs interest and effort. Achievement motivations are measured ex ante and ex post, in order to be able to observe developments during the learning episode. Measurements for students' preferences for e-learning are generated as log-data by the ALEKS electronic tutorial system.

The adaptive tutorial system ALEKS

The ALEKS system combines adaptive, diagnostic testing with an electronic learning & practice tutorial in several domains relevant for higher education. In addition, it provides lecturers an instructor module where students' progress can be monitored, educational standards can be adapted to a particular college, or course and other administrative tasks can be carried out. ALEKS is a commercial software product.

The ALEKS assessment module starts with an entry assessment in order to evaluate precisely a student's knowledge state for the given domain (e.g. Business Statistics). Following this assessment, ALEKS delivers a graphic report analyzing the student's knowledge within all curricular areas for the

relevant course, based on specified standards. The report also recommends concepts on which the student can begin working; by clicking on any of these concepts or items the student gains immediate access to the learning module.

Some key features of the assessment module are (see Figure 1 for a sample):

- All problems require that the student produce authentic input.
- All problems are algorithmically generated.
- Assessment questions are generated from a carefully-designed repertoire of items ensuring comprehensive coverage of the domain.
- The assessment is adaptive: the choice of each new question is based on the aggregate of responses to all previous questions. As a result, the student's knowledge state can be found by asking only a small subset of the possible questions (typically 15-25).
- Assessment results are always framed relative to specified educational standards. The system allows instructors to customize the standards used by their courses with a syllabus editor (part of the instructor module). Both the assessment and learning modules are automatically adapted to the chosen standards.

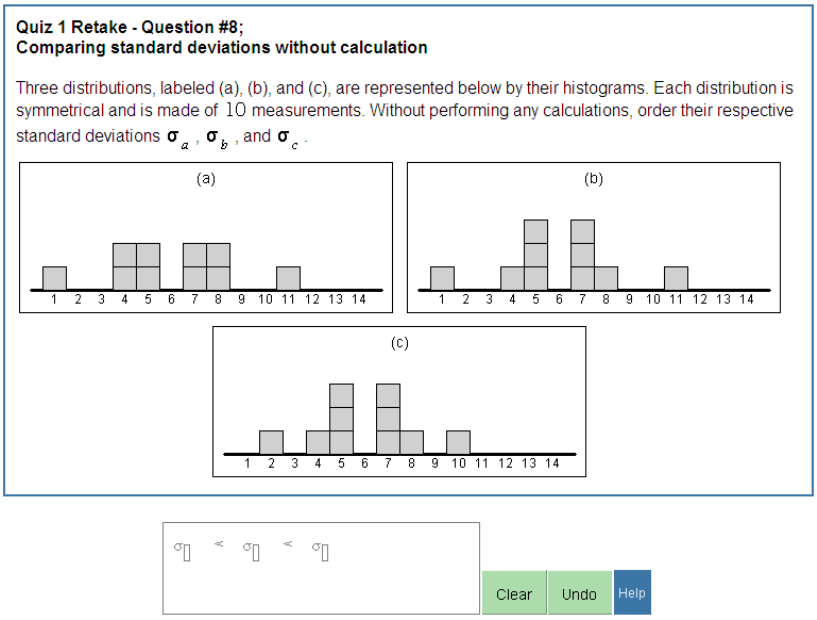

Figure 1. Sample of an ALEKS assessment item.

The learning report, of which Figure 2 shows part of, provides a detailed, graphic representation of the student's knowledge state by means of pie-charts divided into slices, each of which corresponds to an area of the syllabus. In the ALEKS system, the student's progress is shown by the proportion of the slice that is filled in by solid colour: if the slice is entirely filled in, the student has mastered that area, if it is two-thirds filled in, the student has mastered two thirds of the material, and so forth. Also, as the mouse is held over a given slice, a list is displayed of items within that area that the student is currently "ready to learn," as determined by the assessment. Clicking on any of these items gives access to the learning mode (beginning with the item chosen).

At the conclusion of the assessment ALEKS determines the concepts that the student is currently ready to learn, based on that student's current knowledge state. These new concepts are listed in the report, and the learning mode is initiated by clicking on any highlighted phrase representing a concept in the list. The focus of the learning mode is a sequence of problems to be solved by the student, representing a series of concepts to be mastered. The facilities offered by the learning mode are as follows:

- Practice (that is, the problems themselves);
- Explanations of concepts and procedures;
- Dictionary of technical terms;
- Calculator (adapted to the topic studied, e.g. in statistical items, a special "statistics calculator" is provided).

For example, a student working on a particular problem may "ask for" an explanation of that problem (by clicking on the button marked "Explain"). The explanation typically provides a short solution of the problem, with commentary. After reading the explanation(s), the student may return to "Practice" (by clicking on the button marked "Practice"), where she or he will be presented with another problem exemplifying the item or concept just illustrated. If the student is successful in solving the problem, the system will offer (usually) two or three more instances of the same item to make sure the student has mastered it. In the text of problems and explanations, certain technical terms such as "addition", "factor" and "square root" are highlighted. Clicking on any highlighted word or phrase will open the dictionary to a definition of the corresponding concept. The dictionary can also be used independently of the current problem to look up any term the student may be curious about. A graphing calculator is available for computing and displaying geometrical figures in analytical geometry and calculus. Other, related features of the learning mode are Feedback, Progress monitoring, and Practice. Whenever the student attempts to solve a problem in the learning mode, the system responds to the input by saying whether or not the answer is correct and, if it is incorrect, what the student's error might have been. More generally, ALEKS follows the student's progress during each learning sequence, and will at times offer advice. For example, if a student has read the explanation of a problem a couple of times and yet continues to provide incorrect responses, ALEKS may suggest -- depending on the circumstances -- that the student looks up the definition of a certain word in the dictionary. ALEKS may also propose that the student temporarily abandon the problem at hand and work instead on a related but easier problem. The capacities of the ALEKS system to monitor and guide student learning is flexible and multi-faceted. When a student has demonstrated mastery of a particular item by repeatedly solving problems based on it, ALEKS will encourage the student to proceed to a new item.

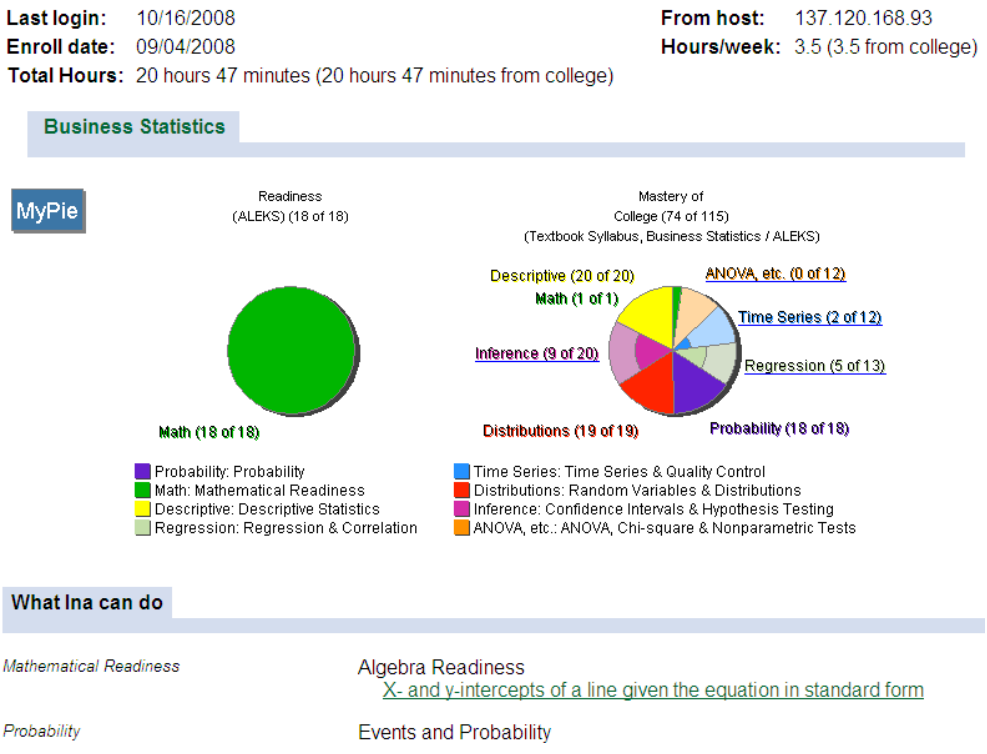

Figure 2. Partial sample of an ALEKS learning report.

The instructor module enables lecturers to monitor student progress and achievement; to view and change the standards applied in the generation of assessment reports; and to carry out other administrative tasks. In detail, the lecturer can:

- View and print reports for individual students;
- View and print a list of students, with a summary of information for each student including assessment results, progress in the learning mode, and total time spent in the system;
- View and print synthetic reports for entire courses, giving an overview of the class's strengths and weaknesses;
- View the standards used by default for a course, with the option of editing standards pertaining to that course only;
- Edit student registration data or retrieve forgotten passwords.

Method

Measures

Metacognitive abilities: the Awareness of Independent Learning Inventory or AILI (Elshout-Mohr et al., 2005; Tempelaar, 2006). The AILI is based on Flavells' three component model of metacognition, which decomposes metacognition into the components knowledge, skills, and attitudes (Flavell, 1979). Incorporation of the attitudes component makes the AILI unique; the MAI instrument is e.g. limited to the components knowledge and skills. Each component is further divided into three subcomponents. For metacognitive knowledge, these subcomponents are based on the types of knowledge identified by Flavell (1979): about persons, about strategies, and about study tasks. For metacognitive skills, subcomponents correspond to the three consecutive stages of a learning episode: the preparatory, the executive, and the concluding stage (Van Hout-Wolters, 2000). For metacognitive attitudes, subcomponents are again based on Flavell (1979): sensitivity to internal feedback, to external feedback, and curiosity. In the construction of AILI a so-called facet procedure has been followed. This design implies that, in addition to referring to a specific metacognitive component and subcomponent, every item refers to one of five content domains defined as the second facet: Learning goal, Emotional interest, Collaborative learning, Deep understanding, and Orderliness/Systematic approach (Elshout-Mohr et al., 2005).

Subject achievement motivations based on Eccles' expectancy-value theory (Eccles, 2005; Eccles et al., 1983; Wigfield & Eccles, 2000, 2002; Wigfield, Tonk, & Eccles, 2004). Achievement motivations for business subjects are measured with an instrument derived from the Survey of Attitudes Toward Statistics (SATS) developed by Schau and co-authors (Dauphinee et al., 1997; Hilton et al., 2004; Schau et al., 1995). The instrument is based on expectancy-value theory as the interpretative framework to understand formation of motivations. Expectancy-value models take their name from the key role of two components in the motivation to perform an achievement task: students' expectancies for success, and the task value, that is the value they attribute to succeeding the task. The SATS instrument measures four aspects of post-secondary students' subject attitudes: two expectancy factors that deal with students' beliefs about their own ability and perceived task difficulty: Cognitive Competence and Difficulty, and two subjective task-value constructs that encompass students' feelings toward and attitudes about the value of the subject: Affect and Value. Validation research has shown that a four-factor structure provides a good description of responses to the SATS-instrument in two very large samples of undergraduate students (Dauphinee et al., 1997; Hilton et al., 2004) for the subject statistics. Subsequently, the adequacy of the SATS-instrument for measuring achievement motivations for business subjects has been demonstrated in Tempelaar et al. (2007).

Learning approaches are based on the model developed by Vermunt (Vermunt & Vermetten, 2004) and the instrument ILS-HO based on that model. Vermunt distinguishes four domains or components of learning: cognitive processing strategies, metacognitive regulation strategies, learning conceptions or Mental models of learning, and learning orientations. Based on characteristic patterns in preferences or habits of individual students with regard to these four domains, four different learning styles can be distinguished, to know the meaning-directed, reproduction-directed, application-directed and undirected learning styles. The ILS aims at measuring the following components of student learning: cognitive

processing strategies, metacognitive regulation strategies, learning orientations, and conceptions (or mental models) of learning. Each component is composed of five different scales, as described in the Table 1.

Table 1: Components and scales of the Inventory of Learning Styles.

Processing strategies	Regulation strategies	Learning orientations	Learning conceptions, or Mental models of learning
Relating and structuring	Self-regulation of learning processes	Personally interested	Construction of knowledge
Critical processing	Self-regulation of learning content	Certificate directed	Intake of knowledge
Memorising and rehearsing	External regulation of learning processes	Self test directed	Use of knowledge
Analysing	External regulation of learning results	Vocation directed	Stimulating education
Concrete processing	Lack of regulation	Ambivalent	Co-operation

The two processing strategies 'relating and structuring' and 'critical processing' together compose the 'deep learning' strategy, whereas 'memorizing and rehearsing', together with 'analysing', compose the 'stepwise learning' strategy.

Course performance. Multiple performance indicators are available: subtopic scores (statistics and mathematics), and scores for different assessment instruments applied in the performance portfolio: final written exam and quizzes. GPA is the overall measure of student performance in the first year program.

Data

Participants in this study were 1972 first year university students in two programs International Economics and International Business Studies. In the first term of their first academic semester, these students took two required, parallel courses: an integrated course organizational theory & marketing, two subjects from the behavioural sciences domain, and an integrated course mathematics & statistics. The methods course is supported by 'practicals'. Those for statistics are based on the e-learning environment ALEKS, and allow for the measurement of user intensity through connect hours. Doing practicals is no requirement, and is especially beneficial for students who lack prior knowledge, and/or experience methods courses as difficult. Therefore, data on practicals are not representative for the whole course.

During the start of the course, students filled self-report questionnaires on preferred learning approaches, metacognitive abilities, and ex ante achievement motivations. In the last week of the term, they filled a second questionnaire measuring ex post achievement motivations in the four subjects of the two integrated courses: organizational theory, marketing, mathematics, and statistics.

Participants are from three consecutive cohorts. Therefore, performance measures as quizzes and final exams are scored with equivalent, but not identical instruments.

Statistical analysis

Due to both large sample sizes and collinearity amongst most determinants of the learning process, direct relationships between students' preferences for e-learning and determinants or outcomes of the learning process are not very informative. These relationships are nearly always statistically significant, but cannot easily distinguish between direct and indirect effects. For that reason, our main analytical tool will be to compare correlations between e-learning preferences and student background factors with correlations between learning outcomes and the same student background factors. The latter correlations serve as benchmarks in the assessment of the role of e-learning preferences on the learning process.

Results

Metacognitive abilities reflect students' self-perceptions of their abilities to independently organize their studies. It will cause no surprise that the levels of these abilities correlate moderately strong with learning performances, especially learning performances that are strongly effort based, such as quiz scores. Learning effort in the ALEKS tutorial is above average related with two of the metacognitive abilities: the skills and the attitudes components. See Figure 3.

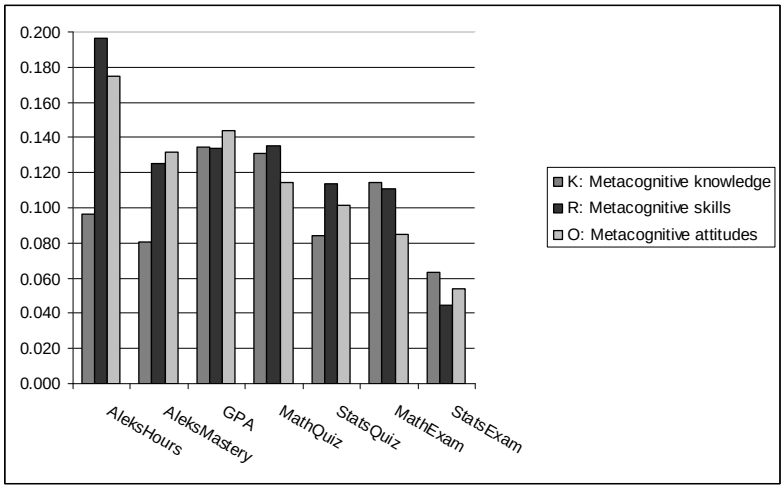

Figure 3. Correlations of metacognitive abilities and outcome measures.

Students with a strong preference for e-learning do also distinguish in terms of learning approaches. They do so even quite strongly, as is expressed in Figure 4. The highly structured way in which ALEKS guides students through the statistical discipline, and the systematic way of offering practice material and providing feedback, appears to be highly attractive for students preferring a stepwise learning approach. Learning time in ALEKS correlates strongly (at least in a relative sense) with the preference for stepwise learning, whilst the correlation with deep learning is about zero. Correlations between stepwise learning and course performances are on a very different level; e.g., scores in the final statistics exam and stepwise learning are negative, signalling that stepwise learning is certainly not the optimal learning approach in studying disciplines as statistics.

Connected with learning approaches are preferences in regulating the learning process. Stepwise learners are frequently dependent on external regulation, whereas deep learners are more often able to regulate the learning process themselves. Figure 5 indeed indicates that external regulation correlates with e-learning time, more strongly than any course performance. Remarkably, also self-regulation correlates strongest with intensity of e-learning, much stronger than any course performance. In fact, most course performances correlate negatively with the self-regulation score, indicating that students with a strong preference for self-regulation in general underperform students with a less strong preference for self-regulation.

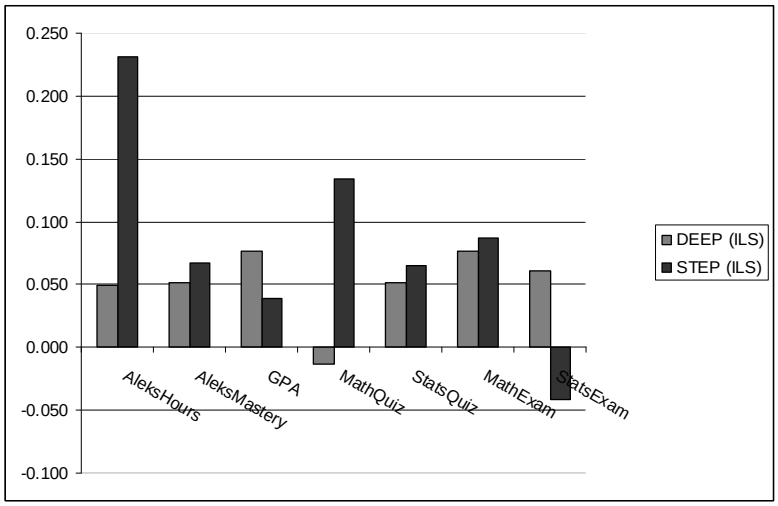

Figure 4. Correlations of deep versus stepwise learning and outcome measures.

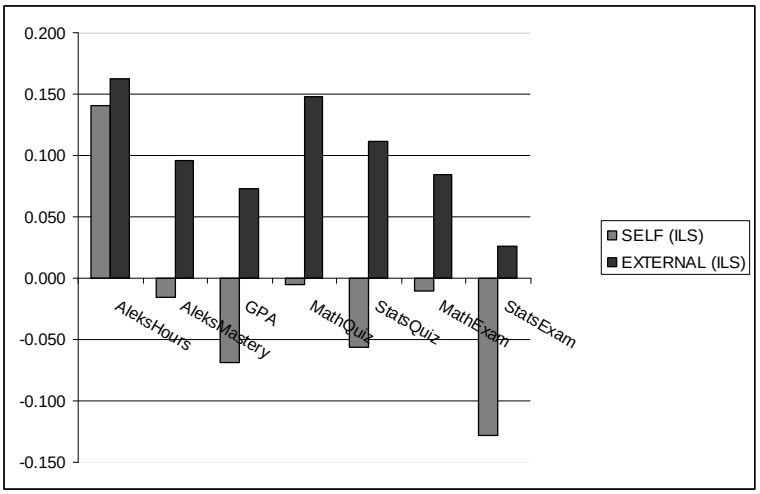

Figure 5. Correlations of self versus external regulation and outcome measures.

A similar pattern can be discovered in terms of learning conceptions. Viewing the correlations between learning conceptions and course performances as depicted in Figure 6, it is clear that not all conceptions are that beneficial for achieving good learning results. In fact, the conception of learning as co-operation, where others have an important responsibility in the learning of the student, appears to be detrimental in most performance measures. In contrast to the use-conception, that in general contributes to higher performances. Intensity in e-learning deviates from this pattern: all learning conceptions correlate positively, with the strongest roles for the learning conceptions construction of knowledge and intake of knowledge.

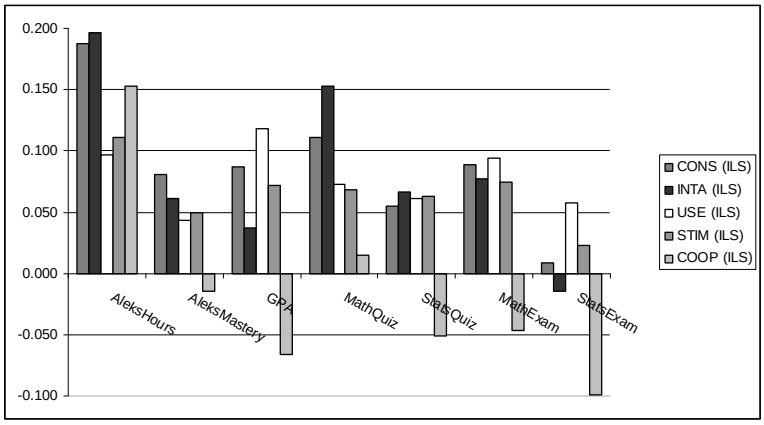

Figure 6. Correlations of learning conceptions and outcome measures.

Ex ante achievement motivations are inversely related to students' prior knowledge. For that reason, it is not surprising that both affect, and perceived lack of difficulty, correlate positively with most course performance measures: see Figure 7. Ex post achievement motivations correlate strongly with all course performances, including e-learning preference: see Figure 8. It tells the simple story that the better motivated students are also the better achieving students. Figure 9, depicting the relationships with the change in achievement motivations, is much more informative.

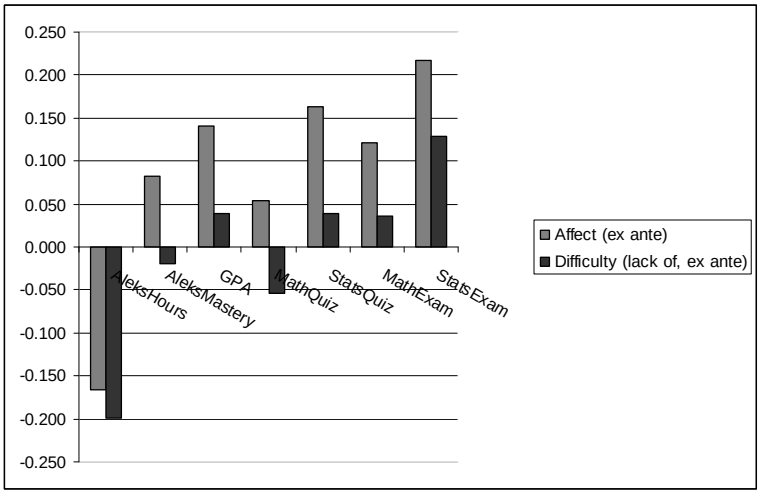

Figure 7. Correlations of ex ante achievement motivations and outcome measures.

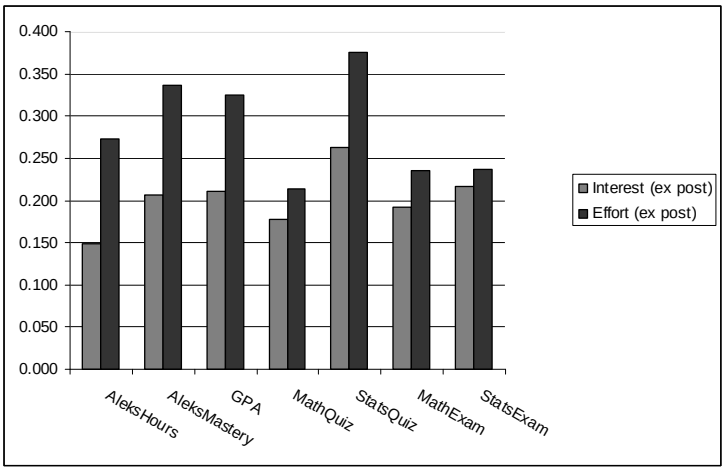

Figure 8. Correlations of ex post achievement motivations and outcome measures.

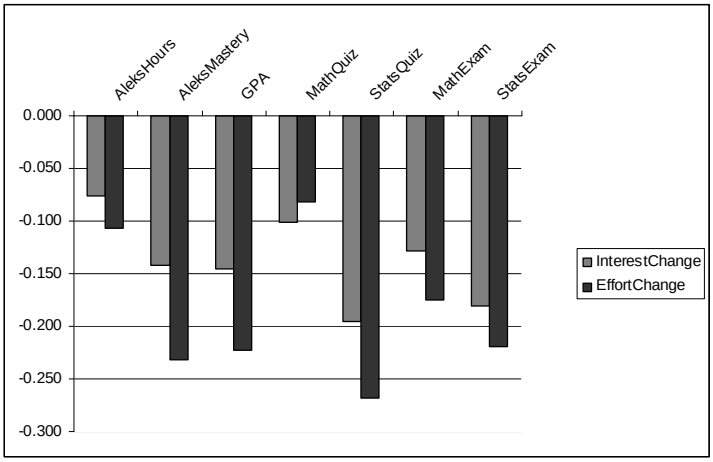

Figure 9. Correlations of change in achievement motivations and outcome measures.

Changes in achievement motivations are generally negative: during the course, students' motivations tend to drop, not to rise. To some extent, this is caused by the way these motivations are measured: ex ante motivations were measured in isolation, whereas ex post motivations were measured relative to ex post motivations for two main subjects: organizational theory and marketing. However, other research suggests that a drop in ex post achievement motivation relative to ex ante motivation is quite common. All correlations are negative, indicating that the better achieving students give up more of their achievement motivations than the lower achieving students. Looking at the size of these negative correlations, it is clear that the intensity of working in the e-learning environment is related only rather weakly to the drop in motivational level.

Conclusion

Students investigated in this empirical study learn statistics in a blended learning environment that allows them to adapt the use of different learning resources according personal preferences. It appears that not only prior knowledge, but also differences in learning approaches, self-perceived metacognitive abilities and achievement motivations account for part of the variation observed in the intensity of using e-learning. Apparently, different components of blended learning are able to serve different types of learners.

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Selecting Educational Content in m-Learning

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Abstract. The new paradigms of learning on mobile devices raise new questions in business, technologically and educationally levels. These devices allow to overcome the spatial and temporary barriers associated with other types of learning: the learner is able to study where and when he/she wants. But there are challenges that must be solved, like the delivering process of learning objects adapted for the user's de-vices. This paper exposes a possible solution using educational and W3C's standards to select the most appropriate learning object for a user taking into account the devices that he/she is using.

Keywords. m-learning, standards, mobile learning objects, context profile, mobile device.

The m-learning's challenges

In the e-learning area, the use of mobile devices has allowed the appearance of a new paradigm of learning called *"any-time-anywhere"* and usually identified as m-learning or mobile-learning.

The m-learning, though using the same pedagogic principles that any other method of e-learning, raises an important number of challenges that should be solved in the near future to be able to consolidate its expansion:

- Of contents: Adapting the educational materials to the final device used by the user.
- Technological: Adapting the educational materials to the "physical way" for which they spread.
- Social and cultural: It is possible to mention in this point the problems originated by the existing rates in the mobile company, the price of the mobile devices, how these devices are used, or the training for the use of this technology of all the involved actors.
- Of business: It is necessary to ask for what business models will be arising around the m-learning, which will be the role of the organizations in the generation, diffusion and sale of contents, or how the relationship between all the implied agents will be articulated.

There are too many questions to answer: how will browsers, user interfaces and standards be affected?, how will it change the paradigm of learning?, where will it be the best place and when will it be the best moment to learn?, and so on.

Nowadays the authors are involved in a research project focused on the selection of educational content appropriated for the student in base of his needs and preferences, and the device that he is using in a particular moment.

Learning Objects (LO) vs. mobile Learning Objects (mLO)

The mobile learning objects have important differences in relation to the traditional learning objects of the e-learning. These differences are divided in two aspects:

- Of format: referenced to the physical way in which the information comes to the user. It is necessary to know the characteristics of hardware and software of every mobile device in order to determine if the edicational content can be reproduced in that device.
- Of presentation: referenced to how the information should be showed in order to increase the satisfaction of the learning experience for the user. For instance, nobody would like to read a 300 pages document on the screen of a mobile telephone.

Taking into account the great variety of existing devices, in an ideal world the contents for m-learning should be developed device-independent. To achieve this, **content and presentation should be separated.**

Factors to the selection of personalised contents

The work initiated by the authors contemplates 3 big necessary factors to realize a selection of content adapted to the user and his devices:

- User's characteristics: preferences and needs.
- Context: what is the way used by the user to learn, where is the user at this moment, etc.
- Learning objects: Characteristics not just of the content, but also of the presentation.

The following figure shows the elements involved: the LMS, which contains the mobile learning objects; the devices with the information of their characteristics (context profile); and the user with his preferences and needs (user profile).

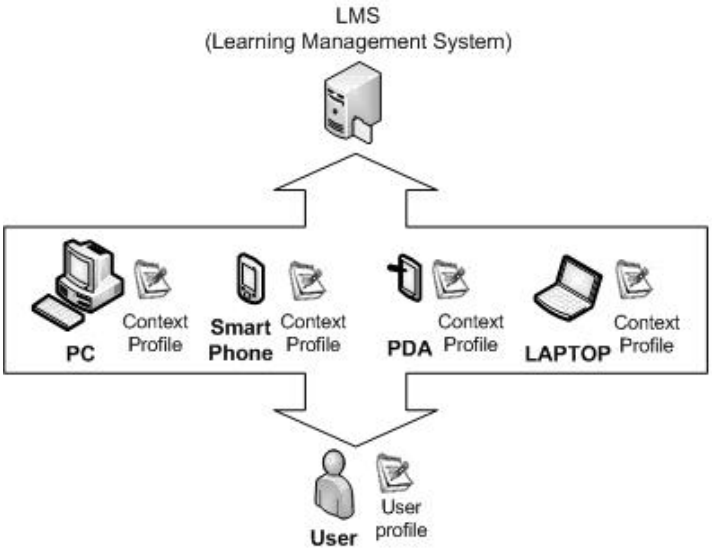

Figure 1 Accessing to the LMS from different devices

Standards integration

The LMS must contemplate the use of different educational standards to achieve different goals: the user model, the educational resources model, the design of the learning course, etc. The objective of this project is to integrate some of these standards to offer a satisfactory learning experience to the student, providing mLOs adapted to the device that he is using.

The next figure shows the different standards that could be involved in a LMS:

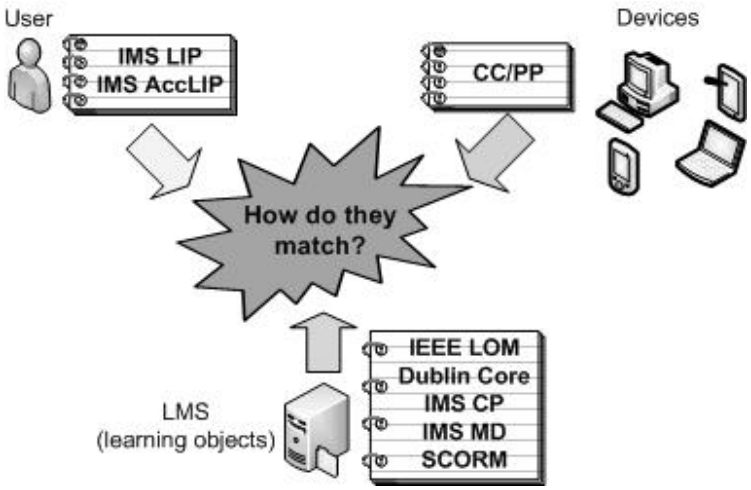

Figure 2 How could we integrate the different standards?

The big question is: How could we make that these standards work together to improve the learning experience of the student?

The standards present big problems of integration due to two reasons: the application domain and the vocabulary used by each one are totally different.

The current work of the authors is focused on 2 processes:

- Definition of the ontologies that these standards imply; on the user (LIP and AccLIP), the device (CC/PP) and the learning object (LOM and AccMD).
- Definition of a common ontology that integrates the previous ones in the same terms, and with independence of the used standard. This will allow to establish relations between all the entities implied to guarantee that a learning object is adapted for the user and his devices.

Conclusions and future work

The satisfaction that the user experiences in m-learning environments will be a key for the development of this new educational paradigm in the future. For this reason, many efforts are neccesary to guarantee an ideal presentation of contents for students with independence of the devices that they are using. The W3C[1] organization by means of the Mobile Web Initiative[2] has some work groups involved in m-learning, producing a series of recommendations and best practices[3] to develop contents for mobile devices.

The authors expect to obtain results for this work in process along 2008, evaluating the applications with the students of Computer Engineering of the University of Alcala de Henares

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Applying a Fact-oriented Knowledge Reference Model to Supply-Chain Management

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Abstract. In this paper we will show how fact-orientation can be used as a knowledge structuring approach for verbalizable knowledge domains, e.g. knowledge that is contained in articles, text books and instruction manuals further to be referred to as 'subject matter'. This article will illustrate the application of the fact-oriented approach as a subject matter structuring tool for a small part of the sub-domains of supply-chain management within the university subject of business administration.

Introduction

For centuries, printed books have been the main source for conveying knowledge or 'subject matter' from 'knowledge sender' to 'knowledge receiver'. In the 80's of the last century, the by then 60 year old concept of hypertext, became a 'real' and 'feasible' way of structuring knowledge, using state-of-the-art software, e.g Apple's Hypercard (Goodman, 1988). The rebirth of this concept, in the mid-eighties, basically was one of the cradles of the world-wide web, as we now know it. It took some more time, however, before there was a knowledge infra-structure on the web: Wikipedia. In Wikipedia and similar internet encyclopedias, concepts are defined in terms of other concepts that are 'hot-linked' to their defining encyclopedia page. How does this different way, in which knowledge is structured help us in the education of students ? Obviously, it will allow us to define individual learning routes through a set of defining concepts. On the other hand, such a notion, is deeply in contrast with the way in which (PBL) courses are structured still: instruction centered around a printed text book in which the structure of the 'subject-matter' is fixed !

In this paper we will analyze a number of current representations of subject-matter in university text books. We will illustrate this with examples in the field of Supply Chain Management (SCM).

A subject matter has its own intrinsic structure (Nijssen & Bijlsma, 2006). Educational programs on a subject matter therefore, need to enable students to access such a structure or 'conceptual schema'. Unfortunately, in many available descriptions of a subject matter, e.g. text books, lecture notes, manuals, wiki's, the intrinsic structure is (at best) hidden among non-structural descriptions of such a subject matter. In this paper we will discuss a fact-oriented 'subject-matter' structuring approach (Halpin & Morgan, 2008; Lemmens, Nijssen, & Nijssen, 2007; Nijssen & Bijlsma, 2005, 2006). We will apply this approach on three different text book representations of 'subject-matter' for the field of supply chain management: (Grant, Lambert, Stock, & Ellram, 2006; Krajewski, Ritzman, & Malhotra, 2007). We will assess these specific representations using a fact-oriented knowledge reference model. Earlier work that discussed the application of a predecessor to this KRM on the field of logistics can be found in (Bollen, 2006; Bollen & Nijssen, 1995).

Deriving the Intrinsic Structure of a Subject Domain

In most, if not all cases, a verbalizable knowledge source is a document that often is incomplete, informal, ambiguous, possibly redundant and possibly inconsistent. As a result of applying the fact-oriented knowledge extracting procedure (KEP) (Nijssen & Bijlsma, 2005) (Bollen, 2002), we will yield a document that only contains structured knowledge or a knowledge grammar which structures verbalizable knowledge into the following elements (*knowledge reference model (KRM)*):

1. Knowledge domain sentences
2. Definitions and naming conventions for concepts used in domain sentences
3. Knowledge domain fact types including sentence group templates
4. Population state (transition) constraints for the knowledge domain
5. Derivation rules that specify how specific domain sentences can be derived from other domain sentences.

6. Rules that specify what fact instances can be inserted, updated or deleted.
7. Event rules that specify when a fact is derived from other facts or when a fact must be inserted , updated or deleted.

A KRM of a complete text book would contain hundreds, possibly thousands of concept definitions, naming conventions, fact types, population constraints, derivation rules and event rules. The knowledge extracting procedure (KEP) specifies *how* we can transform an informal, mostly incomplete, mostly undetermined, possibly redundant and possibly inconsistent description of domain knowledge into the following classes: *informal comment, non-verbalizable knowledge* and *verbalizable knowledge* to be classified into types 1 through 7 of the KRM.

Application of the KEP on the field of Supply Chain management

In this section we will show the KRMs, which are a result of the application of the fact-oriented KEP on the content of textbooks on the operations management and marketing subjects of business administration. Because of space limitations in this article we haven chosen to select a very small subset of concepts contained in these subjects. The choices of text books that cover the subject of supply chain management as such is pure for illustrative purposes, in terms of the KRM and does not imply any implication, in terms of 'good' or 'bad', text books, but merely shows the difference in the presentation of similar 'subject matter' in terms of the elements in the KRM.

The supply chain management subject of the Economic Order Quantity

In this section we will analyze the subject of Economic Order Quantity (EOQ), that has been part of the core body of knowledge for SCM : the economic order quantity (EOQ). We have selected a widely-used text book on the field of operations and process management: Ritzman, Krajewski and Malhotra: Operations Management: Processes and Value Chains, 8th edition, Pearson/Prentice-Hall, 2007 (Krajewski et al., 2007). From now on we will refer to this text book as text book A. We will now provide a self-contained sample of the KRM for this text book.

Table 1: List of definitions for subject: Economic Order Quantity EOQ in text book A (Krajewski et al., 2007)

Concept	Definition
Item	An individual product that has an identifying item code and is held in inventory somewhere along the value chain (p.524[4]) Synonym: Stock Keeping Unit, individual item (p.524)
Lot	A lot is a quantity of [Item]s that are processed together.(p.350)
Lot Sizing[5]	The process of determining how frequently to order and in what quantity (p.465)
Ordering Cost	The cost of preparing a purchase order for a supplier or a production order for the shop. (p. 464) Synonym: Set Up cost (p.464)
Inventory Holding Cost	The sum of the cost of capital and the variable costs of keeping [Item]s on hand, such as storage and handling, taxes, insurance and shrinking (p.463)
Cycle Inventory Cost	The portion of [Inventory Holding Cost] that varies directly with [Lot] size (p.465)
Economic Order Quantity	[lot size] that minimizes total annual [Cycle Inventory Cost] and [Ordering Cost] for a given [item] (p.470)
Unit Holding Costs	The costs for holding one unit of a given [Item] in inventory for a year (p.472)

The second text book we will analyze on the content regarding the EOQ is a text book on supply chain management: Grant, Lambert, Stock and Ellram: Fundamentals of Logistics Management, European edition, McGraw-Hill, 2006 (Grant et al., 2006). From now on we will refer to this text book as text book B.

[4] The referenced pages in the list of definitions refer to (Krajewski et al., 2007).

[5] We can consider a 'lot size' as the result of a 'lot sizing' process

Table 2: List of definitions for subject: Economic Order Quantity EOQ in text book B (Grant et al., 2006)

Concept	Definition
Order-processing costs	include such costs as order transmittal order entry, processing the order, and related internal and external costs such as notifying carriers and customers of shipping information and product availability. (p.20[6])
Lot quantity costs	purchasing- or production-related costs that include: setup costs, capacity costs, materials handling, price differentials and order costs. (p.20)
Inventory Carrying cost	Those costs associated with the amount of inventory stored, they consist of capital costs, inventory service costs, storage space costs and inventory risk costs (p. 21, p.142-143). Synonym: carrying cost (p.136)
Ordering Cost	Typically include the cost of transmitting the order, the cost of receiving the product, the cost of placing it in storage and the cost of processing the invoice for payment. In restocking its own field warehouses, a company's ordering costs typically include; the cost of transmitting and processing the inventory transfer, the cost of handling the product if it is in stock, or the cost of setting up production to produce it, and the handling cost if the product is not in stock, the cost of receiving at the field location, the cost of documentation. Remember that only direct out-of-pocket expenses should be included in ordering costs. (p.136)
Economic Order[7] Quantity	A concept which determines the optimal order quantity on the basis of [ordering cost] and [carrying cost] (p. 136)

Finally, we will give the list of EOQ-related concept definitions for text book : Jonsson, Logistics and Supply Chain Management, McGraw-Hill (Jonsson, 2008). From now on we will refer to this text book as text book C.

[6] The referenced pages in the list of definitions refer to (Grant et al., 2006).

[7] In text book B, we can consider the 'economic order quantity' as a process concept that has an 'optimal order quantity' as an outcome.

Table 3: List of definitions for subject: Economic Order Quantity EOQ in text book C (Jonsson, 2008)

Incremental inventory carrying cost	can be expressed as the product of the [value of items] in stock and the [inventory carrying interest rate] (p.428[8])
Inventory carrying interest rate	the sum of incremental capital cost, incremental storage cost and incremental uncertainty costdivided by the average stock value (p.430) Synonyms: inventory carrying charge, inventory carrying factor (p.428)
Incremental costs	those costs which arise or decrease as the result of the decision to increase or decrease stock volumes (p.428)
Common costs	those [inventory carrying costs] that do not change when stock volumes vary (p. 428).
Ordering cost	all the [incremental costs] which are associated with executing an order process for the acquisition of [items] from external suppliers, or from the company's own manufacture. The ordering cost is the sum of the re-tooling and dismantling (set-up) costs, costs for capacity losses, material handling costs and order processing costs at a specific order occasion (p.280-281). Synonym: set-up costs (p.281)
Economic order quantity	term for the process of determining a suitable lot size is thus a question of optimizing the sum of incremental inventory carrying cost and ordering costs (p.280)
Value of item	refers to the accumulated costs which have been added to the item during its value refinement, i.e. the cost price of the item (p. 429).
Lot sizing	establishing appropriate order quantities (p. 279)

An interesting observation from these three list of definitions for the EOQ subject area, is the extent in which relatively remote concepts are defined. The extensive definition of cost types (e.g. incremental, common costs) in text book C, for example, illustrates that the author, deems it very important for SCM students to have a precise knowledge of these concepts and how they contribute to the definition of the *ordering*- and *carrying costs*. If we compare the treatment of this concept with the text books A and B we can see that in A, it is left implicit how these ordering costs must be determined precisely. In text book B, however, we find some kind of in-between approach in which, the authors do not introduce the 'advanced' cost concepts from C, but where they try to define the notion of *commonality* versus *incrementality* in the definition itself (notably, the definition of *ordering cost*).

The list of concept definitions in the KRM, must be compiled in such a way that explicit reference is made to other entries in this concept list of definitions (by means of putting a definiendum between brackets). By doing this, given a complete list of concept definitions, every concept must be fully semantically defined by reading the list of concept definitions, in order of comprehension.

We will now analyze the text books for the existence of 'ground facts' in some or other tangible form that illustrate the 'appearance' of instances of these concepts, for each of the three text books.

In text book A a complete example of the EOQ concepts is provided on pages 472-474, and in a number of 'solved problems' 3, 4 and 5 on pages 491-493 in which explicit attention is given to the name classes, respectively the dimensions that are relevant to denote ground facts of the concepts, e.g. D = annual demand in units per year, D= (18 units/week)*(52 weeks/year) = 936 units/year.

In text book B one example is given on pages 137, but no explicit attention is given to the name classes, respectively dimensions.

Finally, in text book C on page 282, an example is provided and the dimensions are implicitly given on pages 281 and 434.

[8] The referenced pages in the list of definitions refer to text book C.

One, of the most important assumptions, in applying the EOQ models in a practical setting is the notion that these models and their constituting variables are defined on an 'item' or 'SKU' level. From practical teaching experience whereby text books A and B, have been used, I can recall, a work-out of a case study, in which the students applied the concept of EOQ on an 'aggregated' level (using text book B). They considered the aggregate demand (ranging over all SKU's) in their analysis and provided one EOQ for all items combined. Such a mis-application of the EOQ concept, I never encountered in the course where text book A has been used.

Inspecting the list of concept definitions for the text books mentioned, can explain the afore-mentioned phenomena. The concept of 'item' or 'SKU' in the context of the EOQ can not be found in the list of concept defintions for text book B. In text book C, the notion of the application of EOQ to 'individual' items, is conveyed through the description of the example on page 282. This basically means that it is not possible to 'verbalize' ground facts between instances of concepts, if no 'concept' of 'individual item' or 'SKU' has been defined.

Let's for now, take the presentation of the EOQ subject matter in text book A as a starting point for verbalizing ground facts (or knowledge domain sentences) and deriving the knowledge domain fact types and domain sentence groups. We will verbalize the (relevant parts of) the 'bird-feeder' example on pages 472-474 in (Krajewski et al., 2007) as follows:

- The item having item name 'bird feeder' has a weekly sales volume of '18' units per week.'
- The item having item name 'bird-feeder' has a value of '60' dollars per unit.'
- The item having item name 'bird-feeder' has a cost of ordering of '45' dollars per order.'
- The item having item name 'bird-feeder' has an annual holding cost percentage of the value of 25.
- The organization having organization name 'Museum' has an operating time of '52' weeks per year.'
- The item having item name 'bird feeder' has a yearly sales volume of '936' units per year.'
- The item having item name 'bird-feeder' has an annual holding cost amount of 15 dollars/unit.'
- The economic order quantity for the item having item name 'bird-feeder' is '74.94' units.'

The verbalizations in the above are all so-called declarative sentences. The sentences can be grouped and transformed into a knowledge structure diagram (KSD) in figure 1.

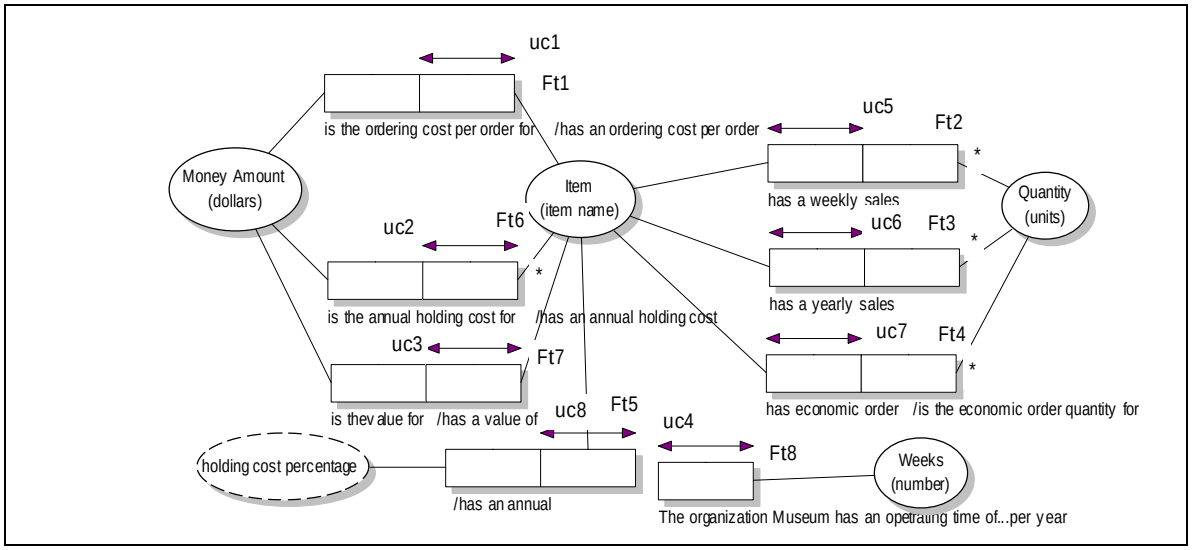

Figure 1. Knowledge structure diagram plus population state constraints and derivation rules of EOQ in text book A.

We have now specified the elements 1, 2 and 3 from our KRM. After we have created a knowledge structure diagram, we can add additional business rules, that constrain the existence of certain sentence combinations. The first set of these business rules, will be called population state (transition) constraints. The first group of these population constraints are uniqueness constraints. Taking the KSD in figure 1 as a starting point, we can generate additional sentences and pose the question whether the combination of these sentences is allowed to exist. For example, are following sentences allowed to exist in combination ?

- The item having item name 'bird feeder' has a weekly sales volume of '18' units per week.'
- The item having item name 'bird feeder' has a weekly sales volume of '25' units per week.'

We assume, that these sentences are not allowed to exist in combination, because at any point in time there can only exist *one* weekly sales volume for a given item. This means that we need to add uniqueness constraint uc5 on the first role of fact type Ft2. A second check on the absence/presence of uniqueness constraints, can be done by asking whether following sentences allowed to exist in combination ?

- The item having item name 'bird feeder' has a weekly sales volume of '18' units per week.'
- The item having item name 'dog belt' has a weekly sales volume of '18' units per week.'

The above sentences, are allowed to exist together, because it is possible that *two* different items have the same weekly sales volume. This leads to the absence of a uniqueness constraint defined on the second role of fact type Ft2.

In contrast with the KRM in figure 1, that could be traced back to the presentation of the subject-matter in (Grant et al., 2006) we will now do the same exercise, based upon the presentation of the EOQ subject matter in (Jonsson, 2008). In this text book, the example they used is on pages 132-137:

- The ordering cost per order are the money amount of 40 dollars.'
- The annual demand or usage of product is 4800 units.'
- The annual carrying cost are 25 percent of the product value'
- The average cost or value of one unit in inventory is the money amount of 100 dollars per unit'
- The economic order quantity is '124' units .'

In figure 2, we have given the Knowledge Structure Diagram (KSD) for this representation/verbalization of the subject matter in text book (Grant et al., 2006).

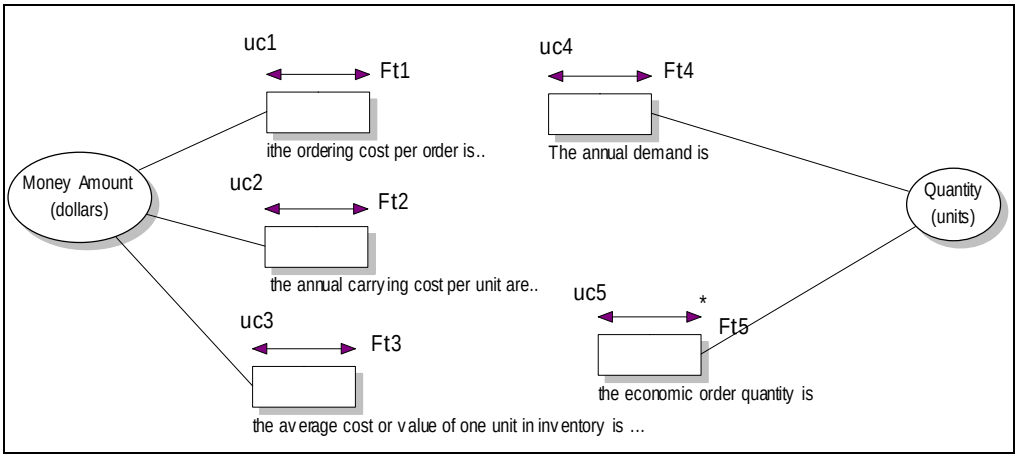

Figure 2. Knowledge structure diagram plus population state constraints and derivation rules of EOQ in text book B.

Inspecting the KSD in figure 2 reveals that there's no single relationship between the variables and a specific item. In case the population of these unary fact types is 2 or higher, it will be impossible to derive an EOQ, because talking about the variables involved and the resulting EOQ that has to be computed, implies that the relationship between these variables and some sort of item/product type is specified.

The fifth element in the KRM is the set of derivation rules in application domain. Derivation rules derive instances of a fact type from instances of one ore more (possibly) different fact types. In figure 1 we that fact types Ft2, Ft3, Ft4 and Ft6, have an asterix (*) beside them, which denotes that they are derived fact types. The derivations can be traced back in the text books A, B and C as formulas.

EOQ = √ (2*D*S/H) [A, p. 473] EOQ = √ (2*P*D/C*V) [B, p.137] EOQ = √ (2*D*O/C*V) [C, p. 281]

An example of a derivation rule for the EOQ according to the KRM of text book A (see KSM in figure 1) is the following:

Ft4.Quantity (Ft4.**item**):= SQRT((2* Ft3.quantity(Ft3.**item**)* Ft1.moneyamount (Ft1.**item**))/Ft6.moneyamount (Ft6.**item**))

Inspecting the above representation of the derivation rule clearly shows that the independent 'variable' in the derivation rule is of type 'item'. This concept is lacking in the example of text book B.

Using the Knowledge Reference Model to Compare Subject Matters

When the relative amount of *informal comment* and *non-verbalizable knowledge* in such a knowledge field is large we can consider the knowledge field to be of the 'phenomenological' type. This normally points at knowledge fields that are beginning to develop and in which no clearly agreed upon relevant concepts and their definitions exist. When the relative amount of informal comment and non-verbalizable knowledge of the subject matter, on the other hand, is small, the knowledge domain can be considered relatively structured, this means that basic domain concepts are agreed upon and their definitions are known. Furthermore, semantic relationships between those concepts exist and are known to the extent that they can be verbalized. In the latter types of knowledge domains, it is possible that more complex rules, laws, derivation rules and event rules can be defined. The former analysis naturally applies, in those situations in which a text book is well-written from an educational point of view. In some cases the actual quality of writing can be insufficient, which can lead to a 'phenomenological' text book for a very well-structured knowledge domain or a text book in which the order of comprehension for the introduction and definition of concepts is practically random. Some noteworthy differences on the presentation of the same subject in three different text books, have been illustrated. The fact-oriented KRM provides more ways to capture knowledge than the traditional 'graphical' tools for organizing and representing knowledge, like for example conceptual graphs (Sowa, 1984) and concept maps (Novak & Canas, 2007).

Application of Fact-Orientation in Instructional Design

In the past 15 years, a large number of students on a polytechnical level in the field of computer science, business administration and law have been trained using educational material expressed in a knowledge reference model format based upon standard text books on the subject matter (Nijssen & Bijlsma, 2006). The time investment needed for the students in such an 'accelerated' learning program turned out to be substantially lower than in a 'conventional' educational setting (Nijssen & Bollen, 1995).

Concluding Remarks

The fact-oriented approach has its roots in the conceptual modeling school for information systems development and database schema design. In this paper we have extended the 'playing field' of this approach as a knowledge structuring approach, illustrated by two samples of subjects within the academic field of business administration. Moreover, we have given a (linear) model that can be used for determining

and predicting the size and complexity of a subject matter. The size and complexity of the implicit structure of a subject can range from structures that can be fully modeled by a small number of definitions, via models of implicit structures that contain a large number of definitions and fact types, to 'complex' knowledge reference models in which a large variety of population state (transition) constraints exist eventually having derivation rules, and event rules.

The application of the fact-oriented knowledge reference model that is proposed in this article will lead to a more productive and effective design of educational systems, by improving the internal structure of the 'subject matter'.

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The Influence of Portfolio Media on Student Perceptions and Learning Outcomes

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Abstract: The electronic portfolio offers many advantages to its paper-based counterpart, including - but not limited to - hyperlinked navigation, adding multimedia and the ease of sharing the portfolio. Previous research showed that the quality of a portfolio does not depend on the medium used. This paper studies the effect of the portfolio medium on perceived support for self-reflection and on the students' learning outcomes. We made use of the fact that during this study about half of the first year medical students used an electronic portfolio (n=157) and the other half a paper-based portfolio (n=190).

Introduction

Portfolio-based learning finds increasing implementation in a variety of educational and professional learning contexts. It is utilized to stimulate and monitor students' professional development and to stimulate their ability to become lifelong learners. Simultaneously, we observe a move from the paper-based portfolio to the electronic counterpart. In medical education a portfolio is progressively being used to stimulate reflection among students (Prop, Shacklady, Dornan, & Driessen, 2007). In medicine, reflection is defined as "including consideration of the larger context, the meaning, and the implications of an experience or action" (Branch & Paranjape, 2002, p. 1187). Portfolios are most often typified as a collection of students' work and achievements during their academic career (Challis, 1999; Chen, Yu, & Chang, 2007).

Portfolio literature mentions many advantages of an electronic portfolio (e-Portfolio) over its paper-based counterpart, such as hyperlink functionality, use of multimedia and the ease of sharing the portfolio (amongst others van Tartwijk et al., 2003; Woodward & Bablohy, 2004). While much research on e-portfolios has been conducted, the focus of these studies is mostly on e-portfolio specific features. When replacing a well established paper-based portfolio with an electronic version, we must take care not to lose the original portfolio goals. We ought to compare e- and paper-based portfolios on their shared potential merits, such as support for self-reflection and effect on learning outcomes, preferably in a similar ecological setting.

Driessen et al. (2007) conclude that creating an e-portfolio enhance student motivation, an e-portfolio is more user-friendly for portfolio mentors, and delivers the same content quality compared to the paper-based variant. They also found that students spent significantly more time preparing an e-portfolio than a paper-based one. However, their questions about perceptions of students focus on the overall experience of the students, and their measurement of the quality of evidence and content was based on a content analysis, whilst the students' perception of the support for reflection and the effect on learning outcomes are also relevant. The student perception of a learning environment to a large extend effects the way students manage to work in the environment, and thus the perception influences the students learning (Diercks-O'Brien, 2000; Gijbels, van de Watering, & Dochy, 2005; Gijbels, van de Watering, Dochy, & van den Bossche, 2006; Segers & Dochy, 2001).

Critical self-reflection is seen as an essential precondition for the professional development of medical students (Branch & Paranjape, 2002; Driessen, van Tartwijk, Vermunt, & van der Vleuten, 2003) and for other professions (Deloney, Carey, & Gail, 1998; Korthagen, 2001). Reflection is a metacognitive skill which plays a key role in the metacognitive process of self-regulation (Ertmer & Newby, 1996), it helps students "become aware of their mental structures, subject them to a critical analyses, and if necessary, restructure them" (Korthagen, 2001, p. 51). Metacognitive regulation compiles a set of activities that help to control the learning (Schraw, 2001). Good learners, typically, have a higher level of metacognitive knowledge and regulatory skills then poor learners. Metacognitive knowledge offers the insights needed to change the learning process to fit the changing task demands (Ertmer & Newby, 1996). Promoting these metacognitive skills via experience-based reflective learning enhances students growth

competence (an ability for continuing development (Korthagen, 2001)). Working on a portfolio stimulates these self-reflecting skills by collecting material and writing reflections (Driessen, 2008). By utilizing reflective thinking skills, students are also able to evaluate results of their learning efforts and effectiveness of learning strategies in certain situations (Ertmer & Newby, 1996).

Cognition, rather then being confined to an individual, most often is distributed among people, between an individual and artifacts or a combination thereof (Hutchins, 1995; Salomon, 1993). By distributing task between an individual and an artifact, some of the cognitive burden of the task is lifted (Norman, 1993). A portfolio, whether electronic or paper-based, is such a cognitive burden lifting artifact; it aids the student in his/her reflective process. Collecting evidence and reviewing the earlier collected evidence brings back memories of critical events. Writing reflections and reading back these reflections and further stimulates reflection.

Whilst both the e-portfolio and the paper-based portfolio support the metacognitive skill of reflection, certain aspects of both might lead to a different level of support. Artifacts, both physical and virtual (e.g. computer software), contain affordances, properties of an artifact "that make it easier to do some activities, harder to do others. Each has constraints, preconditions, and side effects that impose requirements and changes on the things with which it interacts, be they other technology [artifacts], people, or human society at large." (Norman, 1993, p. 243). Understandably, paper-based and e-portfolios contain some overlapping, but, more importantly for this research, some different affordances. A paper-based portfolio, for instance, only affords a linear structure, whilst an e-portfolio affords a more network like structure (via hyperlinks). An e-portfolio affords integration of multimedia, a paper-based portfolio does not. It are these differences, obvious and unobvious, that could lead to a difference in the level of support for reflection, and thus to differences in learning outcomes.

In this paper the results of two studies are reported:
1) the perception of students on the support for self-reflection of their portfolio, and
2) the effect on learning outcomes of the two different portfolio media.

Method

With the introduction of the new Maastricht medical curriculum at the former Faculty of Medicine, now part of the Faculty of Health, Medicine, and Life Sciences, the portfolio was introduced. Since a medical doctor, as a life long learner, should reflect on his/her actions and learning, the portfolio was introduced to develop the necessary self-reflective skills among students (Driessen et al., 2003). The Maastricht portfolio process is described in detail elsewhere (Driessen et al., 2005; Driessen et al., 2003).

Whilst most students worked with a paper-based portfolio, from the first portfolio introduction onward, small scale experiments with various e-portfolio tools have been carried out. In 2006 a large scale pilot with almost half (n=157) of the total (N=347) student population was undertaken. The present study describes results of this academic year. While the students working with the e-portfolio were provided with a user manual for the Blackboard Content System (the portfolio system used), both they and the students working with the paper-based portfolio were provided with an identical, general portfolio manual, containing the conceptual steps needed to create a portfolio.

Mentor

A total of 27 portfolio mentors guide students during their first year, all of them were approached to mentor students using an electronic portfolio, 12 responded positively. While this method of selection is not bias free, e.g. the more enthusiastic or open-minded mentor could opt for the electronic portfolio offering some positive stimulus to the students, forcing mentors to adopt an electronic portfolio against their will might have resulted in a larger, negative bias. The 12 mentors guide a total of 16 student groups, averaging almost 10 students per group, representing about half the first year student population.

Mentor and their mentor group met three times during the academic year 2006. A kickoff meeting in the beginning of the year, to get to know each other, and two worksessions. The students were required to hand in their portfolio three times. After the first two times the mentor and student met individually and

discussed the portfolio. The last hand in moment was for grading the portfolio. A schedule of the portfolio related activities is given in table 1.

Block Assessment

The first year medical curriculum in Maastricht consists of six distinct blocks (Emergencies, Traumata, Dyspnea, Shock, Abdomen and Unconsciousness), given in sequence. Each block is followed by an assessment consisting of a knowledge test divided in two parts (in the 06/07 year block 5 and 6 this parts were administered on a different day), a schedule of the knowledge test is given in table 1. The assessment for block 1 to 5 consists of both the two part knowledge test (80 % of the end grade) and a graded assignment (for instance a presentation or a short paper) (20 % of the end grade). For final grading a scale from 1 (very poor) to 10 (excellent) is used, 5.5 being the passing grade. We analyzed the end grade as both the knowledge test and the assignment form part of the block's learning outcomes.

Table 1: Schedule

Date	Portfolio activity	Knowledge test
Sep-06	Introduction to the mentor	
20-Oct-06		1.1
Nov-06	First mentor group meeting; subject: self-study & practicing self-analysis	
1-Dec-06		1.2
15-Jan-07	Handing in first version of the portfolio	
26-Jan-07		1.3
16-Mar-07		1.4
End of Mar-07	Second mentor group meeting; subject: time management	
13-Apr-07		1.5 part 1
8-May-07		1.5 part 2
14-May-07	Handing in second version of the portfolio	
6-Jun-07		1.6 part 1
12-Jun-07	Handing in final version of the portfolio	
29-Jun-07		1.6 part 2

Questionnaire

As the research aims to compare the paper-based portfolio and the electronic portfolio as a tool for developing self-reflection skills, the questionnaire focuses on this aspect. The questionnaire does not contain portfolio-medium specific questions. Since these questions were to be added to the regular block evaluation questionnaire (containing 30 standard questions), to circumvent questionnaire fatigue we limited the portfolio questionnaire to nine, quasi content validated, questions (Q31 – Q39, see table 2). Due to the limited number of questions, a response set problem can occur. A portfolio usefulness grade (Q39) was asked to check if their overall view agreed with their individual answers.

For privacy reasons, block evaluations are carried out in accordance with guidelines to guarantee anonymity. The questionnaire containing portfolio questions was handed out to 25 percent of the total first year student population at the end of the academic year.

Table 2: Extra questions about portfolios.

Question number	Question[a]
	The creation of a portfolio:
Q31	Helped me get a better impression of the strong and weak points of my functioning
Q32	Helped me get a sense of my professional development
Q33	Gave me insight in how I should approach my study
Q34	The subjects I describe in my portfolio are relevant to me
Q35	The subjects I discuss with my mentor are relevant to me
Q36	The curriculum offers enough opportunity to work on my learning goals
Q37	Give an estimation of the number of hours you spent on the portfolio in the last year (excluding the mentor meetings)
Q38	I worked with a paper/electronic portfolio
Q39	Give a grade for the usefulness of putting together and discussing a portfolio for you as a student

[a] Translated from Dutch

Q31 to Q36 are statements prompting the students to express their respective opinions on a five point Likert Scale. Q37 asks for an integer number representing the total numbers of hours spent on the portfolio, excluding mentor consultations (which approximately took 2 hours during the whole portfolio process). Q38 prompts the students to report if they used a paper-based or electronic portfolio. And the final question, Q39, asks for a school-like grading (ranging form 1 to 10, with 1 representing 'Very poor' and 10 representing 'Excellent').

The Cronbach's alpha of the six Likert scale items (Q31 – Q36) was 0.877, indicating good reliability. The ordinal data from Q31 through Q36, answered on a five point Likert Scale, were analyzed using the non-parametric Mann-Whitney U-Test. Items Q37 and Q39 were analyzed using an Independent Sample T-test.

Results

Perceived support for self-reflection

From Figure 1 - showing the histogram for Q39 - it seems clear that some students are very negative about their portfolio, especially the electronic one (scoring a 1 on five occasions). The results, however, do not differ significantly (independent sample t-test: F = 5.024, T = 0.349, p-value = 0.728), scoring a 5.46 (StDev = 1.771) for the paper variant, and a slightly lower 5.28 (StDev = 2.491) for its electronic counterpart. Both types do not receive a sufficient mark (5.50) on the Dutch grading scale.

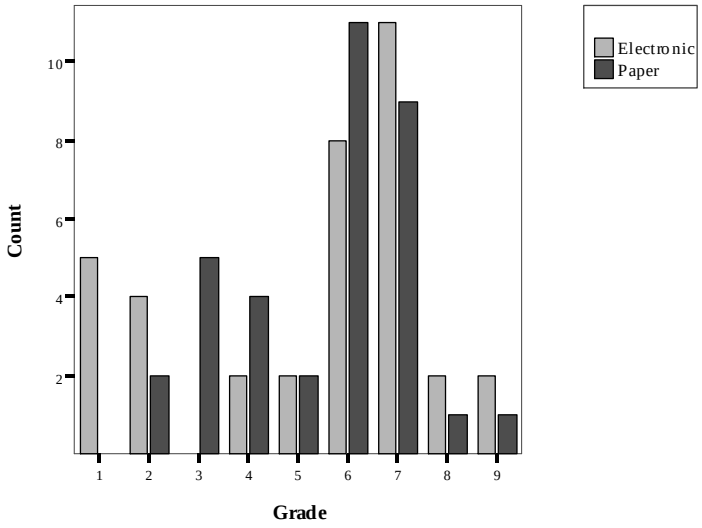

Figure 1. Portfolio usefulness grade

As shown in table 3, for both the paper-based and the electronic portfolio the majority of students had a negative perception about *getting a better impression of their strong and weak points* (48.5 % and 44.4 % respectively). However for the paper-based portfolio the mode lays with Disagree, while for the electronic portfolio the mode lays with Agree. This difference is not significant (p-value = 0.826).

Table 3: Answer percentages to Questions 31 to 36 per portfolio media

	Paper-based						Electronic					
	SD [a]	D [b]	N [c]	A [d]	SA [e]	.	SD	D	N	A	SA	.
Q31	17.1	31.4	22.9	28.6	0.0	0.0	19.4	25.0	25.0	27.8	2.8	0.0
Q32	14.3	28.6	34.3	20.0	2.0	0.0	16.7	22.2	33.3	25.0	2.8	0.0
Q33	11.4	28.6	31.4	25.7	2.9	0.0	22.2	25.0	22.2	27.8	2.8	0.0
Q34	8.6	17.1	17.1	37.1	20.0	0.0	11.1	19.4	8.3	44.4	13.9	2.8
Q35	8.6	11.4	22.9	37.1	20.0	0.0	5.6	5.6	27.8	44.4	13.9	2.8
Q36	2.9	5.7	20.0	57.1	14.3	0.0	8.6	5.6	30.6	38.9	13.9	2.8

[a] Strongly disagree
[b] Disagree
[c] Neutral
[d] Agree
[e] Strongly Agree

Also the majority of the students had a negative perception about *the sense of professional development* and *insight in how to approach the study* with both the paper-based and electronic portfolio (42.9 % vs. 38.9 % and 40 % vs. 47.2 % respectively). The mode for the questions about *the sense of professional development* with both types of portfolio is found at neutral, without any significant difference (p-value = 0.757). For the item about *insight in how to approach the study* the mode for the paper-based portfolio is found at neutral, whilst for the electronic portfolio this is Agree. This difference is also not significant (p-value = 0.573).

A majority of the students perceived the *subjects described in their portfolio* and *discussed with their mentor* as relevant to themselves (57.1 % for both items by students using the paper-based portfolio and 58.3 % for both items by students using an electronic version). The mode for both items and both portfolio types lies with Agree, with no significant difference (p-values are 0.740 and 0.882 respectively).

On the questions if *education offered enough opportunity to work on the learning goals* the majority of students using the paper-based as well as students using the electronic portfolio were both positive (71.5 % and 52.8 % respectively). With Agree as mode for both portfolio types. No significant difference can be found (p-value = 0.240).

Table 4: Mean number of hours spent

	Mean	StDev
Paper-based portfolio	15.81	12.029
Electronic portfolio	23.38	15.723

The students working with an electronic portfolio reported spending more time on their portfolio (see table 4). An independent sample T-test determines this different to be significant on a 5 % level (F = 1.409, T = -2.166, p-value = 0.034). An analyses of Effect Size shows a medium effect size (Cohen's d = 0.533).

Effect on learning outcomes

Whilst the outcomes of the block assessment before the introduction of the portfolio do differ between the students assigned to the paper-based and electronic portfolio in favor of the students assigned to the electronic portfolio (see Table 5), these differences are not significant at the 0.05 level (independent sample t-test: F = 1.012, T = -1.366, p-value = 0.173 and F = 0.000, T = -1.808, p-value = 0.071).

Table 5: Results of the block assessment.

Block assessment		Paper-based portfolio	Electronic portfolio	Cohen's *d*
1	Mean	6.73	6.86	
	n	184	156	
	StDev	0.910	0.884	
2	Mean	6.50	6.70	
	n	189	157	
	StDev	0.961	1.093	
3	Mean	6.51	6.75	0.264
	n	185	155	
	StDev	0.983	0.825	
4	Mean	6.44	6.66	0.234
	n	185	155	
	StDev	0.953	0.924	
5	Mean	6.59	6.89	0.273
	n	184	155	
	StDev	1.158	1.033	
6	Mean	7.03	7.29	0.243
	n	181	153	
	StDev	1.186	0.940	

The outcomes of the 3rd, 4th, 5th and 6th block assessment, which occurred after the portfolio was introduced, also differ in favor of the electronic portfolio using students, these differences are significant at the 0.05 level (independent sample t-test: F = 2.053, T = -2.456, p-value = 0.015, F = 0.101, T = -2.148, p-value = 0.032, F = 0.623, T = -2.521, p-value = 0.012 and F = 2.907, T = -2.208, p-value = 0.028 respectively).

Furthermore, the average grades of the students working with an electronic portfolio (n=153), based on the six block assessments, is significantly higher than those of the students working with a paper-

based portfolio (n=177). Scoring a 6.89 (StDev = 0.680) compared to a 6.68 (StDev = 0.777) for students working with a paper-based portfolio (independent sample t-test: F = 0.589, T = -2.592, p-value = 0.010). Effect sizes for individual block assessment, after portfolio introduction, are all slightly above 0.2, indicating a small effect. Also the effect size over six block assessments indicates a small effect size (0.287).

Discussion & Conclusion

Perceptions about the support for self-reflection of students using an electronic portfolio do not differ significantly from that of users of the paper-based portfolio. Also they perceived no difference in the usefulness of compiling a portfolio. They report, however, more time spent. We assume that students overestimate time spent on a task, as this was found for individuals in specific studies in different fields (IJsselsteijn, Bierhoff, & Slangen-de Kort, 2001; Oshagbemi, 1995). There is, however, no indication that one of the groups has an extra incentive that would lead to a more extreme deviation from the true amount of time spent than the other group. Possible explanations why more time is spent on the electronic portfolio may include the reported tendency to write a more compact portfolio (Driessen et al., 2007; van Tartwijk et al., 2003) (which takes more time) or because they enjoy working on an electronic portfolio (Driessen et al., 2007; van Tartwijk et al., 2003; Woodward & Bablohy, 2004).

Whilst the effect on the learning outcomes with this specific e-portfolio tool, this specific setting, and these specific students were positive, this research is very context depended. After all affordances differ per tool used, requirements for the portfolio differ, technical possibilities and impossibilities differ, support structure differ and the students them self differ. Different student groups may differ in cultural background, experience, intentions and a social setting, this will affect the affordances involved in creating the portfolio, simply because affordances "refer to attributes of both the object and the actor" (Gaver, 1991, p. 79).

The positive effect on the learning outcomes suggests a deeper level of reflection among the students using an e-portfolio. This might have led to better metacognitive regulation which in turn led to improvements in the learners' performance resulting in higher grades. However, only the direct testing of both the reflective abilities and the metacognitive skills of students before and after introducing two different portfolio media, could lead to an indisputable claim of metacognitive advantages of one portfolio variant over the other.

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An E-Portfolio for Post-Graduate Competency-Based Assessment

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Abstract: (E-)Portfolios are often seen as powerful tools to support lifelong learning and competence development. In professional education, portfolios especially aim at improving quality of workplace-based learning and assessment. Implementation of portfolios in educational and/or workplace settings, however, has met with mixed success. The paper discusses the use of a new ICT-tool intending at overcoming important barriers to effective use of portfolios in the workplace, guiding and supporting authentic learning and assessment.

Introduction

Recent developments in professional education have shown a movement towards competency-based education. Competency-based education and assessment are becoming the norm, in (under)graduate, postgraduate as well as in continuous professional development programmes (Evers *et al.*, 1998; Carraccio *et al.*, 2004). Workplace-based learning is at the very heart of competence-based education and professional development (Dall'Alba & Sandberg, 1996). Although active participation in professional practice provides very powerful learning experiences, improvement of performance is acquired only through ongoing evaluation of performance and feedback (Ericsson, 2004). Therefore, competence-based education also calls for authentic, workplace-based assessment which focuses on formative assessment next to summative assessment functions. Research evidence, however, consistently shows considerable weaknesses in workplace-based learning and assessment: learning processes prove to be relatively uncontrollable and unstructured; useful and timely feedback is scarce, and decision making in competence assessment is often nontransparent, based on inadequate evaluation and documentation of performance.

Portfolios are increasingly seen as powerful tools to support both learning and assessment at the workplace and overcome some of the limitations of workplace-based learning (Royal College of General Practitioners, 1993; Elander *et al.*, 2007). Despite variations in content and format, portfolios basically report on work done, feedback received, progress made, and plans for improving competence. Documentation of performance evaluations enables defensible decision-making. Additionally, portfolios may stimulate reflection, because collecting evidence for inclusion in a portfolio requires looking back and analyzing what one has accomplished. Portfolios may be digital or paper-based and content may be prescribed or left to the trainee's discretion. Since their introduction in education in the early 1990s, portfolios have been subject of educational research. Evidence to date suggests that their introduction has met with mixed success (Driessen *et al.*, 2007). Several studies report advantages of digital or web-based portfolios over paper-based tools, technological support and adaptation of digital technologies being critical factors in implementation (e.g. Woodward & Nanlohy, 2004). Overall, however, the use of portfolios is often perceived to be time-consuming and of limited value. As a consequence, successful implementation of portfolios, especially in workplace settings, poses considerable challenges to educationalists.

E-portfolio in post-graduate medical education

For reasons of quality improvement and physician accountability, lifelong learning and performance assessment have become key issues in medical practice. As a consequence, postgraduate medical training in the Netherlands faces radical changes, the most salient of which are implementation of competence-based curricula, systematic and structural in-training assessment and use of portfolios for both guidance of learning (formative) and certification (summative) (Scheele, *et al.*, 2008). Meanwhile, time constraints, competing responsibilities and complexity of tasks in the clinical workplace, as well as limited training of clinical teachers are major hindrances to educational innovation. Therefore, it is to be expected that the proposed educational innovations will only succeed if substantial support and guidance is provided.

Together with Manchester University[1] we developed a web-based in-training assessment support system, called the Manchester-Maastricht ToetsServiceSysteem (MMTSS), which constitutes the main framework of trainees' portfolios. MMTSS aims to provide both trainees and their supervisors with easy access to and deep insight into the trainees' competence development. The system supports workplace-based learning through registration of workplace experiences, online collection of performance ratings, facilitation of reflective practice and documentation of personal development plans. In this respect, the system provides all functionality that encompasses an e-portfolio. MMTSS explicitly aims at increasing the usefulness of portfolios through providing meaningful and detailed feedback on competence development: it automatically converts performance ratings into detailed feedback reports. To this end, new rating forms have been developed and attuned to the competency model as defined by the medical specialties. This allows the computation of detailed competency scores per individual resident. Next to numerical and graphical feedback, the system provides clear overviews of all narrative feedback provided during performance evaluations. Finally, as MMTSS will collect (longitudinal) performance data from large cohorts of trainees across years, individual competence development can be compared to data from relevant reference groups (e.g. all trainees in the same specialism in the same year). Thus, identification of strengths and weaknesses is facilitated, by combining of qualitative and quantitative assessment data. Feedback reports can then serve multiple purposes: facilitation of reflective practice and self-directed learning by trainees; monitoring and guidance of competence development by supervisors; and substantiation of summative decision making.

Discussion

During the past year, parts of MMTSS have been field-tested in three hospitals, in postgraduate training programmes of Pediatrics and Gynecology-Obstetrics. The first user feedbacks on the forms and the automatically generated feedback reports are positive. A more substantial evaluation of the forms used and reports generated is currently being conducted. Subsequently, a beta-test of the MMTSS system will be started with the same group of users, while the operational implementation is foreseen for the start of 2009.

We expect that the applicability of MMTSS's competency-based approach is not restricted to training in postgraduate medical education. The approach seems equally well suited for continuous use in lifelong development, assessment and accreditation of medical specialists. Implementation of MMTSS – and similar systems in professional education – raises several issues for debate and research. For instance, how to optimize implementation processes, given the large number of hospitals, workplaces and users? What training is needed? Will the system result in more and meaningful feedback? Does the system result in active and meaningful use of information and evidence in the portfolio? How to deal with legal issues concerning e-portfolios (e.g. ownership of portfolios)? What are requirements with respect to technology? A detailed evaluation of MMTSS is due after its implementation to determine whether MMTSS indeed overcomes the e-portfolio barrier and truly enables lifelong learning.

Endnotes

(1) See the webpage of the Medical Education Research Group of the Manchester Medical School at Manchester University: http://www.medicine.manchester.ac.uk/medicaleducation/research/technology/eportfoliosupport/

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Eportfolios for Assessment, Teaching & Learning

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Abstract: This paper explores a number of initiatives where there is a move towards collaborative use of personal development plans integrated with eportfolios as mechanisms for delivering such plans. It considers whether such a move towards more 'product orientated' assessment might enhance the student learning experiences.

Outcome based assessment and the use of eportfolios also implies that a course may be delivered in a blended learning format and some thought as to whether this change of culture in the higher education sector has an impact on the tutors delivery and the students learning is also examined.

Indicators of Needs for Preparatory Courses: Context of Lithuanian Education System

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Abstract: As today's society becomes more and more dependent on new technology, increasing attention is given to changes and developing of new educational systems. Not accidentally analysis of educational changes is increasingly widely addressed in research around the world as well as in Lithuania. However, despite some significant research contributions in the area, so far little attention has been given to analysis on off-line and on-line preparatory courses, as a most urgent problem in education.
The paper deals with the analysis of scientific literature on indicators for a need for preparatory courses, analysis of statistical data on dropout rates in Lithuanian universities, study of various documents on admission requirements to Lithuanian undergraduate consecutive studies in the context of teaching subjects, description and analysis of research on the most popular study subjects and analysis of a tutoring phenomenon.

Introduction

The aim of higher education is to help a person obtain higher education and necessary qualification and thus prepare for active professional, societal and cultural activities. Preparation for these activities in the chosen study field depends on many factors: a student's attitude towards learning, study aims, learning strategies, how a study subject answers expectations, study environment, etc. Liberalization of study conditions has resulted in an increasing number of students at European higher education institutions with each year; meanwhile the number of students who cancel their studies has become one of the most urgent problems undesirable both in terms of a person and the state.

A need to provide preparatory/remedial courses has pervaded higher education. McCabe (1996) emphasizes the importance of remedial/developmental education for helping students strengthen their basic academic skills, which are fundamental skills necessary for employment "– the ability to read, write, analyze, interpret and communicate information are essential skills." Drucker (1994) indicates that the labor market is being transformed and job opportunities will be most plentiful for "knowledge workers." Hence, help for students to develop their basic academic skills is the first important step expanding their opportunities for success in the information age.

In the 21st century, time of globalization and advancement of information technology, lifelong learning and knowledge of changes in science and technology have become characteristic features of our society, in other words we live in the period of changes and the milieu, where the main competence is an ability to change continuously (Gudauskas, 1996; Drucker, 2004).

As the industrial age is being changed by the information age, knowledge and information have become strategic resources of states. Thus in a comparatively short period of time information communication technology (ICT) has raised a need for new competences posing other qualification requirements for many professionals and have become one of the main constituent parts of a contemporary society (Otas, 2001).

The aim of this paper is to discuss the indicators of a need for preparatory courses in the higher education system, as well as in Lithuanian higher education system. Scientific literature review enables us to analyze the following indicators of a need for preparatory courses: 1) lack of academic performance; 2) lack of professional motivation; 3) lack of career counseling; 4) differences in learning cultures if they leave secondary school; 5) differences in national cultures if they go abroad; 6) differences in a social status if there is a change in family support and etc.

In order to clarify a need for preparatory courses analysis of admission requirements to undergraduate consecutive university level study programs (Šaučiūnas, 2007) as well as a phenomenon of tutorials in education might be useful. Nowadays tutorials are functioning in many countries. In some countries they have become a huge industry. There are many agencies providing tutorial services in South Eastern Asian countries. Tutorials are less popular in North America and Western Europe but still exist (Žvirdauskas, 2004). Various aspects of tutorials and their popularity in Lithuania have been analyzed in the works by Targamadzė, Zabulionis, Zybartas, Želvys (2003), Žvirdauskas (2004), Kvedarienė, Vaičaitienė (2004), Būdienė, Zabulionis (2006), etc.

Research method. Analysis of the scientific literature on the indicators for a need for preparatory courses. Analysis of statistical data on dropout rates after first year of studies in Lithuanian universities. Study of various documents on admission requirements to Lithuanian undergraduate consecutive studies in the context of teaching subjects, description and analysis of research on the most popular study subjects and analysis of a tutoring phenomenon.

Theoretical approach used

Many higher schools are not succeeding in preparing large numbers of young people for lasting success in further education and careers. Students, whose academic skills on entry to university require considerable remediation, can remedy basic academic skills, potentially limit their potential to graduate. Generally three indicators of a successful participation in higher education are emphasized:

- Attainment of academic and vocational skills
- Completion of a diploma
- Transition and retention in higher education and the workforce.

According to McMillan at al. (1997), the structure of remedial/developmental programs as well as the philosophical basis on which they are built, are influenced by at least three schools of learning theory (Boylan, 1986): 1) behaviorist theory of learning, 2) developmental theory of learning, 3) humanistic theory of learning.

Scientific literature review enables us to analyze the following indicators of a need for preparatory courses: 1) lack of academic performance; 2) lack of professional motivation (Deci and Ryan (1987) point out that the feelings of competence and self-determination are two fundamental components of intrinsic motivation, other researchers claim that if school administrators, teachers and parents are supportive of students' autonomy, they feel competent in school activities and self-determinant in school-related affairs. Autonomy and competence perceived by students further develop into self-determined school motivation); 3) lack of career counseling (Some research indicates that career intervention should be occur through a holistic philosophy (Lee, Johnston, 2001). Betz (2006) holds that successful career intervention is such that is based on the sources of self-efficacy (Bandura, 1997): mastery experience, vicarious experience, social persuasion and physiological state; 4) differences in learning cultures if they leave secondary school; 5) differences in national cultures if they go abroad; 6) differences in a social status if there is a change in family support. All the above mentioned indicators lead to the reduction of drop-out rates in higher education. The rate of drop-out of a higher institution is a complicated problem related to such environmental factors as characteristics of the school, family and community as well as personal attributes of drop-out students, their low motivation (Csikszentmihalyi, Nakamura, 1989; Deci, Ryan's, 1987; Lepper, Hodell, 1989), poor academic performance (Astone, McLanahan, 1991; Ensminger, Slusarcick, 1992; Fetler, 1989; Jordan et al., 1996; Kaplan et al., 1997; Marsh, 1991; Morris, Ehren, Lenz, 1991; Roderick, 1994; Simner, Barnes, 1991). A high drop-out rate is a major educational problem for drop-out students and society. Technological advancement has placed a demand for a highly educated work force and decreased demand for unskilled labor. Several theoretical models have been developed to explain the influences that affect students' decision to complete their studies in higher education. In Tinto's model retention is influenced by a student's pre-entry attributes, goals and commitments, and academic and social integration (Tinto, 1975). Bean (1985) has developed a model conceptualizing a student's persistence as

dependent on his/her background, academic variables, environmental variables such as employment and finances and social integration.

If we take into consideration the effect of an institutional environment or organizational characteristics then we will see that a student's feeling of alienation may be greater in large universities than in smaller educational institutions. Tomlinson-Clarke and Clarke (1996) have found that men experience more alienation and express greater uncertainty than women in their decision to continue their studies. It was identified that students who lived on campus had a greater sense of community and higher retention rates (Lounsbury, DeNeui, 1995; Thompson, Smairatedu, Rafter, 1993). Berger, Braxton (1998) state that institutional communication, fairness in policy and decision making as well as participation positively relate to social integration and have a significant indirect effect on retention rates.

Low academic achievement is one of the most important predictors of drop-out, whether measured in grades, test scores, course failure (Alexander, Entwisle, Kabbani, 2001; Barrington, Hendricks, 1989; Battin-Pearson et al., 2000; Gleason, Dynarski, 2002, etc.). Low academic achievement is most often related to inability to manage one's time appropriately, study habits and learning strategies, lack of academic motivation. Cancelation of studies because of low academic achievement is generally predetermined by socio-economic factors: lack of financial resources, extra work during studies, parenting, etc.

Students' academic performance at universities was improved by identifying high risk courses where students frequently failed at the university (Kluepfel, Parelius, & Roberts, 1994). Each department developed gateway courses to prepare students for these courses. Statistical information on drop-outs from various European and Lithuanian universities shows that highest drop-out rates are evident in science study programs: mathematics, physics, technical sciences, chemistry, followed by humanities sciences.

Fundamental and applied studies by Lithuanian (Pukevičiūtė, 2008; Gudzinskienė, 2007; Barkauskaitė, Motiejūnienė, 2004; Jucevičienė, Lapinskienė, 2001, etc.) and foreign researchers (Pintrich, Schunk, 1996, etc.) have shown that *academic motivation* is one of the main factors predetermining success in studies; it helps to develop commitment to the study subject, study program, strive to seek for as high study results as possible. Motivation predetermines study results, it conditions setting and internalizing study goals and means. Recent studies have pointed out that motivation is not a static state but a dynamic process. In most cases it is conditioned by a person's state of mind, feelings; it initiates the learning process and also guarantees its continuity (Pintrich, Schunk, 1996). Thus in the process of learning motivation may undergo changes. It has been noted that motivation is affected by various factors which condition its intensity or variation.

If drop-out is characterized by a lack of academic success and low motivation for school work, it is not surprising to find out that drop-out students also have low self-esteem and an external locus of control. *Low self-esteem and self-confidence* (Rosenthal, 1998; Gudzinskienė, 2007). The latter dimensions are more characteristic for students in their first years of studies, meanwhile students in their further years of studies are more self-confident, have better planning skills, their attitude towards studies is more shaped, they have a need to gain deeper knowledge of their future profession.

Significant drop-out factors were expressed by Bennett (2003) (see Figure 1). It appeared that financial hardships exerted a powerful influence on the stay/quit decision and significantly moderated the impacts on a decision to cancel studies: 1) academic performance, 2) student's level of commitment to his/her program. Individual self-esteem played a crucial role in encouraging or discouraging withdrawal when a person got low grades or experienced substantial financial problems. The determinants of academic performance, student motivation, satisfaction and commitment were studied.

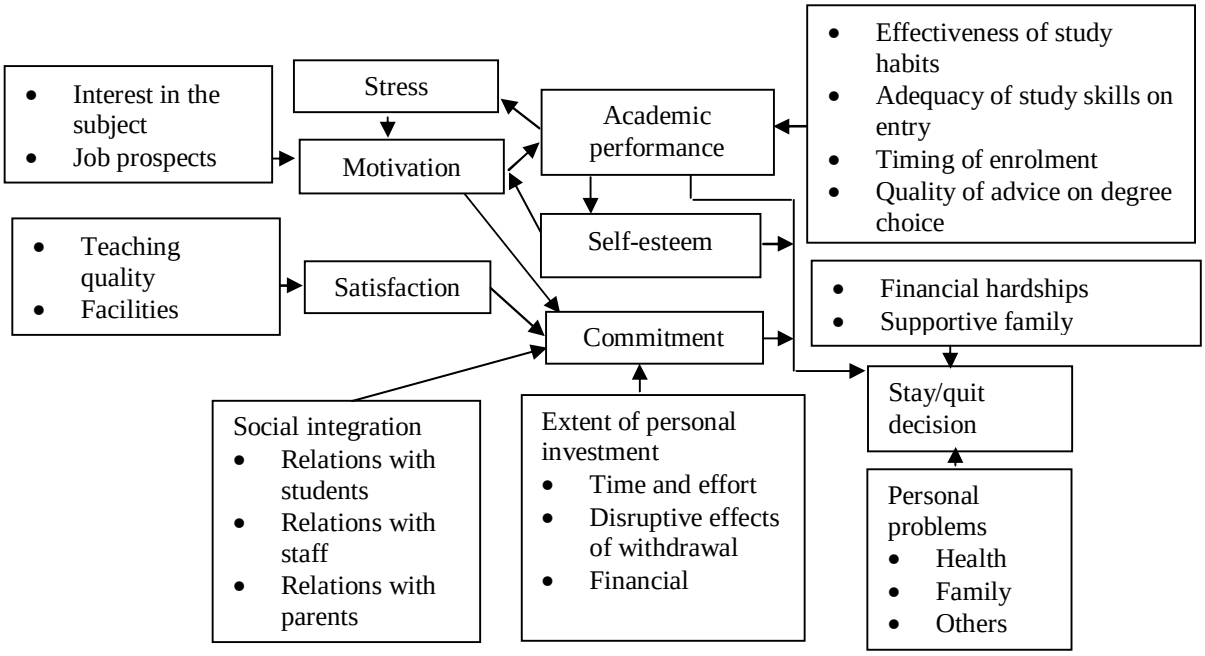

Figure 1. Model of drop out predictors in higher school.
(modified by R. Bennett (2003). Determinants of Undergraduate Student Drop Out Rates in a University Business Studies Department. *Journal of Further and Higher Education*, Vol. 27, No. 2)

Several studies have been conducted on special student populations with high drop-out rates. For example, senior working adults who attend universities may be returning to prepare for a second career or to update their knowledge and skills for the changing work environment. These students are older than the traditional 18-24 year old higher school students who are preparing to enter the labour market. Older adults most often are part-time students and a majority of them have jobs while attending a higher school. Researchers have found out that persistence rates were lower for older adults at universities who worked more hours and studied part-time (Naretto, 1995). They also have noted that a supportive social environment relates positively to the retention of older adults (Ashar. Skenes, 1993; Naretto, 1995).

Other studies have focused on a situation when many enrolled young people find out that they are under-prepared. Placement test results show that they must complete preparatory courses prior to credit-bearing university-level classes. Secondary schools are ineffective in keeping students engaged in schools and fully preparing them for post-secondary and employment options. Many point to the curriculum, which lacks both rigor and relevance in many secondary schools. Students need not only rigorous material to stay engaged but also understanding of why the material is relevant to the real world. Therefore the importance of a tutoring phenomenon is evident, especially in Lithuanian context (Būdienė, Zabulionis, 2006). Description and analysis of the research on the most popular study subjects, tutorials on which were taken by school children or those seeking for admission to higher university institutions allow identify those study subjects, on which *off-line* and *on-line* preparatory courses might be offered: Mathematics, Foreign language, Lithuanian language, History, Biology, Chemistry and Physics.

Indicators of need for preparatory teaching in Lithuania

Drop out rates analysis in higher education

The issue how to reduce drop-out rates in higher education has been of increasing concern. Therefore numerous researchers mentioned above as well as Lithuanian ones have studied drop-out predictors in higher schools and universities (Gaigalienė, 2006; Gudžinskienė, 2007; Padaigienė, Purvinis, Dėmenienė, Vasiliauskaitė, 2007; Liukinevičienė, Vaičaitienė, 2006, etc.).

A big part of Lithuanian researchers have identified that a *study program chosen* without a proper consideration is one of the reasons for canceling studies. Students are given an opportunity to apply to 16

study programs. A wide choice of study programs in Lithuanian higher education system affects students' attitudes towards study organization process, i.e. if an applicant fails to enroll into a first priority program he/she forms a negative attitude towards study organization process what later results in his/her canceling studies. It is obvious that *professional information* and *counseling system* has to be developed. A study carried out by Stanišauskienė (2005) has showed that nowadays students lack a deeper approach towards their career.

According to Gaigalienė (2006), the main reason for canceling studies in Lithuania (N=1153) is a blindly chosen study program, as a consequence leading to *low academic motivation* and canceling studies.

Liukinevičienė and Vaičaitienė (2006) have discussed the possibilities of a wider use of statistical and other information collected from studies departments of different institutions of higher education analyzing the issue of student adaptation in institutions of higher education. "Students who canceled their studies because of an inability to meet academic requirements identified the following reasons: *inability to study difficult subjects, inability to organize self-study, problems reconciling study and work or study and family affairs*".

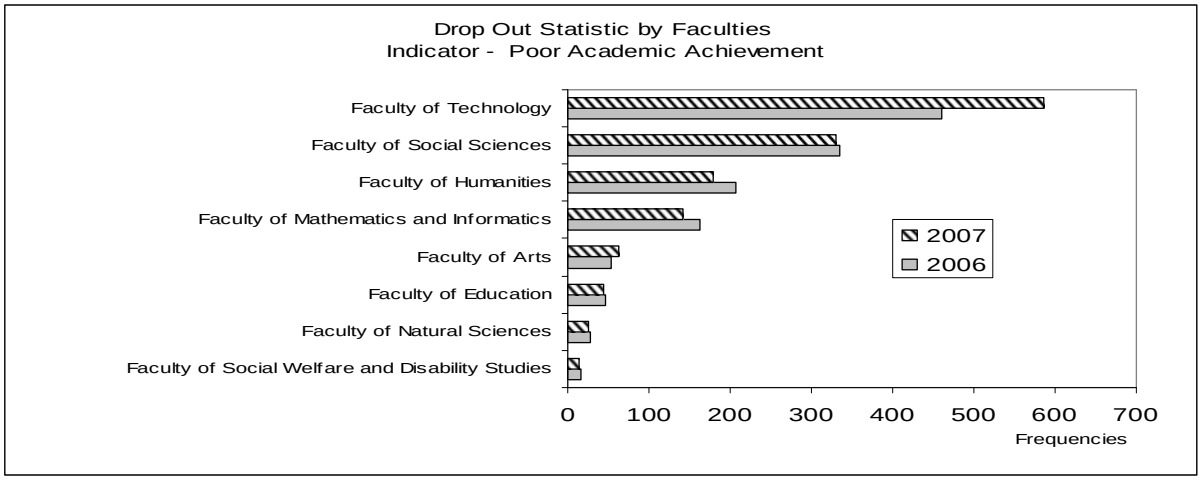

Figure 2. Drop out by poor academic achievement in Siauliai University by Faculties (*2006-2007 academic years*).

The statistical data on dropouts in Siauliai University, collected by this paper authors, confirmed, that biggest drop out rates from higher education institution is leaded by poor academic achievement. Biggest drop out rates is seen in Faculty of Technology (see Figure 2). Obviously, that students' preparation for study such as technological-engineering study programs is insufficient and imperative for preparatory courses.

2.2. Analysis of admission regulations to higher education

There are two types of higher education studies in Lithuanian higher education system: non-university and university studies. Non-university study curricula are implemented only by colleges, higher university study curricula are implemented by universities. General requirements and regulations on admission to colleges and universities are set forth by the Ministry of Education and Science (On admission to ……, 2006; On admission to …, 2007); they are supplemented by the requirements specified for the admission to a particular study program by a particular higher education institution on a further approval by the Ministry of Education and Science.

Currently general admission to Lithuanian state university level undergraduate and consecutive study programs is administered: a school leaver can indicate in his application study programs (up to 16) offered by any university by priority.

Thus applying for admission to the chosen study program school leavers have to pass maturity examinations, both national and school level, with good grades. It is so because admission criterion is a

competition rating determined by the results of maturity examinations, i.e. universities do not organise any entrance examinations to the majority of study programs (except arts and sports study programs), a competition rating to a particular program is set on the basis of the grades in competitive school subjects, the list of which is made up by higher education institutions and the Ministry of Education and Science (Šaučiūnas, 2007).

In order to clarify a need for *of-line* and *on-line* preparatory courses analysis of admission requirements to undergraduate consecutive university level study programs might be useful (Šaučiūnas, 2007). Information on competitive school subjects by study areas and study fields is provided in Table 1.

Table 1: List of competitive subjects by study areas and study fields.

Study field	Competitive subjects	
	For study area	For study field
HUMANITIES	History, Lithuanian language, Foreign language	Mathematics, Religious education, Second foreign language or native language, Geography
ARTS	Lithuanian language, Foreign language	Music studies, Mathematics
SOCIAL SCIENCES	History, Lithuanian language, Mathematics, Foreign language, Biology, Physical education, Information technology, Geography,	
PHYSICAL SCIENCES	Lithuanian language, Mathematics, Foreign language	Physics, Chemistry, Geography, Information technology
BIOMEDICAL SCIENCES	Biology, Lithuanian language, Mathematics, Foreign language	Chemistry, Physics
TECHNOLOGICAL SCIENCES	Lithuanian language, Mathematics, Foreign language	Physics, Chemistry, Information technology, Geography

Source: Šaučiūnas, R. (Patvirtinta). (2007). Studentų priėmimo į pagrindines ir vientisąsias universitetines studijas 2009 metais sąlygos. Prieiga per internetą: <http://www.smm.lt/smt/docs/priem_tvarka/salygos09.pdf>.

Data analysis by study areas (Table 1) shows that applying to university level study programs of the Humanities competitive subjects are: History, Lithuanian language, Foreign language; of the Arts: Lithuanian language, Foreign language; of Social sciences: History, Lithuanian language, Mathematics, Foreign language; of Physical sciences: Lithuanian language, Mathematics, Foreign language; of Biomedical sciences: Biology, Lithuanian language, Mathematics; of Technological sciences: Lithuanian language, Mathematics, Foreign language.

Data analysis by a particular study field (Table 1) shows that applicants to university study programs have to choose other competitive subjects as well: Physics, Chemistry, Geography and Information Technology.

Summing up data in Table 1 a list of mostly needed *of-line* and *on-line* preparatory courses by study areas and study fields is as follows (Table 2).

Table 2. Rating of of-line and on-line preparatory subject courses by study areas and study fields (on the basis of admission requirements to Lithuanian university level studies).

Rating of competitive subjects by study areas and fields	
1. Lithuanian language	6. Chemistry
2. Foreign language	7. Physics
3. Mathematics	8. Geography
4. History	9. Information technology
5. Biology	10. Other foreign language

It may be presumed that the competitive school subjects listed in Table 2 is equally important for school leavers as well as for those studying at universities. In the first case those seeking for admission to the chosen study program have to study hard and succeed in studying these subjects at school or take private classes. In the second case students enrolled on a particular program have to study subjects in greater depth. Thus *of-line* and *on-line* preparatory courses on the subjects listed in Table 2 may be organized.

2.3. Analysis of of-line and on-line preparatory subject courses

It was made analysis of information about preparatory and remedial courses in different Lithuanian higher schools (were revised 10 Lithuanian universities). Data analysis on institutions websites and data get from the representatives organizing course shows that there are no so many different possibilities for a secondary school students and prospective students for high schools to choose a lot of different subjects to study before joining higher schools. Summing up data and rating it in the table 3 shows the list of subjects proposed for off- or on-line courses in Lithuanian universities. This list is close to the rating for preparatory subjects' courses by study areas and study fields on basis of admission requirements to Lithuanian universities.

Table 3: Preparatory and remedial on-line/ off-line courses in Lithuania rating by Subjects

Subject *Online/Offline*	*Courses/Short description*
1. Mathematics *Yes/ Yes*	To broaden knowledge, master good fundamentals, introduce more interesting applications of mathematics, provide information on international competitions
2. Physics *Yes/ Yes*	To deepen and expand knowledge in Natural sciences and to train world outlook; to develop creativity and skills of independent work
3. IT, Computer Sciences *Yes/ Yes*	Organizing small and e-business, Office management, E-publishing, press, Communication technologies in English, Programming, specialized courses.
4. Languages (mother-tongue) *No/ Yes*	Preparatory Lithuanian language courses for secondary school students and prospective students for high schools.
5. Other subjects	Architecture and design, Business administration, Young Businessmen e-school

2.4. Statistics on the subjects given by private teachers/tutors

Tutorials (private instruction) are not a new phenomenon in education. They have been in practice all times and are equally popular in developed and developing countries (Žvirdauskas, 2004; Kvedarienė, Vaičaitienė, 2004; Būdienė, Zabulionis, 2006).

Nowadays tutorials are practiced in many countries. In some countries they have become a huge industry. There are many agencies providing tutorial services in South Eastern Asian countries. Tutorials are less popular in North America and Western Europe but still exist (Žvirdauskas, 2004).

Various aspects of tutorials and their popularity in Lithuania have been analyzed in the works by Targamadzė, Zabulionis, Zybartas and Želvys (2003), Žvirdauskas (2004), Kvedarienė and Vaičaitienė (2004), Būdienė and Zabulionis (2006), etc. This study analyses and provides generalization on those aspects of tutorials which allow identify the teaching subjects, tutorials on which were taken by secondary school leavers or those seeking for admission to higher education institutions.

The study by Žvirdauskas (2004) has identified that a demand for tutorials on the following subjects dominates: Mathematics (28,9%), Lithuanian language (21,5%), English language (17,2%), History (8,1%), Biology (7,7%), Physics (7%) and Chemistry (5%). Būdienė and Zabulionis (2006) have identified the following list of subjects, tutorials on which are most necessary: Mathematics (44,5% proc.), Lithuanian language (32,2%), Foreign language (42,3 %), History (37,2 %). Kvedarienė and Vaičaitienė (2004) have identified (N=574) that the most popular tutorials were given on the following subjects: Mathematics (24,7 %), Lithuanian language (21,8%), Foreign language (29,4%) and History (11,5%).

Summing up the results of carried out studies the following list of the subjects, tutorials on which were taken by secondary school leavers or those applying to universities, has been made up. The results are given in Table 4.

Table 4: Rating of subjects, tutorials on which were most often taken by secondary school leavers or those applying to universities (respondents' opinion).

Subject	
1. Mathematics	5. Biology
2. Foreign language	6. Chemistry
3. Lithuanian language	7. Physics
4. History	

Summing up data in Table 4 we see that tutorials were most often taken on the following subjects: Mathematics, Foreign language, Lithuanian language and History. Thus *of-line* and *on-line* preparatory courses might be organized on the same subjects. Less popular tutorials were on Biology, Chemistry and Physics.

Conclusions

Many higher schools are not succeeding in preparing large numbers of young people for lasting success in further education and careers, most of them need preparatory courses, so we analyzed the indicators of a need for preparatory courses, which were emphasized in scientific literature: 1) lack of academic performance; 2) lack of professional motivation; 3) lack of career counseling; 4) differences in learning cultures if they leave secondary school; 5) differences in national cultures if they go abroad; 6) differences in a social status if there is a change in family support. All these indicators lead to the reduction of drop-out rates in higher education.

Drop-out of higher education institutions is determined by various predictors. The main predictors, which have been highlighted by majority of scientists, are: academic performance, low motivation, effectiveness of study habits and strategies, adequacy of study skills on entry, etc. In fact, low grades and inability to study difficult subjects are one of the revealed factors; therefore, preparatory learning might be useful and needful. Statistical information on higher school drop-outs shows that highest drop-out rates are in science study programs: mathematics, physics, technical sciences, chemistry, followed by humanities sciences.

Study of various documents on admission requirements to Lithuanian undergraduate consecutive studies in the context of teaching subjects, description and analysis of research on the most popular study subjects, tutorials on which were taken by school children or those seeking for admission to higher university institutions allow identify these study subjects, on which *of-line* and *on-line* preparatory courses might be offered: Mathematics, Foreign language, Lithuanian language, History, Biology, Chemistry and Physics.

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Facing the Mathematics Problem, Two Cases Considered

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Abstract: The Dutch Parliament organized an inquiry in the effects of recent educational innovations. The main conclusion was that the Dutch government seriously neglected the main task of ensuring proper education. Moreover, innovations were implemented without large support in the field, and that they were not evaluated. Often there was lack of evidence whether innovations did improve education. One of the main problems mentioned is a lack of mathematical literacy. Especially attention is drawn to the problems in mathematics in the transition from secondary to higher education. Higher education expects a certain level of algebraic skills that incoming students are not all able to comply with. Against this background of a mathematics problem reinforced by generic educational innovations, many trajectories were developed to refresh or remediate algebraic skills in the first year in higher education. ICT is often used for formative and summative assessment of algebraic skills. In this paper we focus on the use of a web-based test and assignment system powered by a mathematical engine, in casu Maple TA. We will study two cases of the use of this system at the University of Amsterdam, in particular at the Economics faculty and the Science faculty.

Educational Innovations, National Concerns

In 2007/2008 the Dutch Parliament organized an investigation into educational innovations. See Dijsselbloem e.a. (2008). The main conclusion was that the Dutch government seriously neglected the main task of ensuring proper education. The reason to organize the investigation was a serious concern in society about the results of education. Such a parliamentary investigation is an important political instrument, for which the parliament may opt independently. Members of parliament form the committee, hearings are held with responsible politicians and experts.

In the investigation four educational innovations were addressed, here we discuss three of them in more detail: (1) the so-called profiling of the curriculum, the “basisvorming” (the non-differentiated first three year of secondary education), and a pedagogic approach, called new learning.

Up to 1999, each secondary school student from age 15 to 18 had freedom to choose subjects, within certain boundaries. To ameliorate the transition to higher education, four profiles were developed with coherent packages of subjects that should prepare for higher education. These profiles are Culture & Society, Culture & Economy, Nature & Health and Nature & Technology. Representatives from higher education participated in the development of the profiles and the new subject contents.

The “basisvorming” is literally the “basis formation”, and refers to the first three years of secondary education. In the old situation, children had to choose at the age of 12 the school type, which in fact led to an early selection. To fully understand the concept, it is good to know that for decades the social-democratic party in the Netherlands promoted the idea of a “mid school” (“middenschool”) to stimulate equality and to postpone the moment of selection. This idea was stuck in the political arena. However, an advice of the Scientific Council in which preservation of the existing formal school structure was made possible by replacing final terms (eindtermen) by primary goals (kerndoelen), and a distinction of two levels were proposed, led to a political consensus.

The idea of New Learning was developed in the same time as the New Economy, to which we now look back as the height of the Internet Bubble. The characteristics are

- An activating learning environment with attention paid to independent learning;
- Meaningful and authentic contexts;
- Cooperation between learners;

- Different role for the teacher (less knowledge transfer, more coaching).

The introduction of this innovation was different from the other innovations. It was not by law, it was a pro-active role that government took in stimulating new learning at the same time as the introduction of the profiles. are the formatting requirements for the papers that will be published in the S-ICT 2008 proceedings. Your paper must conform to these guidelines so that we can have a uniform appearing proceedings. Time between submission of the final camera ready copy and submitting them to the publisher is short, so submitting your paper following these guidelines is necessary for insuring your paper's inclusion in the proceedings.

What were the findings of the parliamentary investigation?

The investigation committee was quite critical in their report (Dijsselbloem, e.a., 2008, pp. 114-115). The effects of the "basisvorming" were limited. There is no evidence that the moment of choosing is at a later age. About the New Learning the committee finds a lack of scientific evidence of the approach. Therefore, this semi-official innovation was quite risky. Base conditions like support of teachers and coaching of students, were not met. Differences in content and learning style were not sufficiently taken into account.
The effects of the profiling system were disturbing. The main goal was the improvement of the transition to higher education. But the number of laureates diminished because switching between the school levels became more difficult. Fewer students opted for scientific and technical disciplines, and this effect is especially noteworthy among female students .

In the analysis of these effects, the committee notes that the main reasons for changing secondary education, i.e. more equality in society and lowering drop-out rates in higher education, were lying outside of secondary education itself. Although it may be legitimate, there is a clear danger that the innovation will not reach its goals because of a lack of support within secondary education. Moreover, the responsibilities of government and the schools became confused. Government interfered with pedagogy, and quality insurance was to much left over to the schools.

What is the impact on mathematics education, especially algebraic skills?

All three educational innovations had a negative impact on the typical level of algebraic skills for the students arriving at higher education. The introduction of the "basis formation" led to a situation where in these three years a less pronounced learning result was achieved. Especially for the better students preparing for higher education, the mathematical fundament became weaker. The just installed committee for a new mathematics curriculum, criticized the basis formation in this way. See Siersma e.a. (2007).

The new learning concept had a strong influence on the teaching practice. Typically, mathematics lessons consisted of say 30% explanation, and 70% doing exercises with the teacher assisting. Now, with the new learning, contact hours diminished and students would do more self-study supported by some staff member. So for mathematics, typically exercises would go into the self-study hours, without a mathematics teacher to support.

Regarding the choice for one of the profiles, only a small number of students chose the profile Nature & Technology. Higher education in science and technology felt threatened and started to allow also students with profile Nature & Health. So one of the possible merits, a thorough preparation for technology disciplines, evaporated at the very beginning. Moreover, the students and schools complained about an overburdened program. Indeed, motivated by the idea of writing for the right selection of students, the developers had broadened scope and depth of the curriculum in all disciplines. Time constraints had prevented to find a balance between the disciplines that formed a profile.

The complaints reached the political platform soon. In 2006, an amendment was proposed by the minister that yielded less hours available for many disciplines, among which mathematics. Now many scientists and teachers complained about these proposed measures. But most impact had a student movement called "Lieve Maria" (Dear Maria), referring to the opening of a letter of a made-up student to the minister of Education, Maria van der Hoeven. In this letter (Van Rest, Hauwert, e.a., 2006), students

mention the problems that they encounter with algebraic skills when arriving at the university. As a result, algebraic skills were on the political agenda. For mathematics the reduction of hours was somewhat diminished. Moreover, a resonance group with members from higher education was installed to follow closely the plans of the new curriculum committee for mathematics, especially with regard to algebraic skills.

The resonance group pointed at three aspects (Van de Craats, e.a. 2007). Mathematics education has become fragmented. A continuous line of development of mathematical ability is missing. Moreover, since two decades, following the ideas of Hans Freudenthal, mathematics education was reformed by introducing contexts for all topics. These contexts helped to motivate students and to connect mathematics to its surroundings. However, the resonance group pointed out that in higher education the context to do mathematics was the discipline itself, like economics, and not a situation constructed per exercise. Moreover, now abstract mathematics was missing to a large extent.

Another mathematics education innovation of the nineties the resonance group pointed at, concerned the use graphical calculator. In the spirit of bringing more ICT to the classroom, the graphical calculator replaced the standard calculator and brought quite some functionality as graphing and tabulating functions, finding zeroes, etc. In practice, the students used this tool to a much higher extent than expected. Both the strong focus on contexts and the use of the graphical calculator have a negative impact on the level of algebraic skills.

In summary, we see that Dutch mathematics education faced five educational innovations, three generic innovations, two especially for mathematics educations. All these innovations had specific goals that were often met in most cases, but in the meantime there is a negative overall effect on algebraic skills. It is hard to discern which effect is due to which innovation, as the effects were all in the same time frame.

After the inquiry, the Dutch Ministry of Education is gearing towards evidence based improvements of education. There is convergence about the place of algebraic skills for the two nature profiles, but the debate is still raging about the mathematics for the culture profiles. See

Two Cases: Sciences and Economics, University of Amsterdam

Since the moment that the students from the profiling system entered higher education, higher education introduced diagnostic tests to pinpoint the problem, and designed remedial trajectories for algebraic skills (see Van Gastel, e.a. 2007). In this paper, we give attention to two trajectories that use Maple Tests & Assignments, a web application with the mathematics software Maple at the background. It can check answers, give feedback, and moreover, it can generate series of exercises from a given template (see also Heck & Van Gastel, 2006). Maple TA is currently used at many higher educational institutes. The courses involved here are Calculus 1 from the Faculty of Exact Sciences and Mathematics 1 of Faculty of Economics and Business, both from the University of Amsterdam.

For the Sciences, the results for Calculus 1 dropped seriously since 2003 (see Figure 1).

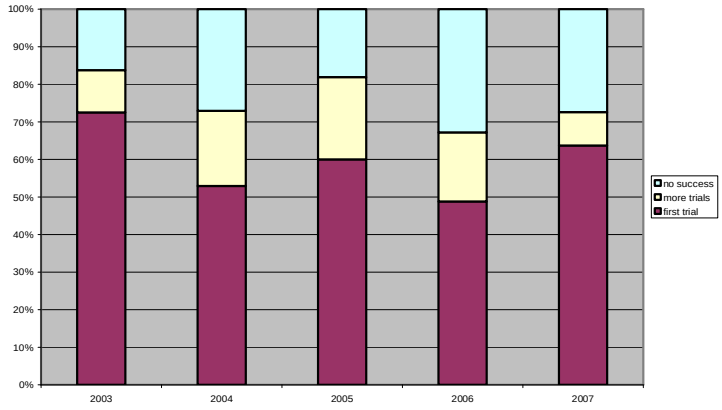

Figure 1. Results for Calculus 1, Science Faculty.

The organization responded by providing more opportunities for re-examinations, as we can see in Figure 2.

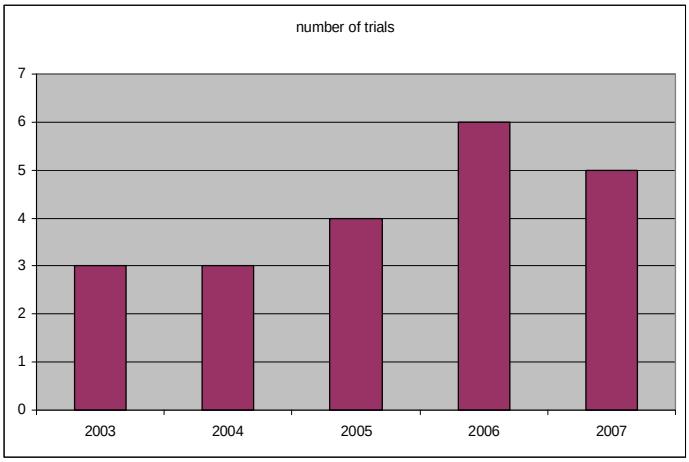

Figure 2. Number of exam trials for Calculus 1

Since 2005, a remedial course for algebraic skills is part of Calculus I. It takes place in the first 5 weeks. The students are given 2 practice tests and 1 final test consisting of 20 questions. A demonstration video about how to work with Maple TA is also at the students' disposal. The number of the students from the exact sciences is approximately 150. The practice tests took place in the 3rd and the 4th week respectively, and the final test was in week 5. The question bank was prepared in previous years, on basis of the syllabus. Maple TA is used later on in a next course Calculus II.

For Economics, a similar decline was noticed since 2003 in the results of Mathematics I (see Figure 3.)

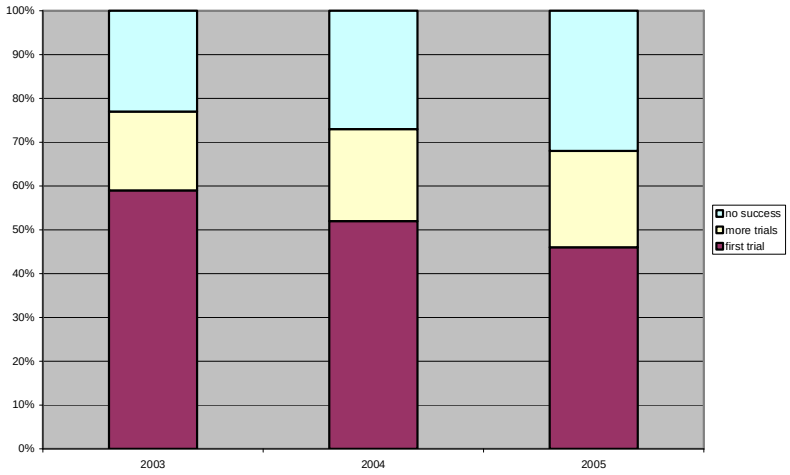

Figure 3. Results of Mathematics I, Faculty of Economics

A remedial course was organized within the first part of the course Mathematics I. In a period of ten weeks the students were given 2 tests per week, checking on their basic algebraic skills. Each test consisted of 10 questions. In order to pass, students were required to have 8/10 answers correct. They could try as many times as they wanted, but within a week they had to complete the given 2 tests. There were regular hours for questions about the material and about the use of Maple TA. There was a demonstration video, which helped the students learn how to work with Maple TA. The question bank was used from previous year. On successfully passing the tests, students were given bonus points. On completion of all the 20 tests, 1 point was added to the overall grade of the students. The level of the difficulty in tests increased

gradually from the first to the last test. Maple TA is used later in the following courses Mathematics II and Mathematics H as well.

Methodology

The methodological approach is a stakeholder analysis. Stakeholders are students, teaching staff and management involved in the courses Calculus 1 from the Faculty of Exact Sciences and Mathematics 1 of Faculty of Economics and Business. The students' opinions and responses were collected from surveys, semester response groups (student panels that meet with teachers), and by means of in-depth interviews with four students. The evaluation for the two courses at the different faculties were not the same ab initio. But by carefully considering the different design choices for the courses, and the clarification made in the interviews with the both student response groups, many questions of the included surveys was found to be highly comparable.

The teacher opinions were collected by means of interviews. The participants were three teachers and a student assistant, in particular the coordinator of the Bachelor of Physics program, the coordinator of the course Calculus 1, the coordinator of Mathematics 1 and one student assistant were interviewed.

Results of student surveys

In general, the majority of students from both surveys hold the opinion that the design of the tests is good. (66% - Survey B Calculus 1 Basic Mathematics Skills 2007; 44% - Survey Economics/BA Mathematics 1 2007/2008). Only 4% / 9% resp., answer negatively. (See Figure 4.)

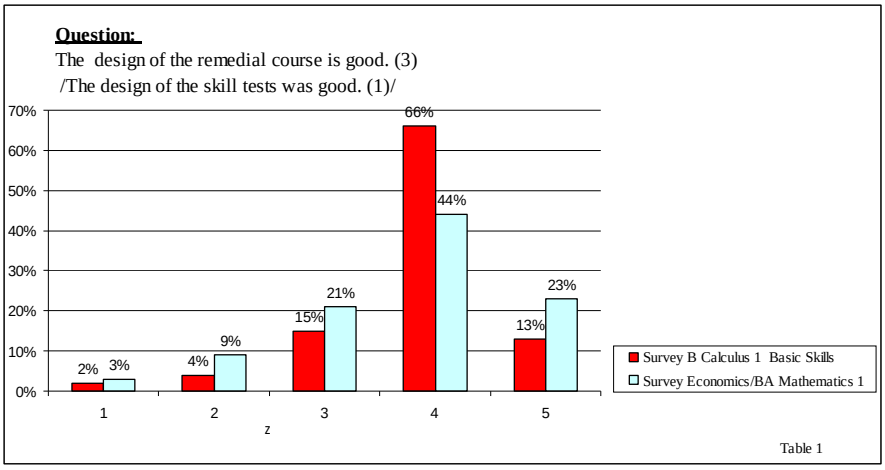

Figure 4. The design

About half of the students (48%) from the second survey seem to be satisfied with reliability of the tests for determining their level (see Figure 5). The answers from the first survey are less pronounced. 30 % of the students do not share the opinion that the skill test is useful. However, students who did the tests more often (like the Economics students), would agree that the test is useful for diagnosis of their knowledge and skills.

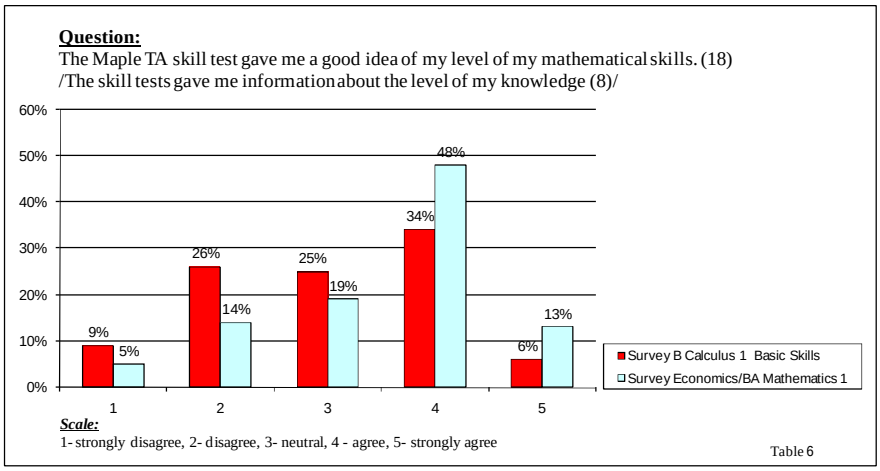

Figure 5. Information about skill level

When asked about the clarity of the skill tests, a quite similar pattern is found in both surveys (see Figure 6). About a quarter of the students did not find the Maple TA skill tests clear.

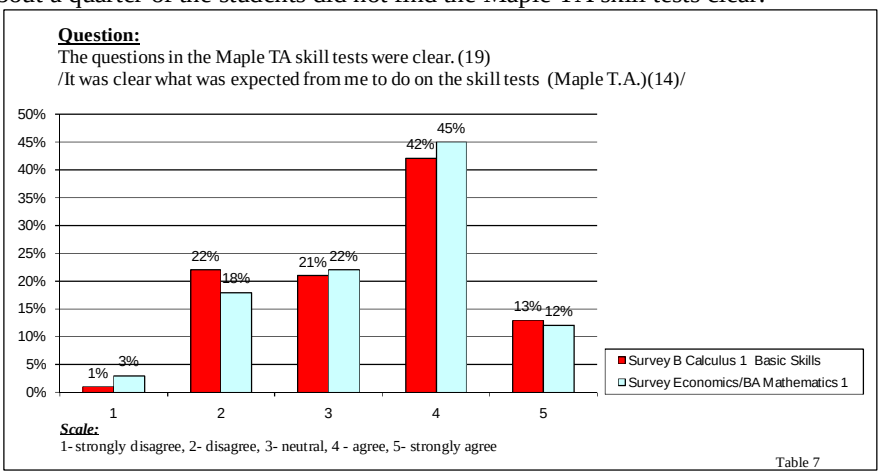

Figure 6. Clarity of the skill tests

On the question how stimulating the tests to keep the students busy studying are, a small minority (17%) of the Economics/BA students share this opinion (see Figure 7). The rest of the results are scattered equally. About 24% of the participants of both surveys state that they either agree or disagree with the statement

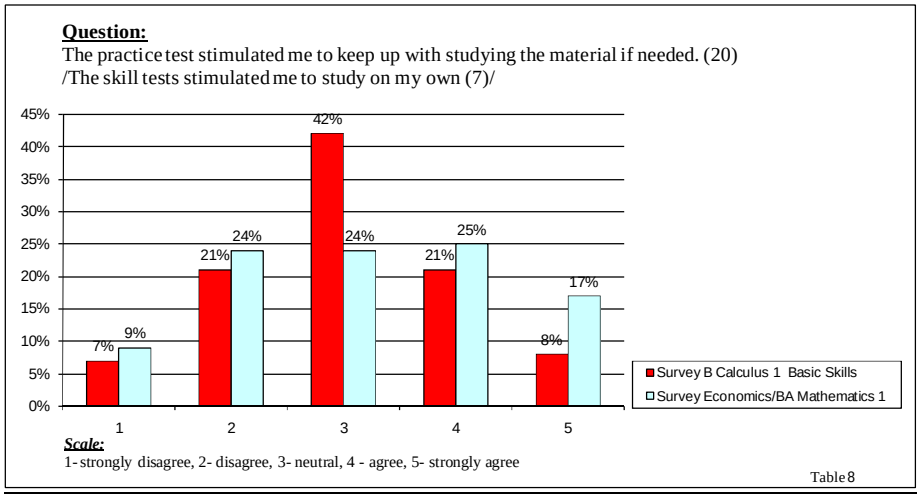

Figure 7. Stimulate self-study

The technical aspect, whether the Maple T.A. is user-friendly program, triggers negative responses from most science students (see Figure 8). About 1/3 of them do not consider the program easy to work with. In comparison, the Economy/BA students are very satisfied with the program. 44% of them state that, whereas only 10% of them seem to strongly disagree.

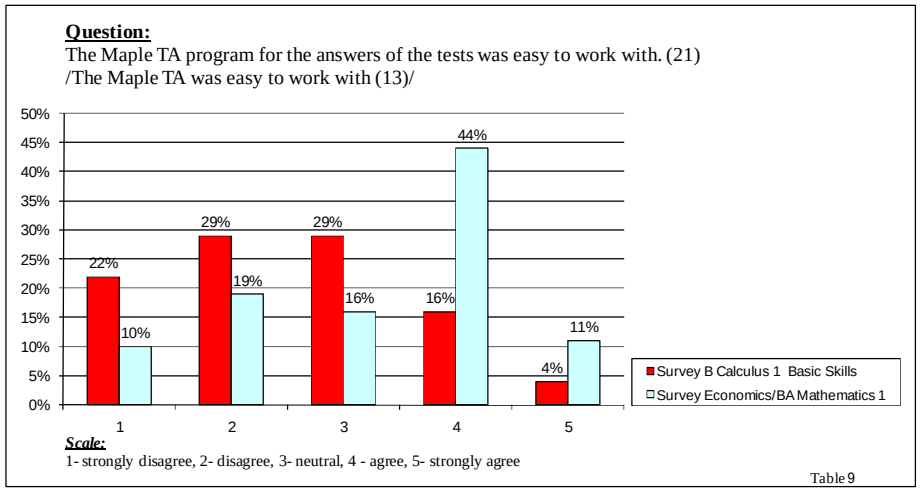

Figure 8. Easy to work with

From the science students' additional feedback, it can be also concluded that the students mainly complain about the difference in the level of the practice tests and the final test. They claim that the assignments on the "real" test are more difficult than the ones from the skill tests. Furthermore, many of them mention that their answers were not always recognized by the program as correct, whereas when done with paper and pencil, they would be true.

Opinion of Teachers

Teachers from the Faculty of Economics are in general satisfied with the design of the course. They reduced the questions and split them into two different tests of 10 questions per week. In comparison to last year, students had to answer 30 questions. This year they plan to keep the new design for the remedial course.

Teaching staff of the Sciences are also satisfied with the design choice for the remedial course. According to one of the teachers, students are the ones who were more involved. They were working manually and they did not actually use the Maple TA tests during the practice classes. At that moment two

of the teachers, who were teaching the exercise classes, did not even know that there was a special set-up for the basic skills testing with Maple TA. For the second semester, when teaching Calculus 2, one these teachers became more involved and actually worked with Maple TA and participated in making new questions.

From the interviews with the teachers, the general impression is that the level of difficulty of the tests was average. Only one teacher out of six considered them too easy. His concern was that the students were already supposed to have the basic algebraic skills and knowledge, but the results from the tests showed that not all the students had. Thus, the idea to rebuild the needed skills and bring the students to the same level was really useful.

From the teachers who were directly involved into the technical part of using Maple TA, it can be concluded that if there is a sufficient question bank, the preparation of tests is
easy and less time-consuming. Teachers try to optimize their time for preparing the learning materials. Thus, for larger groups of students it is very convenient to use the testing program. Two of the teachers, who were not involved in making questions, made the final test on their own, and they did not experience any problems using Maple TA, even though they never tried it before. They consider it "pretty straightforward". For the notation, one of the teachers mentioned that she had to look it up, in order to get familiar with the syntax of the program, but this she did not consider it as a serious problem.

Finally, for a follow-up of the remedial course, contradictory opinions were recorded. According to one of the teachers, there should be no need to spend extra time on basic skills that students should already have from high school. On the other hand, the rest of the teachers think that it is important the basic skills to be mastered and if some students still need support, they could do that through self-practice. A digital environment such as Maple TA has this possibility and could be used.

Summary

In the Netherlands five educational innovations took place in more or less the same time frame. These innovations all have a negative impact on algebraic skills, as was marked by higher education, although it is not possible to discern the effects separately. The complaints from society and education lead to considerable political attention. The way the innovations were implemented was severely questioned.

In the meantime, the higher educational institutions saw the algebraic ability of the freshmen drop over the years. In many higher educational institutes Maple TA is being used. Two cases, the first mathematics course at the faculty of Sciences and at the Faculty of Economics at the University of Amsterdam are analysed. With regard to the didactical aspect, the students found the design choice for the remedial course satisfactory. The results from both the surveys and the interviews indicate that they considered the level of tests as average and that the content of the tests fit well with their previous knowledge. Some of the students of Sciences claimed that the level of difficulty of the preparatory tests lower in comparison to the final test. Therefore, their recommendation was to make tests with the same level of difficulty. In general, they think that Maple TA helps them to diagnose their mathematical level of knowledge. The students from the Faculty of the Economy share the experience that the practicing with the test can be stimulating.

From technical point of view, the students from the Faculty of Sciences were in general satisfied with the use of Maple TA. Some of them complained about the syntax problems they experienced; however, they admitted that this could be due to the fact that they did not practice enough. In comparison, the survey of the students from Faculty of Economics were quite happy with the testing system: both for practice and for assessment. They found Maple TA for self-preparation more useful than the written materials (the study book). Since, Maple TA is used in other courses, Calculus 2, e.g., the students from the Sciences start to feel more comfortable with using the testing system and acknowledge its usefulness. Thus, to answer the question whether Maple TA is easy to use, the more the students practice, the easier they find the system to work with.

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Online Coaching: Summer Course Basic Financial Management at the NHTV

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Abstract: There is hardly any need to explain why the NHTV started an online basic course on financial management. Not only the increasing differentiation in new enrolled students and the country wide discussion about the 'arithmetic issue', but also NHTV research, with regard to the prospective students' level of knowledge, showed that actions to increase that level were worthwhile. We choose for the approach of the University of Maastricht. Decisive reasons for this were the underlying educational concept, (completely online, tutorial guidance throughout the process), the good results and the enthusiastic cooperation of the project manager of Maastricht.

Major aspects
In order to create a successful project, much attention was paid, in advance, to the following aspects:

Commitment

- Managerial approval of all NHTV academies and the Executive Board
- Cooperation of service department managers of, for instance, ITC, marketing, finance and student registration departments

Course set-up

- Students should be able to work independently; the teacher's role should mainly be one of coaching.
- It was decided to offer an online course befóre the official start of the academic year as the point of departure was that this knowledge should have been acquired before the start of the first year.
- The course should be offered completely online through the NHTV's electronic learning environment (n@tschool); this was to be facilitated by the ICT department.
- The main focus was on brushing up or raising the level of existing knowledge, not on offering new knowledge.

Human resources

- Only lecturers who are flexible, and positively tuned in towards e-learning and competency-based / demand driven tuition, were recruited.
- This went for employees of service departments too.

Diagnosed obstacles / Established difficulties /difficulties to overcome Perseverance of project managers and staff, enthusiastic lecturers and direct communication lines with the ITC department are a must. Being familiar with the various supportive services and processes within the organization is also of major importance. As students can only participate when they are enrolled with the NHTV and have paid for the course, service departments need to have been approached beforehand in order to deliver preparatory services. It also appeared that only a few employees within the organization knew the complete ins and outs of the electronic learning environment whereas most course designers' familiarity with n@tschool was rather basic. This meant that virtually all activities, like offering online learning material, installing visual material, designing interactive course material, developing tests with changing variables and optimizing forum and chat possibilities to the fullest, had to be explored.

Findings

So far, seventy-four students have enrolled; one try-out course with eight students took place. Three of them succeeded in attaining the desired result (a sufficient mark for the online course). Six out of those 8 students sent in performance appraisals. They assessed the quality of the course and the team with an average of more than 8.3. The course consisted of three parts with an increasing degree in difficulty. It appeared that most students drop out during the last part. Improvements have been made and the course is running now for the second time. The third course starts in August.

In November 2008 more research data will be available, which we are very willing to share with all attendees at the conference.

Thursday 20th of November

Students' Mobility, Acculturation and Gaps in Learning Skills: A pan-European survey

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Abstract: With the advent of European Union (EU) and establishment of the Bologna Process, standardization and uniformization of teaching and learning have been placed at the forefront of recent debates on higher education. Three issues that have been raised are: student mobility and cultural adaptability; e-learning; and remedial and support programmes. This paper draws on initial phases of the MASTER project funded by the EU Socrates Minerva programme. An online survey questionnaire was administered to students from three universities across Europe. It aimed to explore students' views about mobility and e-learning; and identify gaps in IT and learning skills at start of their postgraduate studies. Key findings have revealed clear existence of students' mobility within the participating universities (average = 22%) and signnificant variation in skills among student. Exploration on students' mobility has indicated further implications in terms of acculturation and learning in foreign language. IT- related results have shown varying gaps in students' skills and relevant training requirements range from 'manipulation of Microsoft office' to 'database search'. Likewise, those learning skills acquired by students from their first degree represent a wide variety that has been categorised from 'essential' to 'not desirable'.

Findings from this particular section of the survey indicate the necessity for additional support in specific areas in form of remedial programmes. Therefore, in order to meet the targets set by Bologna Process, European universities have to adjust to cultural differences by overcoming barriers to students' learning and support them in order to address gaps in IT skills and those associated with their subject areas.

[MASTER – Mobility, Assessment, Selection, Technology and E-Learning Research]

Effective Design of Transitional Preparatory Courses

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In the case of science education and also economics and business education the gaps in required prior knowledge of students often concern mathematics skills. This problem is recognized in various countries. The recommendations how to deal with the mathematics pre-knowledge problem range from curriculum reforms to remedial help.[9,10,11]

The target of our work was to evaluate remedial teaching scenarios for transitional preparatory mathematics courses and to define the influence of boundary conditions on the success of these scenarios. This research is part of the ongoing work on mathematics transition problems in the Netherlands. Many joint projects[12] have been started and a special interest group on mathematics pre-knowledge problems SIGMA (Special Interest Group on Mathematics Activities) joins the higher education forces in development of new approaches to e-learning in this field and promotes the dialogue between the secondary and higher education.[13]

For the analysis of teaching scenarios in our research we have used the model of remedial teaching scenarios developed by Wieland et al. (2007) in which attention is paid on the use of ICT.[14] As a research method we have applied the principles of action research.[15] The success of remedial teaching scenarios was measured with the success of the intervention within its context. We have defined an intervention as a set of remedial teaching activities related to an existing course as its context. Furthermore, the impact of the preparatory teaching activities was estimated in a larger educational context such as the educational programme.

We are convinced that the pre-knowledge problems cannot be seen just as a problem of each particular student. For example the lack of mathematics pre-knowledge of students in science or economics has a very large impact on the overall success rate and can to some extent even influence the quality level of an educational programme. The preparatory activities help students to cope with the level of the regular programme and improve their study progress. From this point of view the quality of the preparatory activities can be seen as a competitive advantage of a higher education institution. As a consequence, this indicates the need for new investments in these activities. Nevertheless preparatory courses can usually not be funded in the same way as the regular curriculum courses. Due to different boundary conditions a specific approach is needed in designing transitional preparatory teaching activities.

We expect that knowledge gained by this research will be an important contribution to the development of the framework for preparatory teaching in different disciplines.

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Pedagogical Approaches Used For Preparatory Teaching

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Abstract: Although an increasing number of good practices on effective teaching and learning in computer-based learning are published, still little is known how to effective teach online. However, teaching and learning theories provide some insights how a teacher can design effective online course. Also for preparatory teaching there are different possibilities depending on discipline and subject for using given techniques of instruction. Furthermore, these courses may be offered in face-2-face form or aided with ICT, what will also influence the teachers' choice of teaching approach. The pedagogical scenario used for a given course has a strong influence on learning processes of learners and groups.
In this presentation we would like to present different features influencing the teaching and learning approach. Starting from meta-level of learning theories we go down to teaching styles and finally different learning activities and tasks. The form of the course, discipline and choice of different activities and tasks will determine the choice of pedagogical approach.

Learning theories

Athough there are different classifications of learning theories we will focus on these which may be employed in web-assisted preparatory teaching. Starting from cognitive approach, trough instructional approach, we will then preset constructivist philosophy and finally social constructivist.

The cognitive approach

In cognitive learning, the individual learns by listening, watching, touching, reading, or experiencing and then processing and remembering the information. Cognitive learning might seem to be passive learning, because there is no motor movement. However, the learner is quite active, in a cognitive way, in processing and remembering newly incoming information. Cognitive learning enables us to create and transmit a complex culture that includes symbols, values, beliefs and norms.

To sum up:

- learning results when information is stored in memory in organized, meaningful manner;
- developing scheme and making connections to prior knowledge;
- teacher organizes information and helps learners to memorize them;
- activities: explanations, demonstrations, examples, advance organizers, graphic diagrams, practice, feedback
- learner is motivated when event, object or experience conflicts with what already knows.

The instructivist approach

The instructivist approach is a traditional, teacher- and content-focused approach. This approach tends to see learners as recipients absorbing and reproducing what the teacher tells them. Associated with this approach is "behaviourism", "positivism", and famous psychologists like Skinner. The learners depend upon their teacher, who selects the knowledge sources, decides the pace and judges the student's performance. Basically, the instructional approach sees "knowledge" as fairly static and objective, existing independently of human activity. The role of the teacher is to act as a "channel", for "objective, correct" knowledge. If electronic media are used, it may be modern multi-media, but the communication is basically one way, from the teacher/producer to the receiving student. However, in a complex world, the instructional approach might not always be the most efficient way to learn (Bjørke & Holt, 2005).

To sum up:

- learning by example / demonstration and learning by being told by the teacher;
- traditional teacher and content-focused approach, learners as passive receptors;
- the learners depend on their teacher, who selects the sources, decides pace and judges the students' performance; knowledge is static and objective;
- from the learner`s perspective: „she taught me…";
- from the teacher's perspective: cover the syllabus and be in control;
- this approach does not lead to deeper understanding.

The constructivist approach

The constructivist approach is associated with psychologists like Piaget. He argues that people have to be active learners and construct knowledge themselves. Knowledge is seen as more subjective, dynamic and expanding rather than objective and static. The main tasks here are processing and understanding of information, and making sense of the surrounding world. The learner has a clear responsibility for his/her own learning. Constructivism calls for participation at all levels and moves responsibility and empowerment down the hierarchy, thereby flattening it.

If a constructivist approach is chosen, the course design will look different, with less-predefined texts, more freedom for the learner to select different sources of information, and authentic problems or cases to solve. Typical features for constructivist teaching are that teachers encourage and accept student autonomy and initiative. Students are asked to elaborate on their understanding of concepts before teachers give "the correct" understanding, if at all. Self-directed learning skills are part of the curriculum. Problem-based learning and resource-based learning are important in this setting. When choosing electronic media here, the Internet is an obvious choice. Furthermore, searchable databases, online libraries and other online resources are important (Bjørke & Holt, 2005).

To sum up:

- learning by constructing meaning;
- people have to be active learners and construct knowledge themselves;
- knowledge is more subjective and dynamic;
- problem-based learning;
- main task: processing and understanding of information;
- the learner has a clear responsibility for his own learning;
- from the learner`s perspective: „I made sense of…";
- the teacher changes from „Sage on the Stage" to „Guide on the Side".

The social constructivist approach

Social constructivism is associated with psychologists like Vygotsky, and takes the constructivist approach a step further, implying that the student must join a knowledge-generating community; a community of practice, and in collaboration with others solve real (authentic) problems as part of their study. Many teachers think this approach is the most appropriate for e-learning, because it gives an answer to the challenges of the "information age" and it exploits the technology better than the other options. The time and pacing will be seen as less relevant than in the case of instructional studies. The tasks will be processing and assessing knowledge and generating and co-constructing new knowledge.

The learners as a community are an important learning resource in itself. Students may in collaboration drive lessons; suggest shifts in instructional strategies and, to some extent, change content. Students are asked to engage in dialogue with the teacher as well as with one another, and to engage in experiences that might engender contradictions to their initial hypothesis. The idea of "communities of practice" where peers help peers learn is crucial in social constructivist learning (Bjørke & Holt, 2005).

To sum up:

- learning by joining a knowledge-generation community;
- the student collaborates with others to solve real problems as part of their study;

- the teacher is a learner together with his students;
- important goals: generic skills of collaboration, problem solving, creating new knowledge;
- the tasks: processing, assessing, generating, constructing knowledge;
- problem-based learning.

Teaching Styles

Teachers develop a teaching style based on their beliefs about what constitutes good teaching, personal preferences, their abilities, and the norms of their particular discipline. Some believe classes should be teacher-centered, where the teacher is expert and authority in presenting information. Others take a learner-centered approach, viewing their role as more of a facilitator of student learning. Although individuals have a dominant, preferred teaching style, they will often mix in some elements of other styles. Five teaching styles which may influence pedagogical scenario in remedial courses we present below.

Direct Instruction

The traditional teacher-centered instruction technique is called direct instruction. The teacher provides the students with much of the information they need, often through lectures, explanations, examples, and problem-solving. Most direct instruction techniques only allow for minimal student-teacher interaction, and need to be supplemented by review, practice, and group discussions.

The main strength of direct instruction is that it is efficient, especially in quickly providing information to the students. It is also an effective way to allow students to achieve mastery when learning fundamental facts, rules, formulas, or sequences.

However, direct instruction is not an effective way to teach higher-level thinking, analysis or evaluation. It cannot be used to teach material over a long period of time, or present additional details to students who have already mastered the basic concepts. When direct instruction repeats material that has already been covered, it becomes redundant and boring for the students, so the content needs to be repeated in novel ways to keep the students interested.

Indirect Instruction

The indirect approach to teaching presents students with instructional stimuli in the form of materials, objects, and events, and requires students to go beyond the basic information that they are given to make their own conclusions and generalizations. Indirect instruction allows teachers to engage their students in activities which require the students to learn independently.

Students take an active role in their learning by developing ideas, testing their own conclusions, and discussing their results. This allows students to independently discover patterns and relationships in their learning and knowledge. Students go beyond the basic problems presented to them, allowing them to develop advanced levels of thinking and analysis. Indirect instruction is most effective at teaching a process or method of learning, and allows for a dynamic teaching and learning environment.

Self-Directed Instruction

Students need to be encouraged to actively participate in their own learning process through self-directed instruction. Without taking a role in their own learning, students become too dependent on their teachers and fall behind in independent thought, reasoning, critical-thinking, and problem-solving abilities.

Self-directed instruction teaches students to take learning into their own hands, apply their knowledge to real-world problems, monitor their own achievement, and go beyond the material that is presented to them. Predicting, questioning, summarizing, and clarifying are four important activities that shift the responsibility of the learning to the students.

Cooperative Learning

Cooperative learning is a technique that encourages collaboration, competition, and independence. Teachers encourage independence among the students in terms of achieving their learning goals, and interdependence through interaction.

One strength of cooperative learning is its social nature. Students are encouraged to interact and share with one another, which helps reduce the students' desire to talk or gossip with one another about unrelated topics. With interaction constantly occurring, a cooperative learning classroom tends to be somewhat noisy, but classroom management is easier.

Cooperative learning helps students develop conceptual reasoning and problem-solving skills. It also helps creates a warmer relationship among students and a positive attitude towards the subject matter.

Discussion

Discussion involves free, interactive dialogue between teachers and students. It is more than just a question-answer period, and requires the teacher to give control of the classroom to the students. The students guide the discussion, meaning that it may not always progress in the direction the teacher anticipated.

A successful discussion requires that all student responses and ideas be accepted and considered, even those that are immature or have not been thought out. Teachers and students need to be open-minded and willing to consider perspectives different from their own.

Supporting the learning process

From a theoretical point of view, speaking of educational support to the learning process refers to the interactions that take place within an educational context and give rise to learning. Distinctions within this concept are introduced, emphasizing different points of view on the supporting activity and consequent differences in the didactical planning.

Modelling

The term Modelling refers to the kind of support that guides the students to acquire expert behaviour in problem solving. In this case, attention is focused on the analysis of expert's results, on what knowledge they use, on what cognitive and meta-cognitive processes they carry out during a problem solving activity. Modelling includes the analysis of meaningful cases, and implements an approach to educational support which is problem-oriented and guided by the teacher (Busetti, Dettori, Forcheri & Ierardi, 2005).

Coaching

The term Coaching refers to the teacher's activity supporting students' efforts to solve some tasks. In this case, the emphasis is on students' work. Here, the teacher follows and regulates students' activity, by analysing it and providing feedback and suggestions. This kind of support, hence, develops during the activity and entails a high degree of interaction between students and teacher. It is not necessarily limited to class activity, though, since distance communication tools, such as e-mail, platforms or videoconferences can be used to allow coaching in ICT-based environments (Busetti, Dettori, Forcheri & Ierardi, 2005).

Scaffolding

The term Scaffolding refers to any incentive or help, adapted to the student's ability level, intentionally given in order to help a student to perform some task (Jonassen, Mayes, McAleese, 1993). In this case, the focus is mainly on knowledge to be acquired and tasks to be tackled, taking into consideration the systemic factors that may affect performance.

It can include also some activities which are typical of modelling and coaching, provided they are implemented so as to progressively decrease while the learners acquire the ability to work on their own.

From the point of view of application, scaffolding can be subdivided into categories taking into account the requirements of the educational situation at hand (Winnips, McLoughlin, 2001; Reiser, 2004).

Preparing pedagogical scenario for preparatory teaching

There are different opinions on the effect of technology in education. One of the earliest arguments questioning technology's role in learning comes from Clark (1983, 1994). He argues that media (technology) is nothing but a vehicle that delivers instruction, and that technology would not affect student

learning. He pointed at the method of instruction as the most important consideration for this aim. Other researchers, such as Russell (1999), Jonassen, Campbell, and Davidson (1994), and Ehrmann (1999), agreed with Clark that focusing purely on the technology would be wrong and that learning should be the center of interest.

The inherent problems of online instruction, including the pressure of limited resources (such as time, money, hardware, and software) and the pedagogical problems of purely online or traditional instruction, have led to a new idea: mix the benefits of online courses with the benefits of face-to-face courses. Many instructors supplement their courses with simulations, online exercises, and immediate online feedback, creating richer learning environments through multimedia and hypermedia. The systematic and strategic integration of these tools into courses to meet pedagogical goals introduce a new way of approaching instruction (Delialioglu & Yildirim, 2007).

Based on analysis of learning theories, teaching and supporting styles, the critical elements which can be implemented in pedagogical scenario for preparatory teaching were selected:

- learning theories employed,
- goal orientation,
- task orientation,
- source of motivation,
- teacher's role,
- metacognitive support,

Depending on discipline and form (online, traditional or blended) pedagogical scenario for preparatory teaching may include different features.

Table 1: Main elements of pedagogical scenario

Learning Theory	
Instructivism Knowledge flows from teacher to the student	**Constructivism** Knowledge is a construct in the mind of the learner
Goal Orientation	
Sharply Focused Instruction with focus on a expected behavior	**General** Simulation with more than one solution to a problem
Task Orientation	
Academic Traditional academic exercises have to be done	**Authentic** Exercises in authentic settings have to be done
Source of Motivation	
Extrinsic Motivation from outside the learner/learning environment	**Intrinsic** Motivation from inside the learner/learning environment
Teacher Role	
Didactic Teacher is the source of knowledge	**Facilitative** Teacher is the facilitator of instruction, guiding students
Metacognitive Support	
Unsupported No support for monitoring progress and adjusting to individual learner's needs	**Integrated** Supporting learners by helping them monitor and regulate their own learning process.

Depending on the mixture of all the features presented above and taking into account the discipline and form of the course there are numerous possibilities of pedagogical scenarios for preparatory teaching. What is more, even the same subject may be presented using two or more different pedagogical scenarios. In the case of preparatory teaching it is important to have in mind what is the main aim to be achieved at the end of the course.

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Enhancing Teaching Through Technology challenges and possibilities

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Abstract: The authors' conducted a live learning lab at the UEL Learning and Teaching conference in London on June 26, 2008 with the same name. The following provides a write-up of the methods, technologies, lessons learned and recommendations, in a hopefully accessible piece. The goal is to produce something that is useful to academics in the classroom, as well as administrators who would like to incorporate more technology as a means to enhance their students learning and knowledge acquisition through distance learning applications. The lab proved successful both in the remote presentation as well as the visual analogy. The results appear useful for those wishing to deliver content remotely and especially as in this case, those who have a *need* to present from a remote location. The latter would be especially valuable for researchers in the field that would like to share results, either with fellow researchers or even to conduct lectures and presentations from the field.

Background

The application of technology in the classroom can significantly enhance learning and teaching outcomes. However, use in the classroom is circumscribed by the inherent benefits, limits, and even risks of each technology. Technology can thus be both enabler and limiter at the same time. Furthermore, while many educators understand the aforementioned in theory, their practical experience proves lacking. Thus, discussions of technology and education tend to focus on possibilities and to some further extent expected benefits. However, real risks and limits exist as to the degree technology can enhance teaching.

On the 26th of June 2008 for the UEL Learning and Teaching Conference, the authors conducted a live learning lab. The presentation aimed to enable participants to experientially explore the challenges and possibilities of enhancing teaching through technology. Using a vRoom powered by Elluminate and Skype, the content on interpreting Jisc/TurnItIn results was delivered from Geneva. Therein, the audience enjoyed a visual analogy due to the media chosen for the presentation. As Professor Andy Pausch said in his last lecture, it was a headfake. Operating at two levels the goal was to enable participants to better understand what needs to be done to incorporate the use of technology into teaching, while they were there to see a presentation about TurnItIn/Jisc.

From the initial audience feedback, the presentation appears to have been a success. However, in journaling the results and sequence of events, the authors have also found places that can be improved, as well as ways to overcome some of the traditional limits. The insights are of particular relevance to those interested in knowledge acquisition in e-learning and distance education.

The Live Learning Lab

Instead of making a generic presentation on the use of a technology and the limits that one could encounter, the authors' created an environment where the audience could participate and actually experience many of the limits. Officially the presentation was about the use of TurnItIn/Jisc (a system for checking the similarity of academic work). Of course one could have made such a presentation using a powerpoint, or on the screen by taking the audience through the schools virtual learning environment (VLE), and demonstrating how jisc works. In fact, such a presentation was originally suggested.

The idea for the live learning lab emerged when it occurred that in fact one of the authors would have to be in Geneva during the conference and would not be able to attend in person. In discussing the possibilities for the presentation, it occurred that one of the possibilities would be to do a remote presentation. Through internet technologies for sending live audio and video Mr. Durkee could participate in person. The realities of the timing, and the lack of tested technologies at the University for making the presentation, added a dimension where the audience would experience the feed in real-time.

The live learning lab was more than simply demonstrating technologies, or making a remote presentation. By bringing the audience into the collaborative setting, the audience got to experience the physical and psychological realities. For example, the room was very quiet until the moment of questions. Therein, the participants could feel how such an attentive silence bares an certain psychological stress that seldom comes to be discussed when considering technologies for distance applications. In this way, they had a direct means for experiencing a visual analogy as to the possibilities and limits of ICT for knowledge acquisition in distance learning environments.

The presentation environment

The presentation environment may be viewed as 3 co-existing complex variables. Each of which can be further deconstructed:

- Applications running
    - choice
    - desktop real estate
        - resolution
        - focus
    - on the screen projected in front of the audience
    - on the presenters computer
- the host room where people will listen to the presentation
- the room at the remote site for the presenter
    - background
    - camera mount

Choice of applications

The authors selected readily available technologies for the presentation to insure that the environment would be one to which most of the participants would have access. While other configurations were available, and may have been both more stable and better performing, by using the ones people could get, the authors already incorporated an element of 'this is what you get, now use it.' The element proves quite pervasive in distance learning environments.

For the classroom, machines have been setup with a standard image rolled out by the Information Technology department. Moreover, there may be restrictions on installing further applications. Therefore, having applications such as the VRoom which are Web based Java, anyone with an internet connection and a browser has a good chance of running them. As was found, likewise, there can be a performance hit for running such applications.

The students even have less choice, as Universities choose the technologies for their virtual learning enviroments (VLEs) like WebCT or Blackboard, and then the students need to find a way to make their own computer systems compatible. Since purchasing may be dictated more by lifecycle plans and existing sales agreements rather than technological necessity or appropriateness, students can find compatibility to be a struggle when there computer don't have the level of prescribed resources. Other times, students have chosen to be on a different operating system (OS) such as Apple's OSX or Linux, and have problems, although in theory a VLE should be platform independent being browser based.

Applications running

Skype, Eluminate, MS Word, and Explorer

- Skype chosen because of its compatibility with the UEL network, and excellent performance in getting around firewalls.
- Elluminate chosen because of its ability to share applications and desktops as well as provide a whiteboard while maintaining platform independence due to being Java based
- MS Word was chosen over power point, as pages can be scrolled, and there is no need to consider slide transitions.

Notes from the Choice of Applications

In making decisions about the applications to use, some important points to reflect upon while making selections emerged. The most salient would be:

- Choose what you know, and know how to use. Choosing an application that has an unfamiliar interface, even if it promises more features, or to do a better presentation will probably detract from the final presentation.
- Know the limits of the transport medium and the presenter
- Configuration – By changing roles, the presentation may be smoother. In other words, by choosing the site where the audience was to be as the server, and having the presenter connect as a remote client, the presenter saw the screen scraping and not the audience. Thus, changes appeared jerky for the presenter and the not the audience.
- Consider the amount of time it takes to get everything running. Some applications take longer to start, and get connected. There should be ample time for both the presenter and the facilitator on the audience side to get the applications open and running before the presentation begins. Choosing the simplest applications for login and starting can significantly improve the chances for success.

Configuration session

After selecting the technologies, and making the initial tests, both the host and presenter met for a session a few weeks prior to the presentation to configure Skype, Eluminate and the audio/video input devices. The session was conducted on machines plugged into the same subnet in the same room.(1) Tests were conducted as to quality of the video feed resolution and sound for Eluminate. Based on the tests, it was decided to use Skype for the presenter's audio/video.

The university uses a deprecated version of Skype which cannot supernode, and it was not initially possible for the two Skype clients to see one another. While the two users, who were sitting next to one another, and whose computers were plugged into the same switch could not find one another in the contacts, they could make Skype calls to other people from their contact lists that were outside of the University. After making the external calls, then it became possible for the two Skype clients to add the new user, and make a connection.

Boot time to go live

Even with a fully configured system tested and in place, one should still plan that on the day of the presentation to establish connections and open all of the applications takes a certain amount of time. Note that actually, at the minimum *there is at least three times more work to be done than a normal presentation*. Each application must be opened on each side, and then the connection tested. All applications which will be used during the presentation should be opened on both computers. This includes a copy of the application which used for physically making the presentation such as Microsoft powerpoint or word. One may ask, why should a copy of Microsoft word be opened locally on the presenter's computer, if it will be shared from the host computer via the Eluminate vRoom? While the point may seem counterintuitive, the step provides a failsafe.

As will be shown, having the presentation open locally for the presenter may have saved the delivery by providing the audience a relatively seamless production when in fact connectivity with one of the applications had been lost temporarily. The presenter could continue to read from the local copy and explain the points, although it was entirely impossible to control the application remotely.

The Setup

Part of going live is getting set up. There are some physical details such as configuring the angle of the camera, and checking the background that are best done without the stress of an impending live feed.

For the *presenter* the key details are quiet space with low background noise, and a neutral background. The camera should be mounted in such a way as to make the presenter appear to be looking into the camera even when they are looking at screen and reading.

For the *audience* site, the camera should be in such a position as to give a good pan of the room. Then there should be a method for easily getting information such as questions to the presenter. This may be a microphone, although other solutions such as a wireless keyboard, and chat dialogue may also be useful.

The Audience Site

In preparing for the presentation there are a number of considerations to be made about the physical configuration of the audience site. Most everything revolves around the screen. People need to be close enough and the projection large enough that they can see everything comfortably. Some other issues regard placement of the camera, and how the audience will actually interact with the presenter. Note as that the presenter will be speaking to an audience which they may or may not hear or see at times, thus having an interlocutor onsite can greatly smooth the presentation for errors from technology and calibration.

A choice must be made as to whether the presenter will be at all times on the screen, or if other applications will be allowed to cover them over. Some people prefer to be able to see who is speaking at all times. Since the desktop area at the host sight will probably be projected for the audience, one must consider what will be on the desktop. If more than one application will be used, it may be arranged that all of the applications are on the screen at one time. For some, the video feed would be one of the applications that they would want to have present throughout the presentation.

However, having the presenter on the screen the whole time raises an important question of where, and likewise how big. Generally, one of the big struggles for the audience site will finding a balance for what should be on the screen and where?

Resolution

The video feed has another element which relates to what the audience sees. There are two places where resolution can be set. One is on the camera, and the other is on the screen. Both affect the size of how the speaker finally appears on the screen. If the resolution is lower on the screen, the speaker will appear larger, however, it also means that there will be less room for showing other applications. However, if the screen resolution is higher, the speaker will be smaller, or will be forced to use a higher broadcast resolution on their side. Using a higher broadcast resolution will mean that the speaker needs more bandwidth, and has a greater chance of becoming choppy due to other network traffic. Note that in the case of using Skype or Illuminate since the applications have to work with a server to traverse the firewall, traffic problems can be elsewhere in the internet and still affect the quality of the video feed.

Likewise, it is also important to remember that on the remote side, the presenter may also have limits imposed by desktop realestate. In the presentation, the remote laptop had a resolution of 1024x768, which meant that one could not see the full application when controlling Word or the like from Eluminate.

Application Focus

Depending on how remote control is given to the presenter, the changing of applications may lead to issues of focus. The altering of window focus while application sharing caused the video window to be hidden on multiple occasions - on top of regaining focus on the video window, the host was duty bound to move the presenter around the screen several times for appropriate screen real-estate.

Interruptions by the host

Inter-presentation communication or more specifically interjections by the host should be agreed upon before the presentation. Two points to consider, first the person making the presentation may have trouble continuing, as it can be much more difficult to recover remotely when interrupted. Equally, the presenter may not be aware of audience reactions that the host can see. Beyond these two points, a third rather technical issue also appears at the perimeter. Basically, some types of connections may not be full-duplex, meaning that simultaneous transmissions from the host and presenter can cancel one another; at which point neither person gets the message. The latter point is probably the one that becomes most pertinent when the system is under strenuous load such as the case of running Eluminate with Skype via a Wifi connection.

Since the presenter may not appreciate verbal interruptions, using the chat function, and typing in questions or queues could be quite helpful. To allow the audience to also participate, either audience members could connect with their laptops, or the host could provide a wireless keyboard and mouse. Overall, the issue of interruptions and cooperation between the host and presenter is one to explore in more detail. To what degree would more feedback have helped or hindered? Assuming that the nature was making the presenter more aware of the audience state, it probably would have helped. As while the host found the audience to be actually riveted (or appearing to be) keeping exceptionally quiet and attentive - there came a moment where they may have been a bit lost when the presenter began describing the various levels of TurnItIn feedback without a visual aid. Here the host could perceive that the presenter was hampered, slightly, by the lack of in-line audience feedback.

The Presenter Side

Along these lines, in Geneva the presenter set up all of the equipment and tested it in the room the evening prior to the presentation. The site seemed perfect, and in retrospect probably too perfect. An excellent place to clip the camera was found whereby the presenter would be looking directly into the camera while making the presentation. To achieve the mount perspective, the camera was placed on the top of a broomstick standing directly against a projection screen in the center. The projection screen seemed to be a good solution, as during these tests, the larger screen and aspect negated problems associated with desktop realestate. Likewise, the room also provided a neutral background and level of lighting appropriate for filming.

Backup facilities

One major point that affected delivery was that the facilities planned for the presentation were locked in the morning. Upon arrival, the controls for the projector had been locked, and the tech staff could not be found. Likewise the broom had disappeared, and the room was unbearably hot. In light of the circumstances, a backup site that had been established the previous day was brought into service. The presenter dragged-in a table and chairs from a commons area, and setup a very rough field site in a seemingly quiet side corridor. The camera was mounted upside down and the screen angle adjusted to use the ceiling as a neutral background.

Physically at the backup site, conditions were also far from ideal. A bright ceiling light had come on automatically and presented a major challenge. Adjusting the position of the table, allowed the presenter to mask the light without significant impact to the auto-contrast of the camera, and thus could prepare for the presentation. Likewise, being in the corridor, anyone could walk by at anytime. During the setup, there was actually a person pushing a very heavy cart about to stock rooms in the building with bottles of water. The amount of noise created by the cart rumbling through the corridors threatened to obliviate the speaker's voice during the presentation. Fortunately, the cart disappeared at about 15 minutes before the presentation just as the first Skype connection was established.

Just 30 minutes before the presentation, it appeared that the room was once again available. Here an error of judgment was made by the presenter. Hibernating the system with everything open, the presenter took a walk with all of the equipment to the planned room. However, upon arrival, the facility was still not appropriate. Therefore with the clock ticking, the presenter made a quick return to the backup site, and then had to wait for connections to be restored from the state of hibernation. Some applications respond well after returning from hibernation, others with network connections required new connections to be made. After coming out of hibernation, the browser needed to be closed as both WebCT, and Elluminate were not responding.

When starting Elluminate the second time, it took longer than anticipated to log on, even though the client was already installed on the remote machine. As the audience had already begun to arrive, the delay created an unforeseen visual analogy to help underscore the point that one of the major limits to the technology is in the realities of deployment.

Some of the delay with Elluminate seems to result from it being Java based and competing with UEL Plus (WebCT also based in Java) for resources while loading. There may also be an issue with the

video/audio compression and competition with Skype. Future presentations would probably benefit from a dedicated client that allows remotely controlling the application and another for Audio/Video. A minor hazard enters with said configuration in that when the desktop a loop may be created whereby the person presenting see their own video feed. Such a loop portends a serious performance hit for the presentation, as was found in the initial testing. To decrease the load, ideally one might use native resources in the operating system such as the remote help function in Windows, or use only applications running a more native language such as C++. However, there is also the problem that these applications may not be as good at traversing firewalls, or even allowed by administrators.

Audience

The combined nature of the presentation - showcasing the "technology" whilst also dealing with a useful L+T message attracted a diverse audience. At the end of the presentation the time for comments was cut short. Unfortunately, time ran out - due to the initial technical set up - getting the video stream going - and due to the short "30 minute" nature of the session, since the audience needed to move to the next back-to-back session fairly rapidly.

Overall, the audience was very quiet and attentive during the presentation. However, the brief moment for questions generated a fair amount of dialogue after one of the participants raised a point. This may have been a response to the intense "attentive" silence that had preceded this opportunity to speak. Maybe as a sign that they felt the speaker was still with them, the participating audience failed to appreciate that due to the garbled audio, the speaker was unable to hear any of the dialogue, and so in a way was locked out.

There were no appreciable additional comments, there or after, regarding the nature of the delivery or its content per se. Therefore, the medium appears to have been acceptable to the audience - although with that friendly audience, would there have been a problem? - Only if the connection had failed too many times or the technology "not-worked" (i.e. complete failure).

Audio / Video Peformance discussion

London

The quality of the streamed video from Switzerland was very good - hardly a single break in feed. (This may have been a direct result of decreasing the picture size from 320 to 160) The audio quality was good as well - just an occasional low-level buzz/hum that didn't detract from the clarity of your speech. The small intermittent detraction probably was caused by local interference.

Geneva

After reconnecting with Skype, while video was being sent from Geneva, no streaming video was being received. The visual of the audience did not change throughout the presentation. This resulted even early in the presentation with asking as to how many people were attending, since only one appeared in the picture box. The lack of a visual felt a bit disconcerting, as it seemed there were only two people in the room on the other side. However, since the presentation had already started, and it was live, it seemed more appropriate to make the presentation as smoothly as possible.

Sound reception in Geneva also became a problem, as when it was time for the question and answer session, the first question came in as a garbled growl. It would probably be better in the future to have the person speak directly into a microphone plugged into the computer, or even pass around a wireless keyboard which people can use to type in their questions. Typing the question would also have a number of added benefits. First, people could be typing their questions of being providing a session transcript that could be later edited and provided to attendees, or published.

Technical

Some technical aspects need further investigation , for example why in London the radio mic wouldn't work, but the headset mic was fine. (?) The difficulties with the radio mic may be related to the technology. Was it Bluetooth? Or via its own receiver on USB? On the latter, there may have been a problem with the USB bus, simply too much traffic, or another conflict. It also may be related to the

batteries and/or signal strength. If the batteries were a bit weak, it could have caused problems with the signal, and then compressing that would have caused more aberrations.

Both desktops could also have been recorded and might be recorded for future sessions. However, for the initial run, there were some concerns in terms of the performance hit this might have on the quality of the presentation.

Elluminate vRoom

Elluminate takes a lot of screen space that cannot be invaded by other apps. The vRoom was an option that probably should not be readily mixed with Skype. Using the built-in video/audio streaming may have improved the screen placement problem; although, initial tests found the clarity to be lacking, as well as the controls awkward. More testing will be required to establish under what circumstances the vRoom facilities for audio and video would perform sufficiently. Moreover, the amount of desktop realestate required by the application means that both for the host and the presenter, moving around in applications can be cumbersome on resolutions less than 1400x1050. The trade-off is that the higher resolutions reduce the size of the presenter on the screen.

Skype

An alternative would have been to install a Skype extra for application sharing. Extras like Unyte(2), Grogok(3) and RemoteX(4) are among some of the options to be tested for future sessions. However, since the University of East London (UEL) allows only a special version of Skype that will not supernode. To use the full version would require seeking special permission from the IT department. Likewise, it was unclear to what extent, even with permission, going "supernode" on the day may have caused further complications. As one of the limits for such a presentation is the combination of IT policies in place in both locations, there was a real chance that even had the full version been allowed at UEL, it may not have been allowed at the University of Geneva. Thus, initial application selection focused on those technologies that had the least likelihood of being blocked due to an administrative IT policy.

Lessons learned and Recommendations

The live learning lab proved full of lessons both for the audience as well as for the host and presenter. Many were found by reviewing journaling from both before and after the presentation. Lessons learned ranged from those in the selection of the technologies to those associated with the delivery and the audience interaction. The following highlights some of the key lesson learned by the host and presenter.

One major challenge for presenting remotely becomes how to notice the few furrowed brows, which normally one would notice and then ask questions to check for their understanding. In fact, this may be a way to provide auditory queues, as the host may be able to interject a polite and fun, “Hi, I‘ve noticed a few furrowed brows in the audience, let’s see what they are pondering.” In this sense, the host also becomes the instinct of presenter and the pair work in tandem. One should note that since the video feed had frozen from London, there was actually no way for the presenter to see the room during the presentation and other queues from the host proved necessary.

The presentation highlights a second major issue specific to the remote presentation. Not being present in the room, one is engaging more directly with the imagination, much in the way old-time radio shows captivated audiences. However, the lack of physical presence also means that the level of visual stimuli to which the audience are accustomed should also be met. Since a speaker in the room normally provides a certain amount through their non-verbal communication such as facial expressions and gesticulation, more needs to be done with visual aids in the remote presentation to enhance the audiences understanding, and re-enforce the points of the presentation. Here the host and presenter need to work in tandem to insure the audience stays focused.

One of the major lessons learned is the amount of time involved. As previously stated, getting the applications opened takes *three times* as long. However, the actual presentation is even more time intensive. The fact of the matter is that this is not a format for those looking for novelty. It is a format that requires much more preparation even from those that are very experienced with IT to pull it off in a seemingly seemless and credible manner. Since the normal travails of opening the computer and

applications for a typical presentation become exponentially more time intensive when one needs to also establish connections, any applications to be used in the presentation should be open and running well before the presentation (this will save time for the audience as the presenters can simply switch, rather than having awkward pauses or interruptions, while applications wait to be opened).

Plan more time for before the session for getting setup, and plan more time after the session for the questions and answers. People will want to talk after the extreme silence, and they should have a chance. However, since there may be technical problems with hearing them ask their questions, either have the questions typed, or plant questions for them to discuss. If the questions are already formulated, and time given, at regular intervals, they will have the relative release they need to, and the silence will not be as intensive.

Probably, one of the most important lessons learned was that since the clock is ticking once the decision has been made to use a site and applications are open, don't change. Valuable time was lost going back to the first site. While the planned site would have been ideal, having the slight delay in the start of the presentation actually diminished the amount of time available for questions and discussion, which would have been far more valuable. Thus, a fair site and being ready is worth far more than the risk of getting what appears to be the ideal.

Likewise, one cannot be too prepared. Whether lecture, class, or presentation, the event will happen with or literally without the presenter. The audience typically will have a fixed amount of time and other engagements. Thus, the most important step to take initially is to get connected. Even if the connections have been tested the night before; everything that can go wrong, probably will go wrong. The backup site probably saved the presentation, even though it was just a side corridor. However, it provided all of the essential elements. It was quiet, had a neutral background, although some work had to be done with the lighting. Using a headset microphone decreased extra passing noise. A very important element in making the second site viable was the Wifi connectivity provided by the University of Geneva. Had the Wifi not been in place, the physical constraint of finding adequate facilities could have proved prohibitive.

An exchange of emails starting the previous evening also proved valuable, as it allowed both sides to know the status, and that the event was really happening. Moreover, sending the presentation via email meant that even in the likelihood that the presenter disappeared, the presentation could continue.

Failover technologies for making the connection also proved valuable. For the presentation, text on the mobile phone proved a valuable means for transmitting passwords. The medium is an especially important issue to consider, as one does not want to be sending a password that unbeknownst to them may appear on the screen or speakers at the host site. The issue became more critical in this case as audience members had begun to arrive early, and configuration continued into what normally would have been the start of the presentation.

Conclusion

The live learning lab run by the authors at the UEL learning and teaching conference highlighted some key challenges for remote content delivery. The issues range from those related to the applications and desktop environment, through the connection, to the very physical layout of the room and color of the paint. Moreover, the lab through the visual analogy successfully engaged educators in a way that provided them the chance to really feel some of the limits that are seldom discussed; such as the presenter being moved around the desktop to make room for other applications. While a bit humorous, they could see that the results could directly impact the quality of the presentation and learner outcomes. For the authors a number of important insights regarding e-learning and questions for further research about distance learning emerged. The key areas for future research will be in the environment, and finding how to bring in the audience interaction in a way to enhance and better support the learning environment enabled by ICT.

Endnotes

(1) Both machines were plugged into the same 10/100 switch on different ports.
(2) https://extras.skype.com/907/view
(3) https://extras.skype.com/1590/view
(4) https://extras.skype.com/1204/view

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E-learning - Non-discovered Territory (a course on studying by the Internet)

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Abstract: There is a group of people (in Poland more than 25% of all of people that declare the wish of the extending of their own qualifications) who do not want to learn on-line. To change their attitudes towards on-line learning it is necessary to conduct a course on e-learning for them. However it should be blended learning course with the first part perform face to face. Actually the course should consist of three parts. We propose, that the first face-to-face part should deal with all skills necessary for e-student (technical and sociological as well as communication ones). The second part, face-to-face again, should be dedicated to simulation of the e-course but performed in a computer room with an instructor. The third part is a practice: a short on-line course that needs of all typical activities from e-student to complete it.

A social survey

All-Poland social survey of educational needs of adults carried out by the University of Warsaw (spring 2008) on request of Ministry of Education financed by European Social Fund has shown very strong polarization of the society with regard to long life learning using the Internet (Badania potrzeb w zakresie kształcenia na odległość, 2008). On the one hand people who have never taken part in such classes definitely reject this form of education and, what is more, they manifest that there are no conditions which could change their attitude to e-learning. On the other hand, people who have already had (even slight) experience in e-learning want to exploit such a form of studying farther. Such people, in general, are almost enthusiastic to this form of learning. They perceive it as a real chance to raise their education level with no harm to their current job or family duties (it concerns single mothers in particular). They point out an economic benefit as well.

Taking both attitudes towards e-lesrning into consideration, it is possible to draw a conclusion that teaching how to learn by the Internet should be the first step in disseminating e-learning. Such a course must be directed to people who have a need for widening their knowledge but they do not want to do it with the help of online courses. Their reluctance is (most often) based on the lack of knowledge about e-learning and their disbelief in the effectiveness of the teaching process. Thus, although it can sound paradoxical, it is necessary to carry a traditional (stationary) course on studying by the Internet for them. Actually, the course should contain online elements but only in the later phase. The beginning must be stationary.

How to learn on-line

Any course on studying by the Internet, which could make a positive change in attitudes towards online learning, should be complete, in the sense that it should contain both technical and social skills as well as elements of psychology. Training on using computers and the Internet, enabling then efficient functioning on the e-education platform and the completion of homework, is a necessary element of such a course. The teaching of social communication by means of computer technology with the use of the Internet (in the synchronous as well as asynchronous mode) is also a very important part of the course (Clarke, 2004). Especially important is teaching of the usage of suitable forms of the expression of emotions and the self-control the tendency to enlarging of the aggression in the statement, which is present in the Internet (Wallace, 1999). Elements of psychology explaining phenomena which can arise in the process of learning without a direct contact to participants of the course and the teacher (e.g. feeling the loneliness and the isolation) must be found in the program of the course as well. Inspiring the creativity and building up motivation are the completion of the curriculum.

The postulate of the creation of the course of the learning by the Internet was notified in the literature, see e.g. (Windeatt, 2002) and such courses where conducted e.g. How to Learn Online (2003), Online Course: How to Learn Online (2002), however the most are courses on-line – requiring from the

student skills of the teaching himself in this mode. From our experiences it results that such solution can be effective only in the case of young persons which already have experience in the use of the Internet (from mentioned above survey it follows that most willingly in Internet courses would enter the young woman from the small city – below 20000 inhabitants, having at least 5 the years experience in the usage of the Internet). However, on-line course will give nothing to older persons or having pure experience on the job with the computer connected to the network. Such persons prefer traditional schools, so one ought therefore to use these preferences for the preparation them to e-learning.

Draft syllabus

The preparation to the learning by the Internet cannot be led exclusively on line, nor should be left to students themselves. The course must be begun face-to-face, and later after some lectures, exercises and workshops one ought to transfer it to the Internet. Contents that should be presented in such course are described in the literature eg. (Clarke, 2004), (What Makes a Successful Online Student?, 2007). Especially important is here however the form of carry on classes.

The course should start from the traditional *first part* which consists of:

- *lectures* concerning of the specificity of the learning through the Internet (differences between the traditional, and remote learning, the role of e-teachers, the communication on e-classes – in this the expression of emotions, organization and planning of participants own work on an e-course).
- *workshops* targeting the exercise of the work with the text, the learning of the retrieval and the filtration of the information in the Internet and the acquisition skills of the auto-evaluation of the level of mastering of the content.
- *classes in the computer room* making possible to teach how to use the software necessary in e-learning (Internet browser, e-learning platform, word processor, etc.), how to communicate in the net and how to operate with electronic didactic materials.

The *second part* also should be provided face then face. Its aim is causing of the change of the reluctant attitude regarding e-learning. One can make this by means of the simulation the work on e-the course in the computer studio under the care of the instructor. In this part participants should perform all activities which are necessary to finish an on-line course with a success. Students should open and study materials, discuss on forums, work out and send files to e-teacher. The role of instructors is of course the help in the realization of these exercises, but also minding the preservation of rules of the correct and cultural communication between participants.

Participants should have the possibility of the acquirement of the practice in the learning through the network, after finishing two first parts. Best solution seems to be the *third part* of the course in the on-line mode. There should be specially prepared mini e-course. It should force participants to repeat similar activities as in the second part, but in natural conditions: on the own equipment, far from instructors and in the defined time (so that every participant should plan the time of his own activity himself).

One cannot expect that the graduate of such training will be an enthusiast of the on-line learning, however, he will be well prepared to the enlargement of his own qualifications by means of on-line courses.

Conclusions

The information society demands, so that people constantly gain new skills, recognized new divisions of the knowledge. The process of the continuous teaching in the mode of traditional courses is very difficult to become realized. It demands large financial and time outlays and ties with utterances and the difficulty of the all family life. Therefore the instruction by means of the computer attached to the network should become the main mode of gaining of new competences. However, among older persons, but still active professionally one can observe the reluctance to the utilization of the computer as the learning medium. It seems that, an only way, overcoming of their reluctance to the learning on e-courses is to show how the educational process driven by the Internet looks like and the preparation people to e-learning. This is just the aim of the course which was presented above.

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A Multi-factor Authentication Model for E-learners and Virtual Learning Systems. Federated Approach

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Abstract: There has been continuous awareness raised regarding the role of security and trust for both developers and users employing and deploying E-learning technology and virtual learning systems. Although end users and stakeholders of these systems consider and perceive security as a bottleneck, its importance in ensuring data integrity and availability can not be underestimated, given the nature of the infrastructure that drive these services.

The internet, mobile networks and educational resource for teaching and learning form the pivot of virtual learning systems. This work explores a Multi-factor authentication information security and assurance model for authenticating E-learners and (VL) virtual learning systems. The elements of the model include but not limited to identity federation and anti-spoofing.

It examines authentication issues that arise during e-learning. The issues discussed include integrity, availability of learning resources as well as confidentiality. The research outcomes from this work suggest authentication issues have not been adequately addressed nor given due prominence in implementation and post implementation of electronic systems that drive remote and distance learning activities.

Introduction

The introduction of VLEs poses new challenges in contemporary information age. Although these challenges cut across different aspects of human computer interaction and cybernetics, there has been an oversight or underestimation of the importance of information security and assurance and impact on learners and these systems.

Challenges

The main challenges of multi-factor authentication are as follows; User friendliness or usability, Access to Data and concurrency issues, Performance due to excessive security and migration and mobility. The deployment strategy of VLEs should therefore be driven by the requirements of individual systems. This paper is organised as follows; section 1 introduction and definitions of E-learning and VLEs, section 2 outlines common tools of VLEs, section 3 a discussion of security requirements and goals in VLEs, section 4 a presentation of multi-factor authentication model and section 5 discussions.

Definitions of VLEs

A Virtual Learning System or VLE is a computer program or computer platform designed to drive computer based learning or e-learning system. E-learning systems are also called (LMS) Learning Management Systems, (LSS) Learning Support Systems, (CMS) Course Management Systems. VLE uses standard client-server architecture in a distributed environment. Below is a conceptual client-server model.

VL can be described as a form of electronic learning beyond physical boundaries of the learning environment Williams& Jahankhani (2006).

Common Tools

Common VLE tools for developing and driving VLEs include but not limited to blackboard, firstclass, *EFRONT, WEBCT* (Part of blackboard, Dokeos, Cyber Extension. Facilities available to these tools are "*SETUP, BROWSE, UPLOAD, APPEND, UPDATE, MODIFY and DELETE*". The communication in VLE is both Asynchronous and Synchronous.

Security Requirements and Goals for E-learners and VLEs

The security requirements and goals of VLE order of importance are availability, integrity and confidentiality (access control), thus who has the rights to access particularly resources. These security requirements can be met, by implementing an effective authentication, approval and answerability systems. Authentication verifies the identity of an E-learners as well as a VLE. Approval grants access rights and execution rights to VLE and tools. Answerability is when VLE tools respond to requests made by E-learners.

Integrity

Integrity applies to the non tampered aspects of data and systems. The need for e-learners and VLEs to mutually authenticate each other is of paramount importance and a required security goal. Figure 1 highlights digital certificates as a viable means that e-learners could use as a way of confirming the authenticity of service providers. Figure 2 is a demonstration of application of digital certificate using FCS anti-spoofing software.

VLEs systems could also be compromised by e-learners. Unauthorised users could gain access to facilities with the permission of the user. This problem if not addressed is likely to lead to the corruption of data, affecting data availability.

Confidentiality

Ensuring strict access and control procedures to persons with authorisation is important. Personal data could be tampered with and left in a corrupt state if appropriate security is not put in place. Most discussions on the protection of personal data seem to be centred on the banking and medical sectors. It is important, to raise awareness among users regarding the risks associated with poorly secured data banks and storage. Intruders are not particular about how and where they obtain personal data. The approach used by intruders in obtaining personal data is to look for RAS (Risk Access Spots) and vulnerability Williams(2004).

The next section is an overview and assessment of methods used in authentication, which are considered to of critical importance to the security of virtual learning systems.

Availability

E-learning as a concept for developing knowledge in the information age needs to be sustainable and maintainable. Security attack such as masquerading and brute force could be used to frustrate e-learners from gaining access to resources that support learning. For example availability could be affected when data gets corrupted. This suggests that integrity of data and availability as goals of security are strongly related.

Why Multi-factor Authentication?

This section outlines essential elements underpinning a multi-factor authentication system and suggests a single point authentication system that uses a federated approach. The idea of Multi-factor Authentication is usually proposed to address a problem which is multi- faceted. Given that in a VLE there are varied security requirements that need to be met, it is essential to strike a balance between system security and end user accessibility as well as usability requirements. The authentication method presented in this paper uses a federated approach where a single point of entry is adopted within the VLE hub or infrastructure. The notion is to grant access once and for all. Figure 1 represents authentication methods for formulating a single point identity federation system.

Authentication methods & Stake holders	E-learners	Service Provider/VLE
Digital Certificates		√
User Identification and names		
Passwords	√	
Profiling	√	
Biometrics	√	
Token allocation	√	
CHAP (Challenge Handshake Authentication Protocol)	√	√
Kerberos	√	√
Identity Federation Systems	√	√
Anti-Spoofing Software		√

Figure 1. Multi-Factor Authentication for Modelling E-learners & VLE

Password for VLEs

Passwords systems form the commonest form of authentication for verifying users of any information system. They are usually accompanied by user identification systems. The effectiveness of any password system is how it is jointly managed with end users. AN effective system will provide continuous alert to users at specific intervals with a given period. Given the rampant use of passwords they can easily be breached in a security system.

It is therefore valid to suggest that a password system as a single point of authentication is inadequate. It also limits access privileges to the user in terms data and processes.

Profiling E-learners

Profiling has been used in several applications and disciplines ranging from computer user interface design and customisation in the retail industry under the disguise of user modelling (Webb et al, 2001).

Profiling can be applied to personalisation of individuals. This can be used for authenticating learners in a VLE. It can be helpful when establishing evidence and trace of information usage.

Why Biometrics?

The quantifications and measurement of physical attributes of persons that use computer based systems is described as biometrics Williams(2004). Physical attributes are extracted from Fingerprints; Facial geometry; Iris pattern; Retina; Hand geometry; Finger geometry; Vein structure of back of hand; Ear form; Voice; DNA; Odour or Gait etc. The discussion in this book has been based on the most common features that are usually tested Williams (2004).

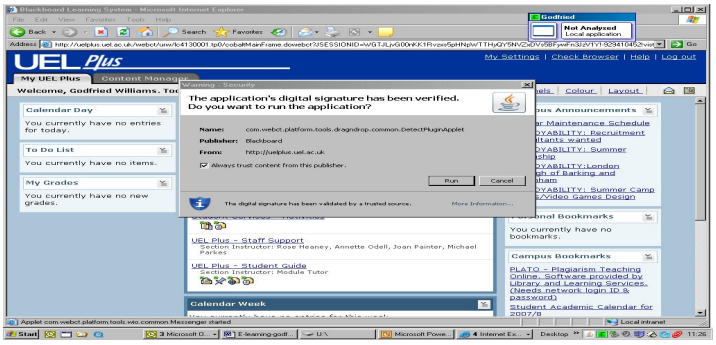
The characteristics of a person are captured and stored by software in the form of a template and secured in a repository. The repository can secure using an electronic chip. The information stored is retrieved and matched and stored as biometric feature; A matching score is derived based on the criteria specified for identification and verification whiles an audit trail is used to verify the consistency of the system.

The implications of using this technology in a VLE and among E-learners are daunting; these include cost and versatility of the technology. Versatility relates to the ability to adapt and adopt the technology among different individuals who want to effect a transaction in a VLE.

This can be a bottleneck among E-learners carrying out transactions in an E-learning environment across different regions globally. The dissemination of information available on distributed platforms has risk implications that can be costly. There are also aspects of the technology that is not yet advanced to deal with issues regarding versatility Williams (2004). The direction of this research is that, there is the need for a multi-factor authentication system with a single point of entry. Further information could be obtained from Williams G, Jahankhani Hossein (2006).

Anti-Spoofing Techniques

Anti-spoofing is a technique used to detect the difference between fake and genuine data. Usually applied in a network environment where the identity of a network host or service provider can be spoofed or stolen with the sole aim of deceiving the user of that data or information. In this paper First Cyber Security (FCS) Software was employed to demonstrate the authenticity of a University website running intranet services. It is a form of isolated credential verification, in the sense that the software checks specific features or credentials of the website to assess its authenticity. The application of federated approach to modelling multi factor authentication will be a more effective security model in a VLE.



Federated Identity

Identity Federation refers to a single sign on or point of entry. Federation helps in systems where there is a need for value added transactions. In a federated system, learners are required to submit their credentials to an identity provider or what is described in this paper as an agent for verification. The role of the agent is to vouch for the user, in this case the learner. This is carried out by presenting the learner's credentials to other service providers of VLEs. Although the general notion of a federated approach is to verify the user at a single point of entry or sign on, there is no indication of mutual authentication. This is quite typical in other online environments such as banking sector where systems are incapable of authenticating themselves in telephone and internet banking transactions due to the absence of effective anti-spoofing strategies. This work asserts the need to employ a mutual authentication strategy as a means of verifying the credentials of both learner and service provider.

Existing federated solutions focuses on the end user without much attention to the service provider. The end user is freed from the management of the authentication process and credentials. In this model credentials are extracted from the multi-factor authentication model highlighted in figure 1. Figure 2 presents an abstraction of a federated approach for modelling multi-factor authentication in a VLE.

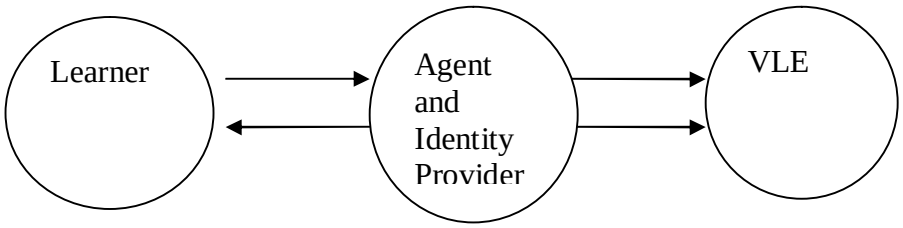


Figure 2. Exchange of assertions and credentials

Impact of federation on Online Systems

There is high value of experience with respect to user friendliness, performance and productivity. It is also effective in B2B transactions, in this case interaction among Institutions. The existence of trust models incorporated within federated systems builds confidence among users and service providers alike. Components necessary for establishing trust in a federated system include; Non- corrupted entities, Secured Communication channels, Secured delegation and accountability and Verified agents and internal entities.

Discussions

In this work an alternative security model for creating a cohesive and holistic security has been presented using a Multi-factor authentication and federation.

This work has asserted the need for a single sign on or point of entry, as it optimises added value transactions as well as ensuring friendliness in a VLE. The importance attributed to user credentials cannot be underestimated. This work extends the idea of federation by not limiting its importance to end users but also extending its importance to service providers. This paper has put forward a case for the need for service providers to equally submit credentials for verification for mutual authentication.

Multi-factor authentication using a federated approach addresses main concerns such as User friendliness, usability, Access to Data and concurrency issues, Performance, migration and mobility among E-learners. This is due to the fact that deployment security strategy of VLEs using the proposed model is driven by requirements of the system in question.

The main security requirements applicable to most VLEs are availability, integrity of data, and confidentiality.

Denial of Service (DOS) attacks can cause unavailability of data. This can affect the continuity of data services to learners. It has also been argued that masquerading and brute force could hamper e-learners from accessing learning resources. The integrity of data can also be corrupted. This suggests that integrity of data and availability as goals of security are interwoven.

Restricted data access and control procedures to persons with authorisation are necessary in managing and maintaining important data services. Personalisation as an important feature of VLE needs to be managed effectively. It has been observed from this work that VLEs do not place high importance on personal data, compared to banking and medical sectors, as result the need to improve awareness. Training of end users and service providers with respect to risks can be helpful in enhancing the functionality of such systems work.

Future Work

Future work will focus on empirical analysis of a bigger sample size to determine new authentication requirements The next section is an overview and assessment of methods used in authentication, which are considered to of critical importance to the security of virtual learning systems.

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Video-Interactive Learning Objects Vignette; Moving Beyond the Learning Object

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Abstract: This paper discusses the experiences of Ivy Tech Community College Northeast and their use of Video Interactive Learning Objects (VILOs) in two courses. It is not intended to be an empirical analysis as this community college does not have resources to analyze this topic as such. It examines the scope and place of Learning Objects (LO) in the learning process and expands the exploration into the use of VILOs as an ideal form of LO.

Introduction & Literature Review

Learners of today come to higher education from all parts of society, crossing ethnic, age, geographic, language, and economic boundaries. They come to the desk with varied education, technology based skills, and life experiences. But yet they all arrive with an eagerness to continue the process of life-long learning, needed in today's world more than any time in history. Barriers to learning are many and can vary from student to student, creating a dynamic that is sometimes difficult for an educational institution and its faculty to manage. Technology can be a universal means to reach these students and assist their life-long learning efforts. It can bridge the gap they may have between their current level of skill and education and that which they seek to attain.

Using a technology based education can literally make education attainable anytime, anywhere. Learners may access educational tools at the level they require and proceed as their needs and goals evolve. As learners prepare to enter a college program that requires specific knowledge or skills, technology based educational tools, accessible on demand, may be used to bridge the gap and prepare the learner for successful entry. This approach would be most successful if the prescribed technology based tools were identified by the college program and then recommended or required of students as they enter a program. Learners would then have access to the prescribed tools needed, and could customize the depth and duration needed. And because the tools are identified by the program in advance, the student would not focus on the "wrong" content or skills. There are many types of technology based learning tools available, and most efficient technology based tool for this use may be a Learning Object (LO).

Definitions for LO have long been debated but McGreal (2004) provides a few characteristic descriptions that are agreeable to most LO experts. LO "enable and facilitate the use of educational content online," are interoperable, reusable, adaptable to a diverse learning environment, may be used to form lessons, modules or courses, and often consist of a "unit of knowledge" (McGreal, 2004). Online databases such as MERLOT have cataloged learning objects from all subject areas at many levels of education. Colleges and universities as well as industry have contributed to this creative commons area in order to contribute to the education of all, for the greater good. A quality LO is often peer-reviewed and databases such as MERLOT offer this review service to members. LO are available online, often free and accessible across many boundaries of today's world. They are exceptionally versatile, and may be both streamed online and distributed via CDs, DVDs, iPods and/or mp4 players at a very reasonable cost to the institution.

The LO may consist of media based or video based presentation of content. Ideally, they are interactive, allowing for review and reinforcement of key content points. Types of LO may be summarized as instructional objects containing explanatory content, individual activities structured around a reading or activity, companion activities linked to database, collaborative activities requiring learner-learner interaction, technical activities that explore pertinent technology applications such as blogs or wiki entry, narrative objects that provide a context for learners and assignments that require submission of a work product (Weller, 2004). The wide variety of LO formats are likely able to accommodate nearly any subject area or learning objective, and at the same time appeal to a multitude of learning style preferences. The traditional model of education where a lecturer delivers content, or the "Sage on the Stage" does not universally appeal to learners accustomed to interaction with technology on a daily basis.

This is mainly due to the fact that the traditional mode of instruction (one-to-many lecturing), which has also been imitated by conventional education technology, cannot fully accommodate the different learning styles, strategies, and preferences of diverse learners (Manouselis and Sampson, 2002). Educators in the information technology era will have to take the role of guides by facilitating learning rather than delivering their knowledge (Fung & Yeung, 2000).

The lecture "content" becomes transformed to an engaging learning tool that places the learner in control. Weller (2004) suggests that "the author of a learning object becomes not 'how can I explain this subject to students?', but rather 'what activity can I create for students to engage with this subject?' It is the contention of the author of this paper that a video-interactive format is well-suited to meet this challenge.

Video Interactive Learning Objects (VILO) are a developed learning object (LO) application that includes the traditional LO features in a video format that maximizes interactivity in order to actively engage learners. Learners are able to view presentations or demonstrations, hear the accompanying audio and cognitively engage in a virtual learning environment. Visual and auditory learning styles benefit from this format. Learners may even practice hands on skills while using VILOs, engaging kinesthetic learners and reinforcing skills needed during competency evaluation. Students with disabilities, learning or otherwise, may benefit from utilizing VILOs due to the variety of sensory appeals and the engaging nature of the object. The VILO begins with an orientation and objective introduction, proceeds to a presentation of information or demonstration and then has an evaluation designed to provide feedback to the learner. This model of pedagogy is outlined in Boyle & Cook (2001) as they describe the learning context present in the LO. The learner may repeatedly view or work through a LO until confident in their understanding or ability to perform a skill, thus self-remediating as needed.

Content areas well-suited for video media delivery include assembly, laboratory procedures, problem solving, case study, visual and auditory recognition, story or historical details and language (Atif, 2003). Learners see and hear content presentation that reinforces concepts and application related to the objective. Critical thinking and problem solving techniques may be presented in a VILO that pauses periodically and asks the learner for input regarding how to proceed or what the next step or choice might be. Explanations may then be provided to develop decision making skills in the learner and reinforce the learning objectives. The VILO becomes a useful tool to facilitate the learning process rather than simply a presentation of content. The VILO instructional delivery becomes a participatory process vs. simple acquisition of knowledge and leads to the product of learning being created by the learner himself (Collis & Strijker, 2004).

The VILO Model at Ivy Tech Community College – Northeast

Two courses were selected for VILOs development and utilizations at the Northeast campus. The first was Medical Laboratory Techniques, MEAS 219. This course is generally taken in the second year of a two year program and is one of the first courses in which students are asked to apply specific knowledge from a college-level pre-requisite courses. Students are also expected to learn invasive procedures and medical testing that requires a time limitation due to the nature of the medical device or media. Knowledge application, proper technique and personal confidence are key objectives of the course. The second course that used VILOs was HLHS 107, the Certified Nursing Assistant course. This course requires only basic academic skills and a HS Diploma or General Education Diploma as pre-requisite. The course lasts four weeks and teaches basic nursing assistant skills as required by the Indiana State Board of Health. Students have a final skills competency assessment as well as a final written examination. VILOs were used in class, lab, off site at nursing clinical facilities and by students outside of class to present specific required content and technique.

Initial VILOs development and use in MEAS 219, Medical Laboratory Techniques at Ivy Tech Community College-Northeast has generated a large number of benefits in addition to the obvious benefit to students. Analysis is ongoing, but the initial observations are pertinent for discussion at this early stage. Students in two concurrent cohorts were introduced to VILOs as they were first used in the classroom and then offered to students on a CD or DVD for use outside of class time. The VILOs were also available on a streaming server and local televised Cable Access channel. The VILOs were well received by students and

they were given the opportunity to re-view them during lab practice time. In this particular program, students and their instructor are permitted to request an individualized remediation plan for lab-based or competency assessment courses. This allows for private tutoring, lab instruction and guided practice. There were no requests for this remediation benefit since the VILOs were developed. Students were asked to evaluate their use of the VILOs at the end of the semester and several points are worth noting. Table 1 shows the frequency that a single VILO was viewed by students outside of class and demonstrates the students perception of the usefulness of the VILO as they rated 'essential' or 'very helpful' 92 % of the time. Students indicated great appreciation for the VILOs and offered suggestions as to future topics in other classes.

Table 1. How many times do you view a VILOs?

Frequency Viewed	Students Polled	Percentage
4+	30	25%
3-4	36	31%
2-3	41	34%
1-2	12	10%
Never	1	.1%
Totals	120	100%

One other component of the VILO success in this course dealt with student confidence in performing invasive procedures. The course requires competency in performing such skills as venipunctures (blood draws) and throat swabs. As expected, performing these skills on a classmate created nervousness. Having confidence in performing these skills is nearly equal in importance as the skill itself when the student transfers the skill to the externship site and eventual employment. Students were asked to determine their level of confidence in performing the skills after using a VILO and compare to observing an instructor demonstration in front of the class. Students reported to be more confident 97% of the time when performing their first attempt at mostly invasive procedures as shown in Table 2.

Table 2. How would you rate the usefulness of VILOs in mastering your Lab Skills?

Usefulness of VILOs	Students Polled	Percentage
Essential	61	51%
Very Helpful	49	41%
Helpful	9	8%
Not Helpful	1	.1%
Totals	120	100%

TABLE 3. Additional Benefits Noted as Anecdotal:

Consumable laboratory materials cost reduced by 40%, due to fewer practices needed
Seat-time was reduced in the course from 5 hours to 3.5 hours making the room available for other courses
Several new laboratory procedures involving devices not in textbooks yet were demonstrated
While absences were not excused, VILOs were used to effectively update student
Students are able to self remediate with no formal remediation plans initiated

The learners in a Certified Nursing Assistant course at Ivy Tech Community College gained tremendously by the use of VILOs that were developed to accompany their traditional face-to-face course presentations and laboratory activities. Nursing and patient care procedures were video recorded and presented with theory and explanation in the narration. Students viewed the VILOs together as a group and then performed the skills in the laboratory setting. Instructors report that students are consistently modeling their technique from the VILOs. Previously when skills were demonstrated by the instructors, it was noticed that each instructor may have a slightly different technique and this created problems for the

students from one class session to the next. This consistency problem has been eliminated with each student learning the exact same and correct technique. Interactive quizzes were built into the VILOs to reinforce key points and specific technique or equipment features. Certification exam style questions are also modeled so that students become familiar with the certification test and have the opportunity to review content on a regular basis. VILOs are made available via streaming video server that students may access from any online station. Program retention in HLHS 107 from enrollment to certification increased from 91.63% in the pre-VILO cohorts to 99.38% in the VILO-used cohorts. Competency based skill assessment required no remediation plans, incomplete grades, or time extensions and clinical instructors anecdotally report excellent performance of skills weeks after the initial content delivery and VILOs use.

Table 4. HLHS 107 Cohort Enrollment, Certification and Retention Data

Cohort Date	Number enrolled	Number Certified on first attempt	Percentage Retention
7 May 2007	20	19	95%
4 Jun 2007	22	20	91%
12 Jun 2007	22	22	100%
25 Jun 2007	17	15	88%
16 Jul 2007	14	11	79%
23 Jul 2007	18	17	94%
20Aug 2007	15	14	93%
20 Aug 2007	12	9	75%
17 Sep 2007	20	19	95%
15 Oct 2007	18	17	94%
22 Oct 2007	19	19	100%
12 Nov 2007	15	13	87%
14 Jan 2008	15	13	87%
14 Jan 2008	12	11	92%
Totals before VILO use	239	219	91.63%
First VILO's Launched in HLHS 107			
11 Feb 2008	20	20	100%
3 Mar 2008	10	10	100%
3 Mar 2008	5	5	100%
10 Mar 2008	13	13	100%
17 Mar 2008	16	16	100%
14 Apr 2008	17	17	100%
19 May 2008	16	16	100%
2 Jun 2008	14	14	100%
16 Jun 2008	16	16	100%
15 Jul 2008	19	18	95%
21 Jul 2008	15	15	100%
Totals after VILO launch	161	160	99.38%

Conclusion

VILOs creation and use has met success at Ivy Tech Community College in the two courses initially selected for implementation. The scope and application of their use is clearly appropriate and near best practice in terms of meeting the specific needs of the course content involved. Ivy Tech students are typically those returning to the education process after several years and have considerable barriers to successful completion of a program. Barriers include previous poor performance in the educational setting and incomplete comprehension of the learning process. Essentially, many of the students do not understand how they learn, how to study, what to study, or how to remediate. The VILOs presentation and its interactive, simple to use format is a tool available to students 24/7 in multiple formats. Ivy Tech endeavors

to meet every student where they are in their educational and learning stage. The VILOs have become a valuable tool in the process.

Success of the project is also owed to the instructors involved in the creation of the VILOs. They asked that important question … "How can I engage the student in the learning process?" The instructors championed the VILOs and involved current students in making the VILOs. Students at all levels stepped up their skill performance during the videotaping sessions and became a part of the creative process. And as the project moves forward, students will continue to play an important role in the creation of more VILOs. They are helping the instructors learn – how they learn. Other areas of study have now joined the VILOs project including manufacturing, culinary arts, therapeutic massage and general education anatomy & physiology. A library database is growing and can be open accessed at www.ivyvilos.com. The VILOs team is seeking to build partnerships with other community colleges and higher education entities to work on creation, delivery and analysis of student outcome.

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Social Presence, Web-videoconferencing and Learning in Virtual Teams

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Abstract: The possibilities of Information and Communication Technology to facilitate collaboration in education have increased considerably in recent years. Using web-videoconferencing, whereby learners in an online classroom can simultaneously collaborate using audiovisual communication tools, enlarges the learners' ability to social and emotional expression, thereby improving communication which may increase learning satisfaction.
The present study compares two cohorts of students that did the same course where both could communicate via a discussion board and one cohort that had the opportunity to also attend web-conferences. Contrary to our expectations, we found learning satisfaction not to increase with the introduction of web-videoconferencing. This finding leads to a number of questions for future research

Social presence

The evidence that the interaction resulting from collaboration can enrich the learning process (Jonassen & Kwon, 2001; Lindblom-Ylänne, Pihlajamäki & Kotkas, 2003; Van den Bossche, Gijselaers, Segers & Kirschner, 2006) combined with the growing possibilities of Information and Communication Technology (ICT) to facilitate collaboration in online learning (Bromme, Hesse & Spada, 2005; Resta & Laferrière, 2007; Schellens & Valcke, 2005) currently leads to an increase in attention for virtual collaborative learning.

A recent development in collaborative tools is the ability to work and learn together in synchronous tools like web-videoconferences whereby learners meet online at the same predetermined time (synchronous) in an online classroom. While web-videoconference is not a new phenomenon, tools like Skype, MSN Web Messenger and Acrobat® Connect allow learners to communicate and efficiently using free or low cost technology by a simple desktop computer. This contrasts with tools that only allow for communication between parties that do not need to be present at the same time (asynchronous), for example in discussion groups. Differences in look and feel are demonstrated in Figures 1 and 2 where figure 1 shows a discussion board supporting asynchronous communication and Figure 2 shows a web-videoconference tool that allows for synchronous communication.

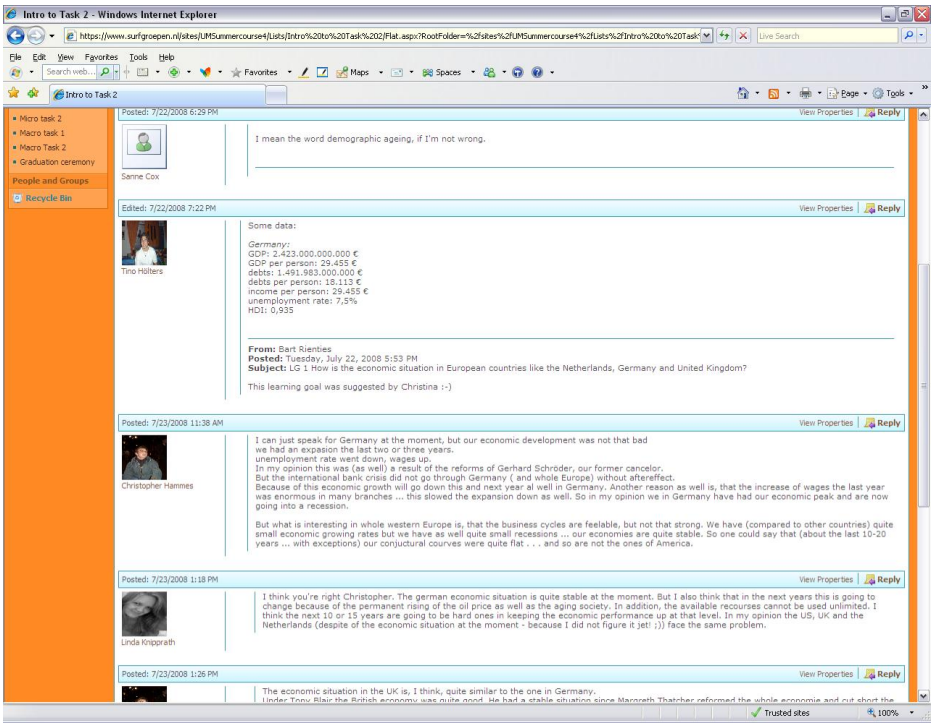

Figure 1. An example of asynchronous communication using a discussion board

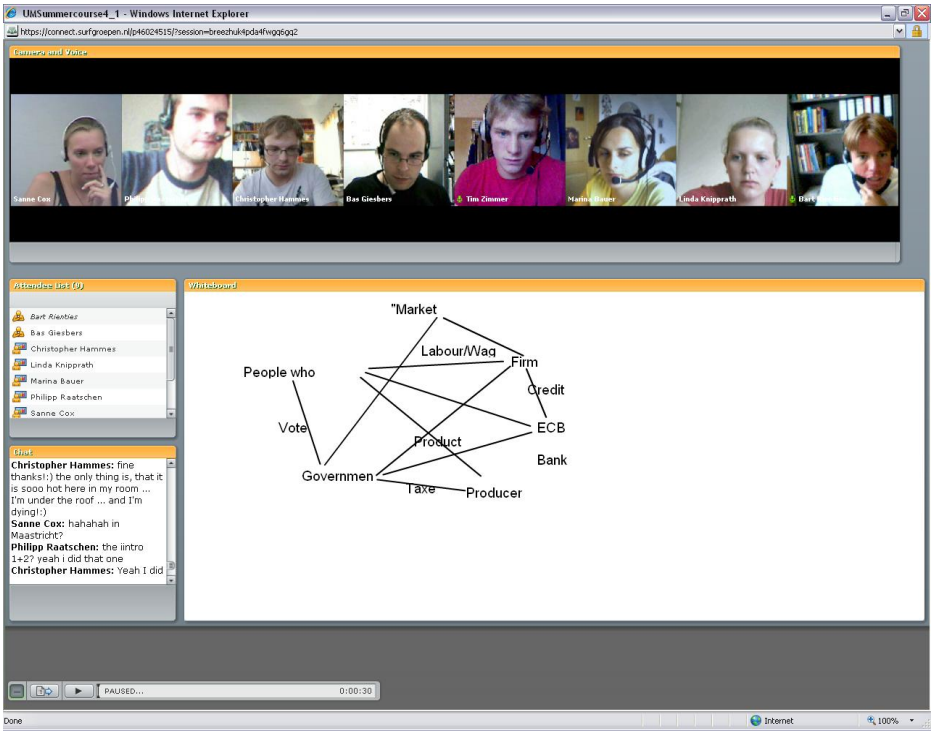

Figure 2. an example of synchronous communication using web-videoconference

Both examples are part of a collaborative environment called Surfgroepen (Surfgroups in English, see www.surfgroepen.nl) offered by SURFnet, a subsidiary of the SURF organisation (www.surf.nl), that allows Dutch universities and research institutes to collaborate (in)ternationally by using innovative ICT

facilities. As Figure 2 shows, web-videoconference enriches of the learning environment by including audiovisual information such as face expressions, the collaborative use of a whiteboard and chat.

A large body of literature in CSCL has highlighted that synchronous communication is superior to asynchronous communication in establishing discourse due to the lack of body communication, delayed feedback and barriers of meaning in asynchronous tools like discussion forums (Beers, Boshuijzen, Kirschner, & Gijselaers, 2007; Derks, Bos, & Grumbkow, 2007; Haythornthwaite, 2000; Mehrabi et al., 2000; Rummel & Spada, 2005; Tu, 2002). For example, Tu (2002) found that discussion forums have the lowest level of conveying feelings and emotion. Haythornthwaite (2000) found that people who have frequent and strong ties to others are using more synchronous communication tools, or use asynchronous tools as if they were synchronous.

Beers et al. (2007) argue that in order for online teams to effectively share and construct knowledge, they need to be able to understand each other, which in asynchronous communication is more difficult. Often, a lack of context, body language or writing style leads to an interpretation of written text (e.g. a post on a discussion board) not intended by the writer (Bromme et al., 2005). Due to miscommunication, a learners' connectivity and sense of belonging (relatedness) might be reduced as well as the perceived competences, which in turn might reduce social interaction.

Garrison, Anderson & Archer (2000) present a model in which the interaction of social presence, teaching presence and cognitive presence is crucial for meaningful learning to occur. In this model, Garrison et al (2000) define cognitive presence as the ability of participants "to construct meaning through sustained communication" (p. 89). Social presence is defined as "the ability of participants […] to project their personal characteristics into the community, thereby presenting themselves to the other participants as 'real people'" (p. 89). Teaching presence is reflected by the educational design but also by the role of facilitator performed by a teacher or another participant. Teaching presence is aimed "to support and enhance social and cognitive presence for the purpose of realizing educational outcomes" (p. 90).

Social presence is found to determine learners' experience and perception of social interaction (Yang, Tsai, Kim, Cho & Laffey, 2006). By enabling learners to simultaneously be seen and heard and to use a shared workspace while being physically separated through web-videoconference, social presence is increased as said functionality enlarges the ability a learner has to express him/herself socially and emotionally in a group.

Several researchers argue that establishing clear instruction and design in an online course from the start is an essential pre-requisite for effective collaborative learning in virtual teams (Anderson, Rourke, Garrison, & Archer, 2001; Arts, Gijselaers, & Segers, 2006; Beers, Boshuijzen, Kirschner, & Gijselaers, 2005; Kirschner, Strijbos, Kreijns, & Beers, 2004). This can be established by the support of teaching presence which, in online settings, can also be achieved by web-videoconferences. Because the facilitator is present during synchronous communication and both course design and course material can be presented in a more direct way, teaching presence is enlarged.

Based upon the increase in possibilities when using web-videoconferences, we expect it to have a positive effect on course design, goals and tasks. In addition, as it should be easier to establish communication and express emotion using web-videoconference in comparison to discussion forums (Derks et al., 2007; Jonassen & Kwon, 2001; Rourke, Anderson, Garrison, & Archer, 1999; Tu & McIsaac, 2002), we expect its use to improve collaboration. As it is also easier for the teacher to provide timely feedback and instruction (De Laat, Lally, Lipponen, & Simons, 2007; Vonderwell, 2003), we expect students' rating of teacher instruction to be higher. Finally, we expect an increase in social presence and teaching presence to have a positive impact on cognitive presence which leads to an increase in learners' satisfaction. As the course materials and assessments were the same in both phases, we expect no change in perceived usefulness.

Method

Setting

The present study took place in an online summer course for prospective bachelor students of an International Business degree programme in the Netherlands. Its aim was to bridge the gap in economics prior knowledge for students starting a bachelor (Rienties, Tempelaar, Waterval, Rehm, & Gijselaers, 2006). The online course was given over a period of six weeks in which students were assumed to work for 10-15 hours per week. The participants never met face-to-face before or during the course and had to learn using the virtual learning environment "on-the-fly". The course used principles of Problem-based learning (PBL), which focuses student learning on complex situations and on a variety of realistic information (Dochy, Segers, Van den Bossche, & Gijbels, 2003; Van den Bossche et al., 2006). A key issue in PBL is that students actively construct knowledge together in collaborative groups (Hmelo-Silver, 2004). In order to assess the influence of web-videoconference on social presence and learning in virtual teams, two separate cohorts were used.

In order to assess whether increasing social presence by adding web-videoconferencing will lead to increased perceived course's usefulness by students we compared two cohorts of students. Both cohorts followed the same course, where cohort 1 used an asynchronous environment offering communication via a discussion board while cohort 2 was offered additional web-videoconferences. As students could voluntarily choose to follow the online course based upon the results of an entry test, differences among the cohorts with respect to the type of motivation (intrinsic/extrinsic/amotivation) might hamper our comparison, in particular when students differ in intrinsic motivation (Rienties, Tempelaar, Van den Bosche, Gijselaers, & Segers, 2008). Therefore, a measurement of motivation was included.

In both cohorts, students had to collaborate together to solve six tasks. An E-book was available and students could use additional sources. The group, together with the tutor, could decide upon the pace with a maximum runtime of six weeks. At the end of each week, the tutor suggested how to proceed with the next task, thereby focusing on process rather than on content. The results of three interim-tests and a final summative test combined with graded participation in the discussion forums were used to make a pass-fail decision. A non-recognised certificate and a drink at a graduation ceremony were the only external rewards.

In cohort 1, students participated in groups within a collaborative learning environment using discussion forums and announcement boards. No obligatory meetings were scheduled. In cohort 2, students could attend four web-videoconferences in addition. A novelty of the web-videoconference system was the simultaneous use of video/audio communication, chat and an integrated whiteboard. At the start of the course, considerable time was spent on getting acquainted with each other during the first videoconference. In addition, the course design, goals and the first task were discussed within the group in order to familiarise the students with PBL. Afterwards, the students discussed the tasks in the discussion forums. At the start of each new week, a videoconference was organised in order to (post-) discuss assignments, after which students continued in the discussion forum.

Participants

In cohort 1, a total of 100 participants were randomly assigned to six groups. Data were analysed for those participants who actually posted at least once a reaction in the discussion forum. This resulted in a total of 82 participants that were selected for analysis. The six groups had an average of 13.66 members (SD= 2.16, range = 11-17) per group. The average age was 19 years and 50% of the learners were female.

In cohort 2, a total of 69 participants were randomly assigned in five groups, of which 62 actually posted at least once a reaction in the discussion forum or attended a web-videoconference. The five groups had an average of 13.80 members (SD=2.59, range = 11- 18) per group. The average age was 19 years and 39% of the learners were female. As the number of participants in both phases was unequal, we removed one group from cohort 1 that differed with respect to the type of motivation and underperformed with respect to discourse, thereby leading to 71 participants in cohort 1 and 62 participants in cohort 2.

Instruments

Expectations of the course before the start

Before the participants started, their perceptions of the course were measured by an instrument developed at Maastricht University. The questionnaire consists of 20 questions on a Likert scale of 1 (=totally disagree) to 7 (=totally agree). The questionnaire consists of four scales (number of questions and Cronbach alpha in brackets); usefulness of prior knowledge test (4, α=0.549); reasons to join the course (5, α= 0.329); group collaboration (5, α=0.331) and course design (4, α=0.780). The low Cronbach alpha for 'group collaboration' is probably due to the fact that there was a large variety in experience among participants with group collaboration in prior education (Tempelaar, Rienties, & Gijselaers, 2007). In addition, the 'reasons to join the course' were quite diverse, leading to a relatively low alpha. Besides the four scales, participants could indicate their level of ICT-expertise, being beginning (26.3%), experienced (62.6%) and expert (11.1%). Less then 10% of the students had taken an online course before. The response rate for cohort 1 and cohort 2 was 93% and 73% respectively.

Academic Motivation

Previous research on virtual teams has shown that the type of academic motivation has a strong influence on learning processes and outcomes (Rienties et al., 2008). Individual contextual motivation for education was measured by the Academic Motivation Scale (AMS) (Vallerand et al., 1992) which consists of to 28 items based on the question stem "Why are you going to college?" There are seven subscales on the AMS, of which three belong to intrinsic motivation scale, three to extrinsic motivation scale and one for amotivation. Intrinsic motivation is subdivided into motivation to know, to accomplish and to experience stimulation. The extrinsic motivation subscales constitute a motivational continuum reflecting the degree of self-determined behaviour, ranging from identified regulation as the component most adjacent to intrinsic motivation, to externally regulated learning, where learning is steered through external means, such as rewards. The amotivation scale constitutes the very extreme of the continuum: the absence of regulation, either externally directed or internally. The response-rate on AMS-questionnaire for cohort 1 and cohort 2 was 93% and 73% respectively and the Cronbach alpha for the seven items ranged from .760 to .856, which is in line with previous studies.

Perceived usefulness of the course

The perceived usefulness of the course was measured by an instrument developed specifically for online remedial education (Rienties et al., 2006). This measure has been used in a variety of online courses for prospective bachelor and master students in the Netherlands as well as for international professionals who worked together in virtual teams (Rehm, 2008). The questionnaire consists of 33 questions on a Likert scale of 1 (=totally disagree) to 5 (=totally agree) divided into seven subscales (number of questions and Cronbach alpha in brackets); course design (6, α=0.635); course materials (3, α=.635); goals and tasks (4, α=0.636); learning satisfaction (5, α=0.727); group collaboration (5, α=0.742); instruction by teacher (5, α=0.541) and assessment (4, α=0.653). For cohort 2, an additional scale was added in order to measure the perceived usefulness of videoconferencing relative to discussion forum (5, α=0.702). Finally, the participants' age and the number of hours worked were measured and a textbox for open comments was included. The response rate for cohort 1 and cohort 2 was 83% and 77% respectively.

Results

The cohorts show no significant differences with respect to age, gender, ICT-skills and prior experience with online education. With respect to students' expectations before the start of the course, no significant differences are found between the four respective scales using an independent sample T-test.

No significant differences are found among participants with respect to intrinsic motivation. However, participants in cohort 1 have a higher level of Identified regulation ($F = 0.728$, $t = 2.157$, p-value = 0.033, d-value = 0.42) and External Regulation ($F = 5.633$, $t = 2.409$, p-value = 0.018, d-value = 0.45), indicating that cohort 1 participants are slightly more extrinsically motivated. Nonetheless, the size effects are small and Rienties et al. (2008) showed that extrinsically motivated students do not differ significantly from average students in virtual teams with respect to their contribution to discourse. Hence, we can assume that the cohorts are comparable.

Effect of the redesign

Table 1 displays the scores on each of the 37 questions on the perceived usefulness of the course. Cohort 1 students are in general very pleased with the online course. Most scores on the Likert scale questions are around 4.0, while the overall course and support by the teacher receives more than an eight on a scale of one to ten. Quite surprisingly, cohort 2 students seem to be less positive about the course. Eight questions have significant lower scores for cohort 2 than cohort 1 based upon and independent sample T-test. In particular, the overall grade for the online course for cohort 2 is 0.7 points lower which is statistically significant at 1%. In contrast, cohort 2 shows significantly higher scores on the three questions concerning the role of the instructor.

With respect to the redesign, five questions were raised to students of cohort 2 in order to measure the usefulness of web-conferencing and discussion forums. Students in cohort 2 are positive about both the use of the web-videoconference system (3.8 (0.9)) and the use of the discussion forums (3.9 (0.9)). However, the slightly higher value in cohort 2 of learning in videoconference sessions (3.5 (0.9)) in comparison to the discussion forums (3.3 (1.0)) is insignificant in a paired sample T-test. Finally, students in cohort 2 work less hours per week in comparison to students in cohort 1 which is significant at 10% confidence interval.

Table 1 Comparison of course usefulness

	Discussion Forum		Videoconference		t-test
	M	SD	M	SD	difference
This Summer/Wintercourse offered me a lot	4.27	0.64	4.02	0.53	0.031*
The contents of the Summer/Wintercourse were inspiring	4.15	0.61	3.94	0.56	0.063†
The format of the Summer/Wintercourse was good	4.15	0.69	4.04	0.77	
The Summer/Wintercourse was well organized	4.10	0.64	4.17	0.72	
The quality of the digital material was good	4.44	0.60	3.96	0.85	0.01**
The digital material motivated me to keep up with the subject matter	3.63	0.81	3.54	0.90	
Learning with an E-book is not different from learning from a hard-copy book	2.78	0.89	2.85	0.99	
It was fun that I could attend this Summer/Wintercourse via the internet	4.22	0.74	4.06	0.81	
The goals of the Summer/Wintercourse were clear to me	4.00	0.72	4.17	0.63	
It was clear to me what was expected of me this Summer/Wintercourse	3.85	0.87	4.04	0.71	
The assigments/tasks stimulated me to collaborate with the other group	3.53	0.86	3.50	0.92	
The assignments/tasks stimulated me to study	3.78	0.85	3.69	0.80	
I am satisfied with what I learned in terms of knowledge, skills and insight	3.81	0.78	3.69	0.88	
I gained enough knowledge and skills in economics to start with my study in Maastricht	3.68	0.71	3.73	0.79	
I think that by attending this Summer/Wintercourse I will get better results in my future study in Maastricht	3.85	0.71	3.77	0.93	
The group in which I participated functioned well	3.86	0.86	3.56	0.90	0.079†
It was fun to collaborate with others in this Summer/Wintercourse	4.07	0.85	3.71	0.94	0.041*
Collaborating with others facilitated my understanding of the subject matter	3.78	0.72	3.65	0.79	
I think I learned more in this Summer/Wintercourse through collaboration with others than I would have learned if I had to work individually	3.34	0.96	3.25	1.12	
I think I was motivated to finish this Summer/Wintercourse because I could work in my own pace	3.68	0.94	3.83	0.86	
It is good that I could attend this Summer/Wintercourse independently (without interference from others)	4.37	0.61	3.92	0.87	0.02*
The use of the webvideoconference system (Breeze) was useful	.	.	3.79	0.87	
I learned a lot from the discussions in the web videoconferences (Breeze)	.	.	3.48	0.92	
The use of the discussion forums (SURF-groepen) was useful	.	.	3.90	0.93	
I learned a lot from the discussions in the discussion forums	.	.	3.27	1.01	
There were too many webvideoconferences in this summer/winter course	.	.	2.67	0.86	
I was given the support that I needed	4.03	0.69	4.23	0.66	
The Online Summercourse-team was enthousiastic in coaching our group	4.22	0.72	4.54	0.58	0.014*
The Online Summercourse team stimulated participation of all group members in the online group discussions	3.54	0.86	3.88	0.70	0.033*
The Online Summercourse team helped us to apply what we had learned on other situations than those mentioned in the assignments/tasks	3.63	0.61	3.94	0.91	0.038*
Give an overall grade for the functioning of the Summer/Wintercourse team (1 = very bad - 10 = very good)	8.20	0.94	7.98	1.42	
The instructions for making the final test were clear	4.05	0.75	3.79	0.71	0.073†
The Weekly tests (intermediate tests) in this Summer/Wintercourse gave me a good picture of what I still had to study	3.78	0.79	3.96	0.62	
The internet application used for the tests was easy to work with	4.15	0.83	3.88	0.94	
Give an overall grade for the quality of the Summer/Wintercourse (1 = very bad - 10 = very good)	8.46	1.02	7.73	1.33	0.01**
I participated actively in the online group discussions	3.19	1.15	3.25	1.10	
I have made ..... Weekly (intermediate) tests	2.81	0.97	2.60	1.35	
Weekly I have spent .... hours on this course	13.43	6.76	11.12	5.54	0.069†

Independent sample T-test (2-sided) of Discussion forum (n=59) vs. Videoconference and Discussion forum (n=49).

**Coefficient is significant at the 0.01 level (2-tailed).

*Coefficient is significant at the 0.05 level (2-tailed).

† Coefficient is significant at the 0.10 level (2-tailed).

In Table 2, the effects of the redesign on perceived usefulness of the course are listed. In contrast to our expectations, students in cohort 2 were less satisfied with the course materials. With respect to the course design, cohort 2 students differ from cohort 1 students but the effect is in the opposite direction to what we expected. In other words, cohort 1 students are more satisfied about the course design than cohort 2 students. No effect has been found with respect to goals and tasks and group collaboration. We do find an improved satisfaction of the role of the teacher in cohort 2 at a 5% significance level and a moderate size effect ($F = 0.057$, $t = 2.549$, p-value = 0.012, d-value = 0.50). However, we do not find any difference among the cohorts with respect to learning satisfaction. Overall, we have to conclude that students who used the web-videoconference in addition to discussion forums are not more positive about the online course than students who only used the discussion forums.

Table 2. Perceived course usefulness in scales

	Discussion Forum		Videoconference		t-test	Cohen
	M	SD	M	SD	difference	d-value
Assessment	14.80	2.41	14.23	2.60		
Course Materials	11.29	1.66	10.65	1.80	0.058†	0.37
Course Design	24.69	2.59	23.76	2.48	0.064†	0.36
Goals and Tasks	15.15	2.51	15.40	1.82		
Group Collaboration	18.24	3.34	17.42	3.28		
Instruction	19.53	2.13	20.57	2.09	0.012*	-0.50
Learning Satisfaction	19.83	2.50	19.27	2.73		

Independent sample T-test (2-sided) of Discussion forum (n=59) vs. Videoconference and Discussion forum (n=49

*Coefficient is significant at the 0.05 level (2-tailed).

† Coefficient is significant at the 0.10 level (2-tailed).

Discussion

Based upon the idea that increased possibilities to establish communication and to express emotion we expected that increasing social presence by using web-videoconferences would positively influence the course design, goals and tasks, group collaboration, instruction and finally learning satisfaction among learners. In other words, we expected that groups working together using (synchronous) web-videoconferences in combination with (asynchronous) discussion forums would be more positive about the course's usefulness than groups who worked together solely using discussion forums. However, the results indicate that students using videoconference are in general not more positive about the online course with the exception of instruction of the teacher.

The fact that students in cohort 2 (web-videoconferencing) are less positive about the course materials might be due to two reasons. First of all, the Cronbach alpha is relatively low, thereby leading to reliability issues. Secondly, in cohort 2 a new version of the E-book system was used, which seemed to be less compatible with Apple-users. In fact, six students complained about compatibility (e.g. "excercises cannot be made with a mac" or "that it works better with Mac computers") in the open comment, while there were no remarks about compatibility in cohort 1, which might explain the lower rating for course materials.

The lower evaluation of the course design for cohort 2 leads to several questions. Although discussion forums have obvious disadvantages with respect to speed of interaction, feedback and ability to express emotion, one important merit of discussion forums is that students can learn whenever they want. Flexibility might be important for online remedial education when prospective students are preparing themselves for university at home or at their holiday location (Rienties et al., 2006). In addition, several authors have argued that by using discussion forums participants have more time to think and are therefore more able to build an effective argumentation (Schellens & Valcke, 2006; Weinberger & Fischer, 2006).

Explaining the fact that no difference was found in goals and tasks, group collaboration and learning satisfaction between the two cohorts is challenging. Maybe, the goals and tasks of the course are sufficiently clear when communicated via a course manual and communication from the instructors in the discussion forum, as cohort 1 students indicated that they knew what was expected from them in the course. Given that it is easier to establish communication and social presence using web-videoconferencing, we at least expected that cohort 2 students are more positive about the merits of group collaboration. Again the merits of synchronous communication might be offset by the flexibility of asynchronous communication. In addition, not every participant had a sufficient broad-band connection, which might have hampered their ability to contribute to the videoconference discussions and hence their perception about group collaboration.

As group collaboration and the course design were not improved in the redesign, the overall learning satisfaction did not increase despite that the role of the instructor was perceived more positively. A possible explanation why the role of the instructor (e.g. to help the students to apply the content to other contexts, equal participation) received a higher rating is that the delay in feedback in asynchronous communication could be counteracted by the weekly videoconferences. In addition, a rough generalization of the roles of the instructor in the videoconference relative to the discussion forum seem to indicate that the instructor was more active in the videoconference, which in distance learning is highly appreciated by students (Vonderwell, 2003).

Limitations and Future research

The results of this study were based on a method using self-reported student perceptions in one particular setting. This can be viewed as a potential limitation as in other settings using web-conferencing might lead to superior results in comparison to using only discussion forums. In addition, the measurement of perceptions of participants about learning characteristics and learning processes is difficult. However, given the reliability figures of the seven scales, high response-rates and the fact that we controlled for differences in motivation and prior expectations, we deem that the results are still valid.

Further, the short- and long-term consequences on learning outcomes have not been demonstrated. The longitudinal effects of our redesign needs to be assessed in future research.

Third, neither content analysis nor Social Network Analysis was conducted on the discourse. These might reveal evidence about learning and knowledge construction from online discussions and interaction patterns among individuals within groups. Research on cohort 1 showed large differences in participation, type of discourse and position within the social network (Rienties et al., 2008), which we expect to be smaller in cohort 2 due to the increased possibilities to interact.

Fourth, research should investigate whether groups using web-videoconferences are more balanced with respect to the type of discourse and participation. In addition, to what extent are students overwhelmed by a variety of ICT tools? To what extent does the requirement to be present during videoconferences hinder the flexibility of learners to decide when and where to learn? Finally, to what extent does the behaviour of participants (students and teachers) differ when using web-videoconferences or discussion forums?

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Literature Scan on Online Remedial Teaching and Learning: A European Perspective
Development of effective online remedial education

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Abstract: In this literature review we explore the different approaches towards remedial or developmental education. Although several European institutions for higher education have started to offer remedial programmes, remedial education in Europe remains a rare phenomenon. In spite of the efforts of the European Union to create a European Higher Education Area, both secondary and tertiary education are determined on a national level. The increased mobility of students and educational staff has created new challenges for higher education. New suppliers of education (like virtual universities and corporate universities) and other forms of education (like e-learning and distance education) appeared. We therefore examined the success factors of effective remedial education and the potentials of ICT in the field of education. With this knowledge, we challenge European institutions for higher education to develop and implement effective online remedial courses, in order to bridge the gap among national and international students.

The changing European society and its consequences for higher education

The globalization, the internationalization and the Europeanization during the last decades have had serious consequences for the field of (higher) education. Students and teachers can study or work easily at foreign institutes, new possibilities in distance education turn up, and ICT becomes a common medium in the field of education. In a globalized information technological environment, the production of knowledge and the power over knowledge is no longer controled by the state. People look for other sources of knowledge, beyond the education organized by the state (Verhoeven, Kelchtermans, & Michielsen, 2005).

This means that a great amount of new suppliers in the field of higher education crop up, like virtual universities, franchise universities and corporate universities. Even public institutions for higher education seem to be organized and structured more privately. Due to the globalization and the growth of information and communication technologies like the internet, higher education becomes more international. Institutions for higher education are using new ICTs to meet the demand of more flexible types of higher education. Besides new suppliers, other forms of higher education appear, like e-learning and distance education (Verhoeven, Kelchtermans & Michielsen, 2005).

Although the European Union (EU) has no legal influence over higher education (i.e. no direct policy instruments to impose regulations in the field of higher education), the Bologna Agreement makes countries show a great commitment to implement European policy guidelines in their national higher education policies (Litjens, 2005). Globalization, internationalization and Europeanization leads in this context to a growing interdependence and interconnectedness of modern institutions, such as higher education institutions. These processes form the background which now frames the mobility of teaching, non-teaching and research staff and students, as well as the internationalization of research agendas of institutions and students' curricula. Besides the higher level of mobility of students, employers and graduates in the field of (higher) education, the Bologna Process also aims at creating a European Higher Education Area that is capable of competing on the international stage and attracting students from abroad, both inside and outside Europe. These trends stress the European language issue and the challenges of communication in a multilingual space. European university policy-makers are stimulated to change their curricula from local languages to the international standard: the English language. But this process is not without problems. Universities are therefore confronted with a dilemma: to transform their programmes into international curricula based on English, or to keep the local language as the main language of instruction and communication. This problem has however never been studied in detail. The real challenge for Europe today is how to provide a multilingual environment for students and employers which

appreciates the use of multiple languages and enhances the exchange of students, teaching and non-teaching staff (Kerklaan, Moreira, & Boersma, 2008).

Remedial or developmental education in Europe

Kozeracki paraphrases Piper (1998) and Clowes (1980) when defining developmental education. According to her, "developmental education incorporates human development theories, is intended to bring together academic and student support services to assist students in preparing to make choices appropriate to their current stage in development, and is viewed as being appropriate for all students" (Kozeracki, 2002, p. 84). Referring to Kiemig (1983) and Boylan, Bonham, & Rodriguez (2000), developmental courses are considered as learning improvement programmes or services, like learning assistence for individual students, course-related services, and comprehensive learning systems, but also freshmen seminars, critical thinking courses, study strategies courses, orientation courses, and freshmen composition classes (Kozeracki, 2002). Due to the interchangeable use of remedial and developmental education, we use these terms in this paper interchangeably as well.

While remedial programmes are common in the United States, they are less common in Europe. Nevertheless, several European higher education institutes have started to offer remedial education programmes as well. One of the reasons why European universities are starting to develop remedial courses is the different situation in the two continents. In the United States, a common assumption is that remediation attracts underprepared students of low socio-economic status (Attewell, Lavin, Domina, & Levey, 2006; McCabe & Day, 1998). Inadequate academic preparation is no longer a barrier to college access (Kozeracki, 2002, p. 85). In contrast, in Europe, a large part of the transitional problems are caused by differences among national secondary educational programmes which are determined on a national level (Rienties, Tempelaar, Waterval, Rehm, & Gijselaers, 2006; Van der Wende, 2003). Therefore foreign students are hindered to effectively start a bachelor or master programme. Remedial or developmental courses can help to bridge this gap (Rienties, et al., 2006).

Considering the large number of foreign students enrolled in European bachelor programmes, and to come forth to the demands of the Bologna Treaty, a reasonable response to facilitate foreign students in their transitional phase is to offer remedial education in a distance learning format. Research has shown that remedial education in virtual settings is effective (Rienties, Tempelaar, Van den Bossche, Gijselaers, & Segers, (n.d.); Tempelaar, Rienties, Rehm, Dijkstra, Arts, & Blok, 2006; Wieland, Brouwer, Kaper, Heck, Tempelaar, Rienties, et al., 2006).

Measuring the effectiveness of remedial or developmental courses

Recently, more empirical research has been conductued in which the effectiveness of remedial education is measured in a longitudinal manner. This means that demographical and socio-economic issues are taken into consideration as well. Results tend to indicate that the effects of remedial education might depend on the particular context, the type of institution as well as the type of domain knowledge or skill. For example, Jacob and Lefgren found a modest but positive net impact on student achievement scores for third-grade students participating in a summer school, for math, as well as for reading. For sixth-grade students, these programmes seem to have little if any effects (Jacob and Lefgren, 2004). In a study of 6800 high school students, Attewel et al. (2006) found that the effects of remedial education depend on the type of institution. In two-year colleges, students who passed remedial courses were more likely to graduate than students with equivalent backgrounds who never took remediation. In four-year institutions, remedial courses reduced students' chances of graduation, even when regulating for academic skills and background (Attewell et al., 2006). Bettinger and Long (2005) took a different dataset and found that mathematics remediation improved student outcomes, while English remediation did not improve student outcomes.

The effectiveness of remedial or developmental courses

Jacob and Lefgren state that remedial summer courses and retention programmes can improve the performances of disadvantaged students under favorable circumstances. Programmes implemented in contexts which incorporate features such as incentives, small class sizes, a highly structured curriculum, and teachers selected by the principal, might offer some hope for low-achieving students (Jacob and Lefgren, 2004).

Most recent studies have focussed on the programme components, in order to improve the status and the effectiveness of developmental courses. Kozeracki (2002) conducted a review of success factors of remedial education and found that offering a high degree of structure, clear goals and objectives, social and emotional support, adequate staff training and professional development are important elements for remedial education - similar element are found by McCabe and Day (1998) and Merisotis and Phipps (2000). Moreover, Kozeracki (2002) destinguishes seven commonly cited elements that are associated with student success in developmental programmes:

- Orientation, assessment, and placement are mandatory for new students
- Clearly specified goals and objectives are established for courses and programmes
- The adult learning theory is applied in the design and delivery of the courses
- The courses are highly structured
- The programmes is centralized or highly coordinated
- Counseling, tutoring, and supplemental instruction components are included
- The social and emotional development of the students is taken into consideration

Referring to Levin and Koski (1998), the following ingredients are central for designing successful interventions for underprepared students in higher education (Levin & Calcagno, 2008):

- Motivation: building on interests and goals of students and providing institutional credit towards degrees and certificates
- Substance: building skills within a substantive or real-world context
- Inquiry: developing students' inquiry and research skills to help them investigate subjects and areas
- Independence: encouraging students to do independent meandering within the course structure, in order to develop their own ideas, applications and understandings
- Multiple approaches: using collaboration and teamwork, technology, tutoring and independent investigation as suited to student needs
- High standards: setting high standards and expectations that all students will meet if they exert adequate effort and if they are given appropriate resources to support their learning
- Problem solving: understanding learning as a way of determining what needs to be learned and how to develop a strategy that will succeed
- Connectiveness: emphasizing the connections among different subjects and experiences, showing how they can contribute to learning
- Supportive context: understanding that learning is a social activity that prospers from healty interaction, encouragement and support.

It appears that these factors clearly align with the success elements defined by Kozeracki (2002). Both authors take the student and its social and emotional development into account, with respect to a supporting and encouraging context. Both approaches to successful developmental programmes agree with one another, but they can also be considered as complemental to each other. Whereas Levin and Calcagno promote the independence and inquiry of students in remedial or developmental courses, clearly specified goal and objectives, highly structured courses, and highly coordinated programmes, such as defined by Kozeracki (2002) are required.

The role of ICT in remedial education

The increasing attention for (virtual) collaborative learning is dued to the common assumption that Information Communication Technologies (ICTs) has growing possibilities to provide a rich learning experience by using a variety of learning methods. First of all, there's the use of e-mail and the World Wide Web to support, supplement, and to supplant regular teaching activities. Moreover, the developments in ICT make it possible to provide programmes for external part-time students. In addition, online courses evolve to the development of virtual universities, where the institutions deliver all their couse programmes exclusively online. More and more open universities - with extensive experience of innovation in distance teaching and the development and delivery of couses to external students, with extensive research

programmes on learning theory, pedagogy, technology and other aspects of online learning - arise (Curran, 2001; Rienties, Tempelaar, Van den Bossche, Gijselaers, & Segers, n.d.).

We define online remedial education as an instruction method using ICT which helps students to provide knowledge and skills necessary to succeed in university. This way, foreign students can study in their home country, which reduces their costs while at the same time offering flexibility to develop their knowledge and skills. ICT has the power to support independent learning as well as to learn irrespective of time and geographical constraints with the wide-spread implementation of internet (Bromme, Hesse, & Spada, 2005; Jonassen & Kwon, 2001). In addition, recent research findings indicate that ICT has some a powerful tool for learning in collaborative settings where students work and learn together (Bryant, Khale, & Schafer, 2005; Schellens & Valcke, 2005). Hereafter, we persue the advantages and disadvantages of online courses in greater depth.

Advantages and possibilities of online education and learning

According to Curran (2001), online learning is already a substantive actitvity in universities and other tertiary teaching institutions, with significant potential further growth. The author defines different potential advantages of online education and learning. The absence of temporal and spatial constraints means greater flexibility for teachers and students. The easy accessible, fast and low-cost means of communication allow students to contact their tutors easily and often receive an early response. Furthermore, students can access materials for directive study, browse the web, search and retrieve information from online databases, download simulations, interact with case materials, and conduct virtual experiments. Besides all these advantages, course materials can be presented in different forms, such as text, sound, graphics, moving images or computer simulations. Audio or video streaming can be used to deliver presentations by academic staff. Students can work individually or can participate with peers in different forms of collaborative learning. They can access web-based resources and communicate with specialists and experts in the wider world. The author labels the phenomenon of online learning as pedagogically effective, cost efficient and socially beneficient (Curran, 2001).

According to research (El Mansour & Mupinga, 2007; Yang & Cornelius, 2004) students' positive experiences with online education are:

- Flexible instructional pace and flexible class participation
- Elimination of barriers of time and space
- Cost-effectiveness of online courses
- Electronic research availability (digital libraries and online databases)
- A well-designed online course makes it easy for students to navigate and find the adequate information

Disadvantages and problems of online education and learning

On the other hand, the new opportunities offered by ICT also create new barriers (Mac Keogh, 2001). Research (El Mansour & Mupinga, 2007; Yang & Cornelius, 2004) claim that students' negative experiences are caused by:

- Delayed feedback from the instructor
- Unavailable technical support from the instructor
- Lack of self-regulation and self-motivation
- Sense of isolation, caused by the lack of interpersonal communication and interaction among students or between students and the instructor, or caused by the use of monotonous instructional methods
- A poorly designed course interface makes students feel lost in seeking information

Moreover, the potential of ICT is also leading to fears of the 'digital devide' where ICT will enhance further social exclusion, creating a society of technological haves and have nots. The dominance of the English language on the internet also causes concern (Mac Keogh, 2001).

The implementation of online education and learning

At a pragmatic level, there's evidence of a substantive degree of consensus with repect to the adoption of particular pedagogic strategies in online learning, based on the perception of students as independent learners. By providing facilities for collaborative dialogue and task completion, with greater emphasis on small group work and exploratory learning, in other words, by 'empowering the learner', students are supported in their learning process. Tutor-student interactions, mentoring, promoting student dialogue and the design and evaluation of virtual seminars are examples of aming at better quality and efficiency of online learning (Curran, 2001). Debande (2004) claims that four strands must be integrated into a comprehensive policy: infrastructure and equipment, high-quality educational multimedia sevices and content, training services and facilities for teachers and for lifelong learning, and dialogue and cooperation at all levels. Moreover, the implementation of a comprehensive online learning strategy should incorportate three stages: infrastructure, content and teacher training (Debande, 2004).

Although research in remedial education in physical settings provide important factors for success (Kozeracki, 2002; McCabe & Day, 1998; Roueche & Roueche, 1999), based on literature and research concerning online education and the role of ICT in education, the following aspects are to be taken into consideration (Rienties, Dijkstra, Rehm, Tempelaar, & Blok, 2005a; Rienties, Rehm, & Dijkstra, 2005b; Rienties et al., 2006):

- 24/7 online availability and accessibility: the use of the internet makes it possible for students to work or study wherever and whenever they want to (i.e. ubiquitous learning)
- Adaptiveness: every student carries his personal luggage of (prior) knowlegde and has a unique learning style. Therefore every course should offer an individual learning path, based on this prior knowledge, learning style and the preferences of the student. In other words, a course should adapt to the individual needs of the students
- Interactivity: in an electronic learning environment, the communication between teachers and students should be actively stimulated. Therefore there needs to be an intensive use of the communication and interaction methods in order to enhance the involvement, the learning profit and the active and authentic learning of the students
- Responsiveness of feedback: feedback seems to play an important role in the interaction of an online course or programme. Students seem to have an interest in quick and direct feedback on their performances. Furthermore, rapid feedback stimulates interaction in an online course
- Flexible learning methods and assessment: the learning environment should not be hindered by the limitations of the technical, organisational and didactical organization of the electronic learning environment

Brown and Bradley (2005) encourage a participatory design and implentation approach, where the e-learning system is a two-way street, allowing early and ongoing communications between designer and users (Brown & Bradley, 2005). The authors suggest some additional elements at the heart of effective e-learning design:

- Activity: a rich activity refers to an activity that opens up opportunities for action rather than an activity that directs students down a prescribed pathway. It implies an active involvement of the learner in making choices about what experiences they will engage in. The action must be considered from the perspective of the actions and challenges it affords to the student
- Scenario*:* besides activity, there needs to be a reason or motivation to undertake an educational activity if the learning has to be memorable and considered valuable. An interesting context or scenario can assist the activity to have meaning
- Delivery*:* good educational design relies on appropriate delivery to reach its full potential
- Context*:* not only the context in which the e-learning will be used is partially predictable for the design of the e-learning resources, the broader context to address the learning needs is relevant as well. Elements of activity, scenario and feedback need to take into account the users' profiles and the delivery element needs to consider the technical infrastructure. However, additional contextual considerations include the institutional objectives of the e-

learning programme, the role and skills of the instructor, the longevity of the resources and cultural sensitivities

- Influence*:* the influence of the e-learning design can be addressed from, for instance, the way that it will affect the learner, the ramifications that it will have for the learning (and broader) community into which it will be implemented, and the environmental influence of its development and use

Conclusion

In this literature review, we first examined what is meant by remedial or developmental learning and education. The situation concerning remedial or developmental education in the United States of America appeared to be very different from the European situation. Whereas remedial education in the United States is prevalent, remedial education in Europe is still a rare phenomenon, although several European higher education institutes have started to offer remedial programmes as well. This can be explained by the fact that both secondary and tertiary education are determined on a national level, despite the efforts of the European Union to create one educational unit (i.c. the Bologna Agreement). Globalization, internationalization, commercialization and Europeanization have stimulated and enhanced the mobility of students and educational staff both in Europe and the world. This movement has created new challenges for higher education, not only to create new possibilities for a more flexible world of education, but also to bridge the gap among national and international students regarding to their prior knowledge, background and perspectives.

The literature scan on the effectiveness of remedial or developmental courses provided us four common characteristics. The first success factor includes incentives, support services, and emotional and social support (Jacob & Lefgren, 2004; Kozeracki, 2002; Levin & Calcagno, 2008; Merisotis & Phipps, 2000). Then there's the need for a highly structured curriculum, with clearly defined goals and objectives (Jacob & Lefgren, 2004; Kozeracki, 2002; Merisotis & Phipps, 2000). The third success factor is adequate straff training and professional development, defined by Jacob and Lefgren (2004) and Kozeracki (2002). The fourth success factor consists of using multiple approaches, such as both individual work and collaboration and teamwork, and alternative technologies (Levin & Calcagno, 2008; Merisotis & Phipps, 2000). Levin and Calcagno (2008) define a fifth and very important factor. The use of concrete, real-life applications in the remedial course, based on students' interests and motivation, increases the effectiveness of the remedial course.

The success factors defined in the literature, namely the integration and inclusion of the use of realistic and challenging problems (i.e. concrete applications), with opportunities for collaborative work, interaction, communication and cooperation (i.e. learning communities), with the encouragement of and guidance for students, and the use of alternative instructional strategies and technologies create great possibilities and opportunities for students in (remedial) education, are clearly aligning with the potentials ICT offers in the field of education. The lack of temporal and spatial constraints (27/7 online availability and accessibility) creates a greater flexibility for students and teachers. The easy access to fast and low-cost means of communication, allows students to communicate and collaborate synchronously and asynchronously with others (like peers, teachers, experts in the field) (i.e. learning communities), to gather information (concrete applications) and to approach the content or information through multimedia and different perspectives (i.e. alternative instructional strategies and technologies) (Curran, 2001; Rienties et al., 2005a; Rienties et al., 2005b; Rienties et al., 2006). This means students can meander independently or collaboratively through the content. Therefore they experience connectiveness with others. Students' experiences with online education are positive under the conditions that there's quick and direct feedback and adequate (technical) support of their teachers and a highly structured and well-designed course interface, in order to enhance their search through the information (El Mansour & Mupinga, 2007; Yang & Cornelius, 2004).

Debande (2004) defines four elements that need to be integrated in order to implement an efficient and successful online course. There needs to be a well-designed infrastructure and equipment as well as high-qualilty educational multimedia services and content. Furthermore, teachers need to be well trained and there needs to be dialogue and cooperation at all levels, at all times. This comprehensive policy shows a clear similarity with the crucial characteristics of a successful remedial course, defined by Jacob and

Lefgren (2004); Kozeracki (2002); Levin and Calcagno (2008); McCabe & Day, 1998; Merisotis and Phipps (2000).

The European challenge nowadays consists of developing efficient and successful online remedial courses, with respect to the defined core elements of on the one hand successful remedial courses and on the other hand successsful online courses. There seems to be a great resemblance between the potentials of ICT in the field of education and the success factors of a remedial course: concrete applications can be explored, individually or collaboratively, through multiple approaches (like instructional strategies and technologies). Moreover, ICT offers more flexible ways to provide support and guidance by teachers. Nevertheless, a well-structured interface and content, with clearly defined goals and perspectives is required. Therefore, adequate straff training is essential.

The question that rises is why so limited initiatives have been undertaken, while these two inevitable evolutions in the field of education match so well together.

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Establishing a European Framework of Transitional Preparatory Courses

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Due to increased mobility and heterogeneity of students in Europe and corresponding transitional problems from one learning programme to another, an increasing number of higher educational institutes are responding by more elaborate selection processes (Van der Wende, 2001, 2003) as well as offering a variety of (electronic) preparatory programmes (Rienties, Luchoomun, Giesbers, & Virgailaite-Meckauskaite, 2008; Rienties, Tempelaar, Dijkstra, Rehm, & Gijselaers, 2008; Rienties, Tempelaar, Waterval, Rehm, & Gijselaers, 2006) in order to smoothen the transitional barriers of life-long learners. As a common standard to assess competences and knowledge in Higher Education in Europe is not expected in the near future, each institute has to determine whether a student from another Member State is accepted to a learning programme or not. Offering preparatory courses to smoothen the transition might seem an attractive option for those who lack skills or knowledge. Some form of remedial education might improve academic integration or even completion rates (Tempelaar et al., 2007; Wieland et al., 2007). However, due to a lack of quality control of preparatory courses in Europe, the effectiveness of bridging activities across Europe remains unclear. In this round-table, we will discuss our preliminary findings on developing a European Framework for Transitional Preparatory Courses (EFTPC). This framework should allow practitioners and policy-makers to compare the different preparatory courses across Europe. Based on the literature review, identification of practices and recipes for developing preparatory programmes, a first version of the EFTPC will be discussed with the audience. This framework should be practical, evidence-based and preferably sufficiently flexible to fit into most contexts within the European Member States. In particular, the relationship between the pedagogical approach used, the population, primary and secondary learning goals, learning process and learning outcomes/performances will be analysed and compared. In contrast to other frameworks, EFTPC is dynamic and designed in an "open-source" manner. The final aim of the EFTPC is a methodology to be able to compare good and bad practices of defining knowledge gaps and offering preparatory courses across European Member States.

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Modelling Mobile Agent Mobility in Virtual Learning Environment (VLE) using Fitness function

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Abstract: Virtual learning Environments are driven by distributed systems. Effective distributed systems communications requires intelligent mobility as a vehicle to enabling seamless resource sharing and access to services. The nature of VLEs requires software tools for managing and making learning enjoyable and less painstaking. Mobile agents enable different software and services to collaborate in information sharing, adapt to new service requirements, demonstrate cooperation in a system environment, however being independent and autonomous. These requirements are essential in achieving mobility in VLEs. This work presents a novel fitness function as a key feature of a generic software methodology for modeling mobile agent mobility in VLEs.

Introduction

Virtual Learning Environments (VLEs) are group of software used for managing and enhancing learning electronically (Roach & Stiles, 1998). This facilities and functionality enables tutors, instructors and students communicate online (Ginsburg, 1998). VLE should have the capabilities to enhance student learning experience based on the requirements of the programme a student is enrolled hence enriching students learning experience. Heaton-Shrestha, , Ediringha, Burke and Linsey (2005) also defined VLE as web-based software products providing sets of internet tools to enable teaching materials to be managed. Pablo and Wallace (2001) explained the VLE is not only dependent on the its accessibility, availability and the integration of the technology for the benefits of students but rather on the willingness of tutors to embrace and use computers for the delivery of course materials. Apart from VLE supporting teaching, learning and certain administrative functions, it also has the ability to facilitate communications among learners (Booth & Hulten 2003). The modes of communication are both asynchronous and synchronous. Again, VLE mode of delivery can be synchronous, asynchronous and/or both (Chen, Li & Shyu, 2003). These forms of communications are emails, booking appointments, negotiating assignment deadlines, social interactions with other students via blackboard learning.

This paper reports on a study conducted to ascertain the requirement for developing Virtual Learning Environments (VLEs) and how these needs are met using fitness function for modelling the solution to meet the requirements and demands of such as system. The systems used for this study was University of East London blackboard Learning System called UEL Plus. We realized that UEL Plus has multiple features to support teaching and learning. UEL Plus provides an improved communication, access to resources and advanced assessment capabilities. Our study focused fundamentally on the UEL Plus which part of VLE. The rest of the paper is organized as follows: Section 2 will describe end user categories and section 3 will highlight the mobile agents as a solution. Section 4 will introduce mobile agent fitness function and Section 5 will discusses the mobility in VLE in section 6 draws conclusions.

User Categories

We identified two main user groups for this study. They are front-end and back-end users. According to Sampson, Karagiannidis, Schenone and Cardinali (2002) formal, vocational, life long and occasional learners fall under the front end users category while individuals, software houses and other organization whose main interest are developing management learning and virtual learning software. Basic functions and or task on a VLEs are;

1. Authentication and authorization
2. Editing and saving personal settings
3. Navigation through the site

4. Using available communication tools
5. Building course content
6. Assessment
7. File Upload

Front end users need these basic functions to be user friendly and easily accessible. This form of interactions between users and the software is at the heart of e-learning development.

Back end users uses information and input from the front end users to map up these functions of the front end users to the solution provided by back end users with respect to developing knowledge repositories and resources.

Mobile Agents an Alternative Solution

Our experiences in evaluating UEL Plus identified certain areas where an agent could be used in modeling interactions and communications during the systems development as we believe that it will considerably improve performance and front end user experiences of UEL Plus. The areas where we had feedback relating to front end user experiences were:

- Uploading of files
- Maintaining files and folders on VLE
- Using communication tools for creating asynchronous discussion, emails and chat
- Monitoring and tracking progress of students
- Other emerging technologies that could be added on

Based on these feedbacks, we proposed a solution into the modelling of mobility in mobile agent for VLEs. Gutl et al. (2004) identified three main objectives as an innovative solution in e-learning systems. These objectives were;

- Personalized retrieval of information,
- Presentation and management of relevant learning material in a timely fashion; ability to support teaching and learning paradigms and lastly
- An improvement on knowledge with respect to front end users behaviour in human to computer interaction.

In the following section we will show how we used the fitness function to model solutions for the critical areas of applications that require mobility such as VLEs.

MOBILITY FITNESS FUNCTION

Mobility fitness function is a function derived from an algorithm, based on the concept of survival of the fittest in genetics. In this section we defined elements for the mobility requirement for the mobile agent. The list is not exhaustive but only a representation for the fitness function.

Let F be the function denoting key mobility requirements for a mobile agent.
Let f_1 to f_{15} be elements in the same set F.

f_1 = Synchronization
f_2 = Latency
f_3 = Abstraction
f_4 = Polymorphism
f_5 = Inheritance
f_6 = Persistency
f_7 = Calling
f_8 = Invocation
f_9 = Message Passing
f_{10} = Naming

f_{11} = Addressing
f_{12} = Encoding
f_{13} = Availability
f_{14} = Replication
f_{15} = Self Protective and Certified

Melomey, Williams, Imafidon, & Perryman (2008) established the implementation of generic mobility fitness function based on the following steps:

- Initial population should be randomly created for mobile agent *m(0)*
- the fitness function *U(m)* should be computed for each individual mobile agent *m* in current population *m(t)*
- probability for selection *p(m)* for each individual mobile agent in *m(t)* should be defined, such that the probability *p(m)* is equal to *U(m)*
- *m (t + 1)* generated
- Selection of individual mobile agents using probability *m(t)* to produce new agents which is known as offspring via crossover, mutation or reproduction

Let $F(X) = (x_1 \ldots . x_n)$

The fitness function U (m) = $(x_1 \ldots . x_n)$

Where U (m) = $(1/e+x)^2$

$$U(m) = m(t) + \sum_{x=1}^{n} m(t+1) f(x)$$

The above expression represents a fitness function in an inverse relationship to a fitness solution.

The fitness solution derived from the fitness function is applied in the second of the four major phases thus;

1. Mobility requirement
2. Mobility analysis
3. Mobility design and
4. Implementation of code.

Fitness Function for VLE

In the following subsection we will show how we used our fitness function to provide solution for VLE issues identified in section 2.

Addressing

There are certain elements that need to be present for an entity say agent to be able to travel from its platform of origin Hp_i to a host platform Vp_n. These requirements are required to perform address resolution prior to process migration. Three elements that need to be present are:

Receiver identification (RID)
Packet identification (PID)
Transmission Frequency of physical layer (TF)

Let R be the set requirement RID, PID, TF

Let H be the set header fields that contains control information
L be length of the packet
p be payload type
s be sequence numbers
i be integrity check information

$R \subseteq H$

Each computing platform is identified by global assigned address. A process will be able to migrate if it contains a header field carrying control information. The address resolution client which is the host platform needs to verify the integrity, authenticity and the logical address for resolving information sent across different platforms.

A platform hosting each mobile agent need to ensure mobile agents on its platform has a valid server and address resolution is also valid. Authorisation of available address to be used should be authorised by servers in order to ensure validity of the address.

Replication

High availability of services is paramount to mobile distributed computing as it enhances performance. It is a technique that is used to maintain copies of data in geographically dispersed environment and also as a back up in the event of loss of data or a systems failure (Coulouris, Dollimore, & Kindberg, 2005). The fitness of a replica will be measured in real time by the function of the differences in elapsed time. This ensures consistency and correctness at anytime for events. This represented as:

F (t): $f_{t+1} - f_{t-1}$

Where f_{t+1} is the current time replica server was accessed

f_{t-1} last known time a replica was accessed

Remote Method Invocation (RMI)

A method transparently invoked from process A to process B across a network as if it were a local method is termed as remote method invocation (Coulouris et al.2005; Williams 2000). This holds true for object oriented language rather than a procedural language. Invoking a method remotely involves two processes:

1. a reference to the remote object
2. a registry to store remote references

Let *n* be the number of identified elements for solution X

x_i be elements in X

$f(x_i)$ the fitness of x_i

The fitness of F can then be defined as

$$F(X) = {}^{1}/_{n} \sum_{i=1}^{n} f(x_i);\ n>0$$

We define the average fitness above as average fitness for the elements in the mobility requirements as identified.

F(x): Hp_i à Vp_n

Persistency

The Object Management Group (OMG) service stipulates a typical structure for persistency. This should consist of persistent ID, persistent object, persistent object manager, persistent data store and protocol. A persistent object or entity that need to travel from Home platform (Hp_1) to visit (*n*) number of visiting platform (Vpn) require a reference ID, a dynamic state that lives the duration of the process and a persistent state that will be used for reconstruction of the dynamic state in case of a failure. These conditions qualified for an entity to be mobile in an environment.

Naming services

The Sun Microsystem naming services system administration guide defines naming services as a central repository that computers, end users, and applications communicate together across the network. In this work, we also define name services as integrated services that manages all name information and hierarchies and also as an autonomous feature for transparency and persistency of entities (Melomey et al. 2007). Its function is to provide basic function and mapping of name to address on the network. In order to get the remote computer's address, the program must request assistance from say Hp_1 from the domain name services (DNS) database running on that platform. DNS is a naming service which provides identification for computers on the internet . The name server uses Hp_1 as part of the request to find IP address of the remote computer. The name server returns this IP address to the Hp_1 only if the host name is in its database. It uses a logical tree to resolve names as part of the service

Synchronization

Synchronization is important to maintain consistency of processes from H_p to V_{pn} at any given time (Coulouris et al.2005). The concept of clock synchronization deals with the understanding of ordering of events occurrence as produced by current processes. These events occur between message sender and message recipient for example from process A to process B. Clock synchronization is required to provide mechanism that can assign numbers sequentially based on agreement between sending and receiving processes. Several algorithms were developed over past decades. Lamport (1978) introduced the concept of an event happening before another in distributed environment. The notion is illustrated between event *a* and *b*; *a* à *b* where *a* "happens before" *b*. Another algorithm developed by Lamport and Meilliar-Smith (1985) require a reliable connected network to handle fault. Christian's algorithm measures in local time the time at which a message is sent (T_0) and the time at which a message is received (T_1). This is done by issuing a remote procedure call to a time server to obtain the time. The delay in the network is then estimated as $(T_1 - T_0)/2$ (Christian, 1989). Hence the new time can be said to be the time returned by the server and in addition to time elapsed by the server to generate the timestamp. This is expressed by $Time_{new} = Time_{server} + (T_1 - T_0)/2$. There is also the Berkeley algorithm which was developed by Gusella and Zatti (1989). Berkeley algorithm was based on the assumption that any computer on the network has an accurate time which can be used for synchronizing time between processes. This assumption may introduce delays and losses depending on the network and also due to the distributed nature in accessing the network and the processing capabilities on the learning system.

Let S = Synchronization
- H_p = visiting platform
- V_p = visiting platform
- V_{pn} = *n* visiting platform
- P_n = *n* number of processes

The timescale for measuring Δs is important where S which synchronisation is a derivative of the f(x) which is $^{\Delta f}/_{\Delta s.}$ Measuring the short time for *n* processes is dependent on how fast changes occur in the system. The time range between which *n* process leaves H_p and arrives at V_{pn} can be expressed as:

$$F(x) \text{ à } \Delta t = \int_{t}^{t+\Delta t} f(s)\, dt \quad \text{where the interval is } [t, t+\Delta t]$$

F(*x*) is a complex system during its evolution; the system may change its own F

Discussion

In our study using UEL Plus, we analyzed feedback, identified student lecturer issues and evaluated mobility solutions for back-end user category. Solutions we designed using mobile agent oriented approach addressed synchronization, remote method invocation, addressing and naming services, persistency and replication of data. We examined the persistency of data and how they were mapped into the objects. We enabled the mobile entity to have an internal mechanism which acts as a persistency layer such that it will encapsulate database access from other objects. In this manner, data persist after any form

of interruption and interaction occurs during the course. A fitness function for modelling and testing features appropriate for persistency of objects is critical in such as environment.

Front end users are more interested in up to date, timely and current state of databases. This implies that concurrent data access and update of repositories should be synchronized. This is more crucial when it comes to coursework submission for group projects, where continuous and joints updates are required from individual team members when approaching deadlines. Synchronization then becomes an issue for the back end users to deal with in order to ensure consistency of data, processes and clock synchronization of various remote devices connected to the network infrastructure. Our work indicates that there is a connection between replication of data at various server locations with respect to change in time among primary and secondary servers. This also applies to resolution of names and addresses.

We had the understanding that front-end users were looking for a unified point of authentication for ensuring coherent and an organized teaching and learning resource platform. Consistent and coordinated naming of objects and identification of processes underpins the need for metadata as a means of providing effective mobility. These needs are met based on the conditions that must be met for remote method or data invocation's fitness function criteria. The fitness function measures the suitability for elements mobility in the VLE.

Conclusion

In this paper, we presented an overview of VLE and user categorization. We also presented fitness function for mobility as alternative solution to traditional approaches in eliciting requirements for implementing mobility in VLEs. This mobility fitness function was further illustrated by applying it for mobility element requirements specification. This was further narrowed down to individual mobility requirement mapped unto their fitness solution applicable to the development of VLE and it was used to provide a solution tailored for simulating effective mobility in UEL Plus.

Currently, work is being done to integrate this fitness function as part of a generic methodology for capturing mobility in mobile agent based systems and applications. This when concluded will provide a standard methodology for building applications where mobile agents are seen as an alternative approach to information systems development.

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Teaching Part-time Students Using Computer Supported Collaborative Learning

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Abstract: The University of Applied Sciences Technikum Wien offers 11 bachelor degree programs and 15 master degree programs. Students can choose between full-time and part-time programs. Most of the part-time students are pursuing a profession. Therefore, their amount of time of attendance is much less than the amount of time that full-time students spend in class. For part-time students special suitable teaching methods need to be introduced to ensure a top quality education. Especially for this part-time students the University of Applied Sciences Technikum Wien offers different types of E-Learning and Computer Supported Collaborative Learning via different online tools like the Campus Information System (CIS), instructor moderated newsgroups, Wikis and others.

Computer Supported Collaborative Learning as well as some other combinations of non traditional teaching methods is used by the authors in several courses. This paper shows some best practices in using a variety of teaching methods. It even evaluates the experiences especially in courses for part-time students.

Introduction

The University of Applied Sciences Technikum Wien offers 11 bachelor degree programs and 15 master degree programs. Especially at master degree level most of the studies are part-time programs. Students are used to be employed. They attend university classes only a few days a week in the evening and contact time between students and lecturers is as well limited as the time they stay learning together with other students. Because of this fact it was essential to rethink organization of learning and teaching. Therefore new technologies and mainly new teaching methods have been introduced at the Technikum Wien.

The authors try to answer some questions like:

- Do Computer Supported Collaborative Learning methods close the gap between less time of attendance and a high quality education?
- Acquiring knowledge is just one important factor of education at universities and higher education means more than just knowledge transfer. Today's businesses require also some "soft facts" like the ability for team working. Do the designed teaching methods also affect other skills of students? Do they influence social skills like communication or the ability to work in a team?
- Can Computer Supported Collaborative Learning also help to support Self Directed Learning?

Computer Supported Collaborative Learning and E-Learning at the Technikum Wien

"Computer Supported Collaborative Learning and E-Learning" includes the phrases *computer support*, *collaborative learning*, and the all-embracing *E-Learning*. These indicate different steps of integrative complexity. Lecturers at the Technikum Wien can choose a wide range of possible technologies.

The Campus Information System (CIS)

At the Technikum Wien a centralized web platform called the Campus Information System (CIS) supports students and lectures in their daily work. On the one hand all relevant information about university life and on the other hand all important information about lectures are presented. Every lecturer and every student get a personalized view to focus on his or her personally needed information. So for example

lecturers see all lectures they have to teach with all possibilities for adding teaching documents or assessing students. Students have access to all necessary documents; they can view their remarks, or request their individual time schedules.

Figure 1 shows a personalized view for a lecturer. The area indicated by number *1* gives access to some organizational parts like the personal time schedule or an overview of all lectures. The areas at the right show information and possibilities to administrate one specific lecture. In this case the lecture with topic Database Design is shown. Area number *2* offers possibilities to organize the lecture regarding to the curriculum or to manage documents needed for the learning process. Area number *3* links to the newsgroup server. By default each single lecture has its specific newsgroup that can be subscribed. Experiences about newsgroups can be seen below. Finally, area number *4* allows assessing students.

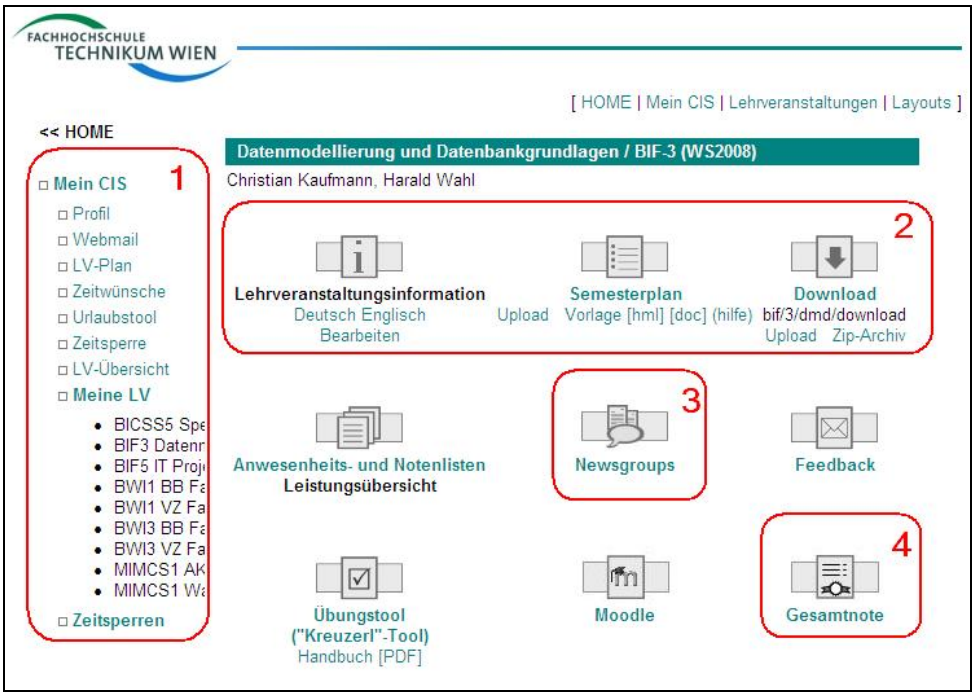

Figure 1. A lecturer's personalized view at the CIS.

Using the CIS, each single lecture can be planned independently. One can choose the complexity of electronic support, starting by simply providing electronic documents up to a full integration of the E-Learning platform Moodle – from the simplest way of Computer Supported Learning to Computer Supported Collaborative Learning.

Download directories

The easiest way to support students by electronic documents is to provide documents for download. For all lectures a download directory is accessible form everywhere over the internet. A drawback of this method is that the one and only way to structure these documents is storing them into subdirectories or by naming conventions. Communication – if it is communication at all – is done just in one direction namely from the lecturer (he or she provides the documents) to the students (they download the documents).

Newsgroups and instructor moderated forums

Every lecture is linked to a specific newsgroup at the Technikum Wien newsgroup server as well as to a web based forum. The lecturer chooses the usage of one of these technologies.

In both cases it is a one-to-many communication, i.e. it is done from one single person to all others who have access to the newsgroup and the way around. Everyone can ask a question that can be answered from anyone, even from the lecturer. All statements can be viewed by everyone. There is a tiny difference

newsgroups an instructor moderated forums where an instructor, i.e. the lecturer, has more potential to structure the discussion entries. He/She has even the possibility to edit posts.

While the quality of newsgroup postings highly depends on discipline of the students the forum entries can more easily be structured and controlled. The lecturer's role is to guide the students. Figure 2 shows the newsgroup entries for a lecture Database Systems. It shows the posts of students or lecturers and the indented corresponding answers and re-posts.

Subject	Sender	Lines	Date
die datenbank geht nit	Christo...	2	28.04.2008 21:36
ÜB3: "Zusatzpunkte Umbuchung"?	Herber...	15	03.05.2008 08:39
Re: ÜB3: "Zusatzpunkte Umbuchung"?	Hassan...	27	03.05.2008 10:45
Re: ÜB3: "Zusatzpunkte Umbuchung"?	Rene R...	33	03.05.2008 11:01
Re: ÜB3: "Zusatzpunkte Umbuchung"?	Herber...	38	03.05.2008 11:45
Re: ÜB3: "Zusatzpunkte Umbuchung"?	Peter G...	40	03.05.2008 20:51
Re: ÜB3: "Zusatzpunkte Umbuchung"?	Gregor ...	47	04.05.2008 18:04
Re: ÜB3: "Zusatzpunkte Umbuchung"?	Herber...	71	05.05.2008 17:04
Frage an die Lektoren/Studenten - Prozeduren u...	Philipp ...	4	13.05.2008 16:50
Trigger benennen sich selbst um und lässt sich n...	Herber...	27	15.05.2008 20:15
Trigger: Wie stoppe ich die Ausführung eines DEL...	Stefan ...	13	15.05.2008 21:10
Demo-Prüfungen...	Harald ...	8148	17.05.2008 01:00
Bei wem läuft C# + Oracle? (Oracle Client?)	Herber...	21	17.05.2008 19:47
Re: Bei wem läuft C# + Oracle? (Oracle Client?)	if06b13...	35	17.05.2008 20:01
Re: Bei wem läuft C# + Oracle? (Oracle Clie...	leon	6	17.05.2008 20:45
Re: Bei wem läuft C# + Oracle? (Oracle ...	Herber...	24	17.05.2008 21:11
Re: Bei wem läuft C# + Oracle? (Oracle Client?)	Kerneg...	30	17.05.2008 23:58
Re: Bei wem läuft C# + Oracle? (Oracle Clie...	Herber...	49	18.05.2008 00:06
Re: Bei wem läuft C# + Oracle? (Oracle ...	if07b13...	73	18.05.2008 00:30
Re: Bei wem läuft C# + Oracle? (Oracle Client?)	Rene R...	41	22.05.2008 11:18
Re: Bei wem läuft C# + Oracle? (Oracle Clie...	Herber...	57	22.05.2008 12:38
Re: Bei wem läuft C# + Oracle? (Oracle ...	Rene R...	62	22.05.2008 13:48
Re: Bei wem läuft C# + Oracle? (Oracl...	Peter G...	66	22.05.2008 16:44
Re: Bei wem läuft C# + Oracle? (Or...	Herber...	78	22.05.2008 17:07
Re: Bei wem läuft C# + Oracle? ...	Peter G...	80	22.05.2008 17:41

Figure 2. Some posts at the newsgroup of Database Systems.

Wiki System

The Wiki System at the Technikum Wien is a web based application with a specific rights management. The Wiki is structured into namespaces (i.e. the lectures are shown on the left part of page as can be seen in Figure 3). Students and lecturers of a lecture have access to the corresponding namespace. Access means that one is allowed to *read the content* of a namespace (compare the right part of page in Figure 3). Specifically access in the Wiki means that all these users are also allowed to *edit the content*. A characteristic of a Wiki is the possibility to quickly and easily edit the content. Wikis are an easy to use way for supporting collaborative learning.

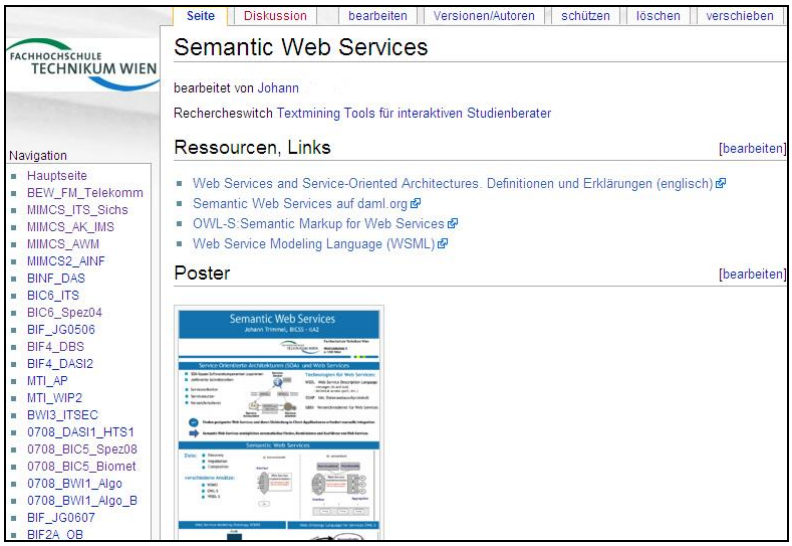

Figure 3. A content page of the Technikum Wien Wiki.

Moodle

This year the open source E-Learning platform Moodle was launched at the FH Technikum Wien. This platform allows lots of learning and teaching methods including all above mentioned techniques. As Moodle is brand new at the Technikum Wien there does not exist many experiences so far.

Best Practices of Teaching Methods

Using computer supported teaching methods differs completely from traditional teaching methods. It is absolutely necessary to work out a concrete concept of the planned lecture. Some best practices of the authors especially in using Wiki systems are mentioned here.

Group puzzle in combination with a Wiki system

A group puzzle is a self organized learning method where the learning content of a course is split up in parts an worked out by student in teamwork. A group puzzle is operated in two phases. Phase one is called the research phase and phase two is called the explanation phase. In the first phase, students form groups. Each so called “expert group” has to do a specific topic, which means reading articles and research books and the internet on that subject. The result is a compendium of the important facts for a topic which will be used in the following phase. The second phase is characterized by reorganizing the groups. Every new formed group must contain at minimum one member of every group of the first phase. Based on the documentation done in the expert phase a representative of each phase one group explains his research topic to the other members of his new group. All members explain their specific research topics.

The crucial points of this method can be summarized as:

- Deep understanding of research topic
- Good documentation of essentials of research topic
- Concrete explanation in phase two
- Willingness of discussion

Some of the points can be supported easily by the lecturer except for the quality of documentation – a fact that leads to poor learning outcome. As a consequence it is very important to get the students to prepare high quality documentation in the expert phase. A solution can be found by forcing the students to write the actual state of research into a Wiki system. At any time everybody can look at the current state of documentation. Lecturers can evaluate the quality of Wiki entries and can give direction quickly.

Experiences

The main effort for using traditional teaching methods is mainly given in the preparation of a course, i.e. before the lecture starts. Computer supported (collaborative) learning works best if the lecturers assist the students. Lecturers' availability at any time points out to be the major effort.

The problem of little time of attendance

Part-time students are used to attend less time at university than full-time students do. Here computer supported (collaborative) learning methods should help. Collaborative in this context mostly means virtual team work on the students' side. But it means team work in the field of cooperation between students and lecturers as well. Lecturers' main task is to guide the students on their way. Guidance can be obtained by defining a concrete structure for learning. But even controlling the actual progress of the students and forcing them to work further on can be a form of guidance.

What about social skills?

What are social skills? Can social skills be measured by the way how students communicate? Can it be measured by the way they manage themselves and a team they are working with? Or are social skills also the ability to objectively evaluate others or the work of others? For sure, social skills are much more. But communication and evaluation can simply be implemented by computer supported methods. Communication is the main factor for the success of reaching a team goal. If two-way assessment is part of the final remark students learn to neutrally assess each others.

Is self directed learning far apart?

Lecturers can assist self directed learning by pre-organizing the learning process and predefining structures. But self directed learning is sometimes a lack of motivation for the needed effort. Highly motivated students mostly do not have problems to organize themselves and to learn in a self directed way. The others for example, can be supported by using team dynamics. The group puzzle for example has dependencies, if students in the first round do not fulfill their task properly students in the second round cannot benefit from the team work. Assistance in communication can overcome that kind of difficulties.

Conclusion

Computer supported learning at the Technikum Wien has a wide range of possibilities. The simplest way is achieved providing electronic documents but even computer supported collaborative learning is possible. Due to less time of attendance especially part-time students need a higher grade of support. Well designed courses and the right set of methods are needed.

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Digitizing Courses for Flexible Educational Scenarios

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Abstract: Working in an environment supporting teachers to enhance their courses with e-learning tools, we constantly try to offer facilities for teaching and learning and see what effects they have. Not always in an experimental setting, no on the contrary, often in a quick and dirty way to see what obstacles arise, what first glimpse impressions are and how a larger scale implementation could be organized. In this way we decided to offer as much learning material in a digital format as possible for one specific course. All learning resources were reduced to hyperlinks and lectures were recorded for online publication. By doing this, we tried to answer the question whether the effort was compensated by the added value of digitizing. The retrospective conclusion is that digitizing should only be done in situations in which the students are not able to attend regularly or if reuse of material is an option.

Introduction

In a society where lifelong learning has been adopted as a standard, discussions have changed from how to support learners to become expert information gatherers to how to educate learners to become excellent knowledge builders. This, of course, affects several aspects of the education system; choosing educational scenarios in which students learn how to relate every day problems to learning goals and activities (problem based learning (Barrows, 1997)), inquiry teaching (Collins & Stevens, 1983), learning how to be aware of the complexity of daily practice (cognitive flexibility (Spiro, Feltovich, Jacobson, & Coulson, 1992)) and how to become partner in learning (Scardamalia & Bereiter, 1996). Together with the constantly evolving educational technology and change in the student population, regarding age and geographical spread, these theories are often elaborated making use of several tools for distance education and e-learning (Sharples, 2000). And with more and more master, part time students and students studying a considerable period abroad, teachers notice a substantial and growing part of their students not attending lectures or other face-to-face meetings or going to the university library to study. Therefore they ask for online solutions and universities decide to develop tools, services and well adapted educational scenarios. This seems in line with the trend that educational institutions shift from the place where teaching and learning occurs to places where education is developed and distributed from, while teaching and learning take place at any time and place (Savin, 2006).

To answer the question whether the Faculty of Health and Medical Sciences at the University of Maastricht could enhance the attractiveness of the educational program by digitizing all study material and offering video registrations of the lectures, a pilot was conducted within a bachelor course. Without doubt, students think this is nice, but does the output compensate the efforts needed to realize this? And what possibilities arise from a service like this for future use in order to attract more part time master students and students from other parts of the continent or even further away?

Method: what has been done?

The pilot took place within a standard bachelor course: Psychology and Health (course 1.4a, 2007/8). This course is attended by that amount of students (around 300) that efforts and outcomes would be of any significance.

In stead of offering a standard e-reader, all (chapters of) books were scanned and together with links to e-journals, urls and other digital material brought together in an e-reader^{plus}. In total 793 pages have been scanned, ranging from four pages to nine chapters of a book. The making of this e-reader^{plus} took 20 hours work (16 more then offering links to online material in combination with a list of hard copy material). The students could find this in the institutional used electronic learning environment (eleUM). Besides the e-reader^{plus}, the standard UL-collection was also available to the students. The e-learning team from the University Library also supported the block coordinator in the design and use of his eleUM course.

Besides digitizing all learning resources, the lectures were also recorded and offered in eleUM (nine, taking place within a period of eight weeks). Lecturers were informed on this and instructed to ensure a qualitative good recording. Before actually offering the recordings, they had to be converted and made available via a video-server. The recording, converting and publishing were taken care of by the faculty. This took eleven days of work (88 hours). Connected to the publication of the videos, discussion boards were made available in which the students could submit questions on the lectures. The idea was to offer a place for prolongued interaction on the content of the lectures. The server the videos were stored on, has afterwards been logged to evaluate the use of the online lectures.

After the final test at the end of the course students were invited to fill in a questionnaire to express their experiences and opinion on the services (N=245, 96% response rate). The results on this questionnaire have been related to the test scores. In addition to the students perspective, also the lecturers were asked to express their experiences.

Results

(Altered) behaviour in relation to the learning resources

62% of the respondents stated having used the learning resources more then compared to previous courses. 46% also searched for additional information, besides what was (digitally) offered. 12% answered not having used the e-readerplus at all. Reasons for this were not wanting to print (4%), not in favour of studying form a computer screen (8%) or prefered studying in the university library itself (3%).

Other experiences and facts regarding the learning resources

According to the reasons the respondents gave for using the digitally offered literature (or not), they often mentioned the time gain; the e-reader components are easy to print, you do not have to come to the library to search, find and study or copy the material or find digital copies by yourself. Also the money saving aspect was mentioned; students do not have to copy to study the material at home, it is possible to read from the screen. These are the main reasons that 94% of the students think it is of high value that the literature is offered online (sometimes next to hard copies in the library). The quality of the online material is also valued high.

(Altered) behaviour in relation to the (video) lectures

The majority of the students stated to come as often to the lectures as they would have done without the possibility to watch them in eleUM. The lecturers confirmed this and noted no decrease in students present. What might have been changed is the number of students that in total ‘attended’ the lectures (both actual present and the ones watching only the video lectures). This corresponds to the feedback that 40% of the students having watched the video lectures did this because they had not been able to attend.

Figure 1 shows what (fragments of) editions have been clicked on (and on what date). It shows that after every lecture took place it was also visited in eleUM. Of course one can see towards the end of the block more fragments were (re)watched (in preparation of the final test), but also that even after this test (scheduled on the first of April), students kept watching the video lectures.

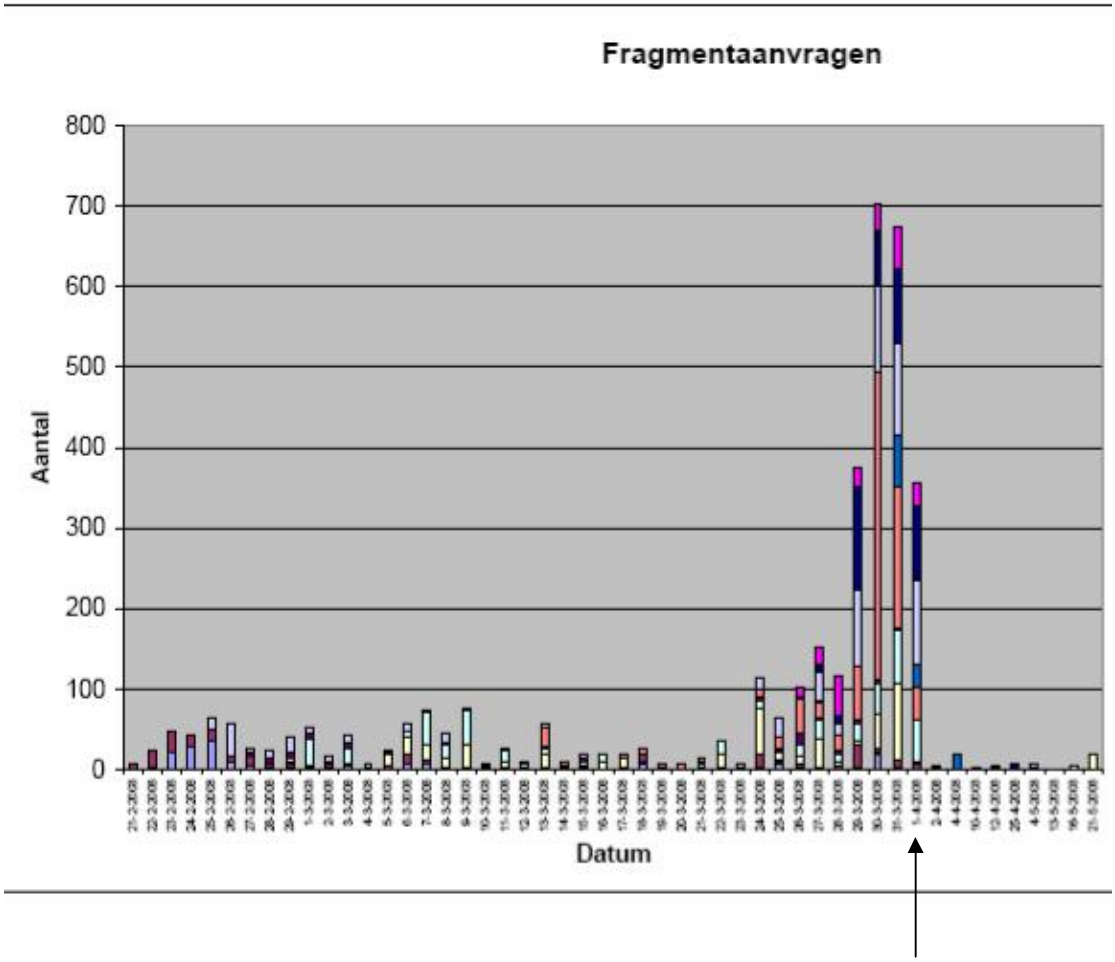

Figure 1. Amount of fragment views per day. The arrow points to the date the final test took place.

Not visible in this graph, but derived from the server log, is the fact that students watched the video lectures both day and night (mainly between 15:00 and 22:00 hours) and that they mainly watched while connected to the university network (94%).

The knowledge of being able to watch the lectures again, did not affect the amount or way of taking notes during the lectures. Only 16% stated they made less notes then they would have done without the video lectures.

Other experiences and opinions

Most students watch the online lectures at least once during the course. 40% instead of attending, 30% as a second chance option. This is affirmed by the server logs, indicating students mainly browsing for fragments of lectures, knowing what to look for, instead of watching whole lecture registrations. Striking is that students stating having used the online lectures for test preparation score significantly lower on the test (mean score 5.8 against 6.8). Assuming that watching or re-attending does not negatively affect the amount of knowledge on the topic, suggests that perhaps the weaker or less confident students tend to use the opportunity of rehearsal. The opinion of the lower scoring students differs as well: they less appreciate the online lectures, and do not feel the face-to-face lectures can be substituted by online lectures.

Although the students could submit questions or start discussions on the content of the lectures in a lecture related discussion board, they hardly did this. 60% of the students stated not having had the need

to submit questions on the content of the lectures at all, and if so they preferred to do this during the face to face meetings. Only 60 contributions were submitted to the discussion board, from which half related to topics like changes of rooms, not being able to find information or other not content related topics. Besides this lecure discussion board students could discuss task-related topics in forums connected to each of seven tasks. This was done to even lesser extent: 27 contributions in total, related to four of the seven tasks. The block coordinator participated actively in all these forums.

Responding the question whether the online services had (positively) influenced their learning or level of understanding, 50% agreed on the idea that this had raised their personal outcome. And 80% of the respondents claim that the quality of the course has been raised by digitizing the lectures and resources. The quality was rated high, the added value as well. During the course one of the students reported problems downloading the lectures at her home computer and asked for a copy on DVD or a version to be downloaded on USB-device. This could not be done due to restrictions in order to prevent unauthorized use or sharing of the material. But inquiring after the need of students to be able to watch the lectures via podcasting (on their cell phones or i-pods) only 12% responded to really like this option, 30% would perhaps use this podcasting option if made available.

Results of the course related evaluation

Besides the experiment related questionnaire, students filled out the standard course evaluation in order to compare the opinions on quality of (several aspects of) the course with other courses (these students participated in) and previous versions of the same course. According to results of these standard evaluations, one can conclude the course has been graded higher on practically all aspects; the overall opinion on the course increased from 6.6 to 7.4 (on a scale of 10), while time spent on the study went up from 10.5 hours to 13.6 hours per week. The appreciation of the lectures increased from 5.7 to 6.8. On top of this the results on the final test showed a increase of scores; 8% more students passed the final test compared to the previous year, with a slightly higher score (6.4 compared to 6.3 last year).

Results in short

- Digitizing all learning material (literature and lectures) meant 13 days more work then usual;
- Literature has been referred to more often (due to topic or course in relation to others or becasue the literature is easier to consult because of the digitizing?);
- The appreciation of the digital resources is high;
- Main reasons for this are the time gain and the ease of printing on demand;
- Both lecturers and students state lectures are visited as much as before;
- Most students watch the video lectures. 40% instead of attending, 30% as a rehearsal option;
- 75% of the respondents stated to use the video lectures to prepare for the test (Note: the students who really did so according to the server log, scored lower on the test);
- 50% of the respondents do not feel the online lectures and resources having influenced their level of understanding, 50% thinks the level reached is higher then would have been reached without;
- 8% more students passed the final test compared to the previous year, with a slightly higher score (6.4 compared to 6.3 last year);
- 80% of the students feels the quality of the course has been raised by digitizing.

Discussion & conclusion

Although the students highly appreciate the fact that all material has been offered in an online format, the costs do not seem to compensate the results (in the case of a course for ‘on campus’ students). If, however, reuse is possible, for instance for a part time or distance education version (sometimes running parallel), or if the content is of such complexity ‘attending’ a lecture again and possibly prolongue discourse, the idea is that digitizing lectures is worthwhile. The same goes for the literature: only for students not able to visit the library on a regular basis or if more interactivity with the material can be offered (like linking to other sources, or a marking or annotation function), the expenses for digitizing (in cooperation with the publishers) seem to be justified. Important to be aware of is the opportunity lecture registrations offer for reuse; instead of inviting students to come to the university to listen a teacher orate, one could cut lectures in pieces and combining them with assignments, offer them online and have students

elaborate on the fragments in several ways. You offer the students material to plan their study in a more flexible way, but you also make the material more flexible (based on a wider variety in teaching and learning modes). If this affects the content of the lecture needs to be focused on. The topic of podcasting is another one: can this make the learning environment even more flexible and how does it affect the content and organization of the course? Also the aspect of online discourse on material needs further study; what do students need to start online conversations on study topics? And can these really contribute to better understanding and higher participation of students?

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From Virtual Mobility to Virtual Erasmus
- The European Portal of International Courses and Services

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Introduction

In the political and societal discourse of the developments in higher education, students' mobility has become increasingly important. But talking about student mobility usually means talking about physical mobility. You will immediately think about students in the beginning of their twenties packing up a suitcase and spending several months abroad. It means living and learning in a foreign country and sending postcards back home. But what about the growing number of students older, engaged in family and work life, the handicapped, less well off who cannot get a room in L'Auberge espagnole? What about the lifelong learner everyone is talking about?

On the European level the current efforts to motivate and enable more students for spending time at a foreign university during their academic education are almost exclusively focused on physical mobility. This does not fit to the reality of today's education system nor does it reflect the needs of today's students. Several pilots have shown that virtual mobility serves as a supplement to the current forms of international student mobility considering the needs in lifelong learning.

With this paper we would like to introduce the next major step taken in the field of Virtual Mobility: the conversion of Virtual Mobility to Virtual Erasmus, in terms of evolving from the pilot phase towards mainstream provision of Virtual Mobility for all universities. An important part of this is the development of the supporting infrastructure, here introduced as the European Portal of International Courses and Services (EPICS).

Background

The growing importance of international student mobility is embedded in the context of the changing landscape of higher education worldwide and can eventually be conceived as a result of three developments on a broader societal level. In a globalised world, people's lives are less-and-less constrained by geographic proximity (Baumann, 2000; Stichweh, 2003). The world has become smaller and travelling as well as meeting people from foreign countries has become a regular routine for many of us. In the process of individualization, traditions and institutional regulations have eroded and in a "multiple-options society" (Gross, 1994) people can and have to make choices in all spheres of life, including their education, career and professional development (Beck, 2004). Finally, knowledge has become the major capital and creative force of today's society. In a knowledge society knowledge has become a factor of production and labor is increasingly based on scientific skills. (Böhme, 1997; Gibbons 1995; Stehr, 1994; Weingart, 2003).

Political initiatives on promoting international mobility of students go back as far as the late 1940s when the Fulbright Program was established. Since then many other national and international bodies have taken up activities in promoting international student mobility in higher education. Likely the most well-known initiative on the European level is the Erasmus programme. Since its launch in 1987, the programme has been running for more than twenty years and has become a household name within European Academia. Until now, more than 1.7 million students have participated in the programme (1).

Despite new ambitions to create a European Higher Education Area (European University Association, 2001), to endorse a fluid structure of mobility (European Commission 2006) and to make the Erasmus scheme an element of the new European Union's Lifelong Learning Programme 2007-2013 with setting the target of doubling the current cumulative figure to three million individuals participating in Erasmus by 2012, the focus of the Erasmus programme (as well as other initiatives) was kept on physical mobility. But the statistics and more research carried out so far indicate the limits of what can be achieved through the current mechanism. Next to financial reason additional restricting factors such as being

engaged in family and/or work life, health or special needs are playing a major role for many learners as well. However, lifelong learning must be available to all, without restrictions.

Virtual mobility serves as an ideal supplement, a more flexible and cheaper mobility scheme, fitting the needs of non-mobile students and lifelong learners. As a general term, virtual mobility means "*the use of information and communication technologies (ICT) to obtain the same benefits as one would have with physical mobility but without the need to travel"* (eLearning Europa, cited in Bijnens et al, 2006). Furthermore, virtual mobility "*offers access to courses and study schemes in a foreign country and allows for communication activities with teachers and fellow students abroad via the new information and communication technologies.*" (EADTU Task Force on Virtual Mobility, 2004). Such a type of mobility does not only contribute to the original vision of the Erasmus programme on a truly European scale, but also add a new flexibility and breadth to the ambition of European student mobility. Furthermore, it offers more varied modes of study which can be shorter, time specific and place independent, as well as provide more personalised and more specialised opportunities for the student. One can imagine several dimensions of mobility in its virtual concept, including the creation of virtual learning communities, virtual projects and others.

From pilot phase to mainstream

Within the EADTU and other European networks, several initiatives and programmes on virtual mobility are already running resp. have been finalized. To highlight a few: In the project *e-move: an operational analysis of virtual mobility* (2006-2007) several virtual mobility courses were developed and implemented. In addition recommendations and procedures for wide scale applications have been published. With REVE (2005-2006) a manual on virtual mobility was published, giving support to teaching staff in implementing virtual mobility. In VM-base (2006-2008) a full-fletched 'blended' Erasmus action was set-up and supported in oder to enhance the success of the Erasmus programme. The Net-Active project (2006-2008) initiated a European network of Master courses by intercontinental virtual mobility with Latin America. And finally CSVM (2006-2008) helped to bring distance students into online working via virtual internships and thus stimulate their employability (2).

These activities have shown the profit of virtual mobility next to physical mobility. They help to overcome its obstacles and to mobilise students that are less likely or even excluded from participation in international studying. To make the best use of the knowledge and experiences gathered in the different projects and guarantee their sustainability in the course of the next two years EPICS will be developed. Its main features and key objectives, partnership and project set-up as well as target groups, impact and sustainability will be introduced in the following paragraph.

EPICS - The European Portal of International Courses and Services

Main features and key objectives

The EPICS project's *main objective* is to increase the number of student mobility throughout Europe and support the realisation of a European Higher Education Area by organising a Virtual Erasmus scheme. The idea is to have a centralized web portal showing all distance/e-learning courses available to international students. Those looking for international courses can find a selection of them on their own university's website, provided from a central platform which is administered by the course providers. Universities will be given the possibility to offer a selection of courses made available for virtual mobility via a customized "window" to their students on EPICS. But only those international courses fitting and supplementing the offerings of that particular university will then be made accessible for their students. The student can take the available courses with the guaranteed recognition of credit points based on bi-lateral agreements amongst participating universities. As an additional option, students and universities will also be enabled to visit the full EPICS portal directly and view and select from all courses available. Thus EPICS provides a link between universities, students and courses all over Europe. Universities have the opportunity to share university courses and broaden the offerings to their students by international cooperation.

In addition to the database, the portal will also include on-line services for offering high quality guided independent learning and support in organizing mainstream offering of virtual mobility in a Virtual Erasmus scheme. The focus in creating the portal is convergence not standardization or uniformity. It will be built on the fundamental principles of autonomy and diversity and embodies the value of coordinated reforms, compatible systems and common action.

Next to setting up the EPICS portal several expert groups will be formed sharing their expertise and experience on relevant issues concerning virtual mobility. Their objective will be to institutionalize procedures and provide solid recommendations to common problems. These combined activities will support European universities in making their offerings internationally available and to solve administrative issues, currently preventing them from making their courses available to international students.

Partnership and Project Set-up

EPICS is a two-year project which has been approved under the European Commission's Lifelong Learning Programme/Erasmus/Virtual Campuses. It will start in November 2008. The EPICS partnership consists of 11 partners from 10 European countries:

Table 1: Partnership of the EPICS-project

European Association of Distance Teaching Universities (EADTU) – Co-ordinator	The Netherlands
EuroPACE	Belgium
Swedish Agency for Networks and Cooperation in Higher Education (NSHU)	Sweden
Open Universiteit Nederland (OUNL)	The Netherlands
Universidad Nacional de Educación a Distancia (UNED)	Spain
Open University of the United Kingdom	United Kingdom
Estonian Information Technology Foundation (EITF) / Tallinn University	Estonia
Università Telematica Internazionale UNINETTUNO (IUTU)	Italy
Universidade Aberta (UAb)	Portugal
Anandolu University (AU)	Turkey
Fernstudien Schweiz (FS-CH)	Switzerland

The partnership represents a consortium of coordinators from major Virtual Mobility projects sharing substantial expertise and experiences in this field. EPICS will benefit from this via over 40 virtual mobility courses that have been made available through the related projects, various guides and research papers, networks of experts that have been established etc..

Target Groups

The EPICS-project aims at several different target groups at the university and political/societal level:

The short term target groups are all universities/institutions directly or indirectly involved in the partnership. These are traditional and distance teaching universities already involved or interested in virtual mobility. They benefit from sharing expertise and experience, the extension and sustainability of their virtual mobility-projects as well as the new dynamics of broadening cooperation in this field. The participating educational institutions will have the opportunity to experiment with including international courses in their mainstream offer, by using the EPICS Portal. Next to the project consortium several stakeholders will be involved like the European Commission, the European University Association, the German Academic Exchange Service (DAAD), the European Student Union and other important organizations invited experts.

The long term target groups of EPICS are the European higher education institutions in general. The development of a mainstream provision of virtual mobility courses with a portal on European Courses

and Services contributes to internationalization of European universities and widening participation. Universities benefit from increased numbers of students enrolling from other countries by improved accessibility and attractiveness. The universities further benefit from EPICS by supplementing their existing offerings with selected courses from other universities to enrich their own programmes. University staff will benefit from on-line support and services as part of the EPICS portal.

On-campus as well as off-campus students benefit from easy accessible high quality European courses, enabling them to further individualize and specialize their learning portfolio. Further they can benefit from services on-line as well as inter-institutional agreements on enhancing accessibility and credit recognition to support their guided independent learning.

Major activities and foreseen outcomes

Epics will support the shift from project based virtual mobility to the mainstream provision of international courses. In addition universities will be supported in their efforts to organize Virtual Mobility as an integral part of their study offerings. For the technical support of the internationalisation of courses a European Portal for International Courses and Services (EPICS) will be developed.

The three major fields of activity and the related outcomes are:

A. Share expertise and experiences of virtual mobility-coordinators

For European universities it will not always be easy to make their offerings available to international students, mainly because of administrative issues. Core topics like - barriers and opportunities of the development of Virtual Erasmus; - course availability as well as services on-line within the consortium; - aspects of accessibility and its restricting factors like student admission, fee structures, credit transfer, assessment modes etc will be further discussed and existing expertise will be shared. One of the main goals of this project is to integrate the available expertise and experience with VM to set the basis for a European Virtual Erasmus programme. The core-group will therefore present good practices of organizing virtual mobility and possibilities to overcome common obstacles like assessment on-line, enrolment, recognition of credits etc. address VM specific issues and present possible solutions. This will be partly shared material from earlier projects and partly new produced material by combined efforts. From this activity several contributions to the portal on generic information concerning virtual mobility and specific contributions in relation to online staff and student support will derive, e.g. introduction programmes for virtual mobility staff and students, an introduction to the portal, supporting multi-media tools and inter-institutional agreement forms.

B. Combine and extend networks of VM and offerings of courses

Experiences so far show that - like in the physical Erasmus-scheme - the dynamics to initiate virtual mobility usually comes from university staff operating in international networks. Therefore the EPICS-project aims at broadening and extending existing networks active in virtual mobility. The objective is to not only increase the number of networks but also the number of subjects covered with virtual mobility courses.
So far already 12 networks are represented in EPICS covering several subjects like social and cultural sciences, marketing and sustainable development.

These networks and their courses will be the starting input for EPICS. The networks will be stimulated to further broaden their partnership and increase their number of available courses for EPICS. Currently these networks already represent more than 50 courses and more than 80 partners. This serves as a basis for an immediate institutionalisation of a European virtual mobility community. This community already represents numerous participating universities involved in stimulating student mobility. The interchange of the involved networks and establishment of new networks will generate more international courses available to students. By including these courses in the university's mainstream study programmes the visibility and accessibility of international courses to students will increase and consequently their participation.

C. Develop the supporting technical infrastructure EPICS

With the EPICS portal the necessary infrastructural support will be provided for the international course offerings and student and staff services. The portal will start with 40 courses from 11 countries and is envisaged to grow above at least a hundred courses from 15 different European countries. All course templates will be presented in the original language as well as in English. The portal will have a build-in search engine for finding European courses on aspects like – subject, - BA/MA level; - admission: - language; - course start; - on-line/blended; - tutoring facilities; - assessment modus; - credit points (ECTS).

In the development the focus is convergence not standardisation or uniformity. Like so many of the educational ambitions of the European Union it is built on the fundamental principles of autonomy and diversity. It embodies the value of co-ordinated reforms, compatible systems and common action.

The portal will be available as a direct central entry point as well as local entry points at the various universities' websites. EPICS will be integrated in as many universities as possible. The consortium and other EADTU members will therefore integrate locally a webpage on international course offerings at each university's website directly linked to the EPICS database. Universities are able to show only a selection of all the courses available on EPICS and use the portal as a tool to complement their own programmes and offerings.

IMPACT

By combining the available knowledge and experience as well as the existing networks in virtual mobility, the project will have a strong basis for an immediate institutionalisation of a European virtual mobility community. This community already represents numerous participating universities involved in stimulating student mobility. The interchange of the involved networks and dynamic to establish new networks will generate more international courses available to students. By including these courses in the university's mainstream study programmes the visibility and accessibility of international courses to students will be increased and consequently their participation. The EPICS portal will offer the necessary technical infrastructure to support staff and students in organising and participating in virtual mobility schemes and establishes the basis for a Virtual Erasmus programme.

Sustainability

To sustain the impact of the EPICS project beyond its lifetime four groups are key: the students, the consortium, the universities and the networks of Virtual Mobility.

EPICS is about building on former projects and working towards mainstream provision of Virtual Mobility. This represents a solid basis for institutionalizing the provision of virtual mobility. Isolated projects will be centralized with local entry points, the courses will be better accessible and hopefully more universities will be interested to join. Most importantly, students will be addressed, not by projects and experiments, but rather by mainstream provision of virtual mobility. This will lead to a growing number of students taking courses in a _virtual mobility scheme and secure the long term sustainability of the system. The development of a Virtual Erasmus programme will certainly support this.

The Task Force EPICS that was established by EADTU in the beginning of 2007 as well as the bilateral and multilateral networks will continue their work after finalizing the project.
EPICS will be developed as a self facilitating portal with only minor maintenance costs in the long-term. Although running on the servers of EADTU, the real maintenance is lying with the participating universities. They will submit and update courses and it is of course in direct interest of the university to keep records on EPICS up to date. Next to that they are of course also legally bound to give a correct presentation of the courses to the students. The full database of courses will therefore always be up to date. Also new submissions of courses can be done continuously by on-line password protected entry for every university.
The university entry point of EPICS will be fully integrated at the participating universities and therefore automatically be updated, when international course offerings are updated on the EPICS portal. This means minimum maintenance efforts for the universities.

Furture prospects

Physical student mobility has become more and more important over the last decades. An increasing number of students are spending part of their tertiary education in a foreign country or even doing a whole degree abroad. But student mobility is also increasingly losing its exclusivity in enhancing international competencies (Bracht et al., 2006). It is likely that trans-national and border-crossing mobility of study programmes as well as internationalization at home will increase in the future at a more rapid pace rather than physical mobility of students.

> *"Student mobility [physical] is likely to grow in the future, but in the wake of growing internationalisation of higher education in various respects, it is bound to loose some of its glamour."* (Rivza & Teichler, 2007, p. 474).

While this diagnosis is valid for physical mobility, virtual mobility in higher education is only at a very early stage. Different pilots have been tested among students, elaborated and put into practice.

With the further development of new learning environments and new educational models, exploiting the full potential of ICT and making virtual higher education is likely to be one of the most important driving forces in the academic world in the next ten years, with virtual mobility playing a core role in the European learning space. The present developments are only a starting point for a wide deployment that will change the nature of national and international higher education. The technological means will further enhance and offer new ways of communicating and collaborating in a virtual space (e.g., Olsen, 2004; Van De Ven & Van Der Wende 2004). EPICS will be one of the key initiatives in bringing virtual mobility out of the pilot phase and enhancing it to mainstream level is the European Portal of International Courses and Services.

Endnotes

(1) Reliable numbers on overall student mobility are hard to give, mainly because of the different forms of mobility and because a lot of students being mobile are not formally enrolled. Rough estimates show that one out of 40 European students decides to study an entire degree abroad. One out of ten European students spends a shorter period of time abroad, a number that has increased significantly over the last two decades. Less than one out of 30 students in Europe is coming from outside of Europe (all data taken from Rivza & Treichler, 2007, p. 462).

(2) For further information on these and other project please visit:
e-move (http://www.eadtu.nl/virtualmobility/); REVE (http://reve.europace.org/partners/index.php); Venus (http://www.venus-project.net/); VM-base (http://vm-base.europace.org); Sputnic (http://sputnic.europace.org); Net-Active (http://www.net-active.info/); CSVM (http://www.eadtu.nl/csvm/); Moril (http://www.eadtu.nl/conference-2007/files/K5.pdf)

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Towards a Dutch Remedial Education Portal?

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In this round-table session, we'd like to discuss opportunities for a more co-ordinated approach to online remedial programmes in the Netherlands. Are there possibilities to combine local efforts and share material?

In the Netherlands, an increasing number of institutions offer online remedial programmes. Students in Economics, Health, Foreign Languages, Psychology, Social Science and Mathematics are the main target groups. Some initiatives are on a local (institute) level, while others are on a regional or even national level.

Although the aggregation of experiences and content is extremely valuable, most portals are not well connected to one another. In fact, there is no one-stop-shop for prospective students who are in need of remedial education. Prospective students will have to go to either a particular faculty, institute, regional or national initiative in one particular field of science in order to assess their prior knowledge and to remediate any deficiencies.

Now that the first steps of collecting experiences with remedial education have been taken, the time seems ripe to think about a long-term vision together. Would a common 'national remedial education portal' be a feasible vision? In such a portal, all initiatives of remedial education in the Netherlands could be bundled under one umbrella, either by linking the content of the other portals or by aggregating all content into the national portal. As such, it might contain material of a wider array of subject areas, of a number of different institutions, it might help to grant access to a number of educational programmes and accommodate the needs of several student target groups.

Would there be added value in such a joint effort? What would be the problems we'd be facing, and would there be committment? This round-table organized by SURFfoundation aims to inventarise opinions of those involved and discuss what steps we might take towards a National Preparatory Portal. We invite all representatives of portals, good-practices and developers of remedial education to brainstorm about this vision of a National Preparatory Portal.

Some examples of existing online remedial programmes:

- The NHTV Breda has developed an online Summercourse for financial management students at a local level.
- In a joined SURF-project of University of Amsterdam and University Maastricht, several online Summercourses were developed in the field of mathematics and economics (http://www.web-spijkeren2.nl/).
- A large national SURF-project called NKBW (http://www.nkbw.nl/) has developed a portal for mathematics problems, whereby students from nine different institutes can assess their mathematical knowledge and skills.
- In the new SURF-project Acculturation, a portal will be developed for acculturation of foreign students of nine different vocational institutes and universities.

Some portals share the experiences of teachers how to set-up an effective remedial course (e.g. http://www.web-spijkeren2.nl/). Other portals act as a content provider, where a joint effort is made to tackle a particular domain or field within higher education.

Curriculum Internationalisation – a key to the 'HOW?

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Abstract: Internationalisation and globalisation of education are very popular themes for or at conferences. After some 20 years of efforts to internationalise, starting with mobility, the topic of internationalisation in education remains at the forefront of the debate. The number of publications on the topic is increasing at a very high rate, ranging from scientific or research publications regarding cause-and-effect in academic achievements and diversity in student populations and effective teaching methods in a multicultural context (to name a few: Gabrieli, undated; Andrews, undated; Au, 1993; Portes, Cuandas & Zadi, 2000) to more practical publications offering readers checklists and job-aids (e.g. Hollins, 1996; Brown & Jones., 2007).

Where the modus operandi used to be that teachers and educational institutions 'blamed' culturally diverse students for their lacking, the general consensus now seems to be that educational institutions and teachers should take responsibility too and take this cultural diversity into consideration when designing and delivering programs and assessments (Brown & Jones, 2007). The big question of course is:
HOW?!
At the same time that our classrooms are becoming more and more culturally diverse, demanding different teaching and assessment approaches, the world is increasingly globalised. Students need to be prepared for the global workplace; they need to develop an international perspective while also dealing with local/national needs, cultures and values. This also asks for curriculum internationalisation. Again, everyone agrees, but the question is:
HOW?!

This round table session will focus on internationalising the curriculum in order to prepare students for the global workplace. We will share our approach at INHolland University and the model we use for developing internationalised curricula. We will try to take the issue of how to internationalise a programme down from its abstract level to a concrete and tangible level and hence show faculty the vast amount of possibilities. Hopefully, when faculty see that internationalising a programme needn't be a very complicated thing, internationalisation will move up on the list of priorities.

At INHOLLAND we first defined what it actually means to be 'internationally and cross-culturally competent' in terms of what a business students should know, be able to do and how he should behave.
These indicators tell us precisely what we want to assess the student on. From that point it's almost as easy as 1-2-3 to decide what should be offered in the programme that prepares the student for his assessment!
During the round table session we will present these indicators and participants will put the usefulness of the indicators to the test.

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Be Prepared! Online Acculturation and Remediation of International Students

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Abstract. In 2007 the National e-learning Action Plan (NAP) was launched in The Netherlands. A consortium of nine institutions and NUFFIC developed a project which focuses on the acculturation of international students. The NAP-project Acculturation develops online remedial courses, combined with the process of acculturation. The ambition of the project is to increase the quality of the incoming foreign students. After finishing (a) we hope students are better prepared to the study and educational culture in the Netherlands (b) and all the materials, developed in the nine pilots, are online available through a repository.

Context

In 2007 the National e-learning Action Plan (NAP) was launched in The Netherlands. NAP encourages e-learning innovation projects at Higher Education (HE) institutions. The goal of the NAP focuses on increasing the participation-percentage of student in HE in the Netherlands. A consortium of nine institutions and NUFFIC[16] was granted a project which focuses on the acculturation of international students. The project starts the first of September 2008 and will finish at the end of August 2010.

Motivation and Rationale

For European countries, internationalising Higher Education is vital. The number of international students is increasing every year with 8%. Currently, about 50.000 international students participate in the Dutch HE Institutions focus on attracting international students and on the concept of 'the international classroom'. Research shows that, at the start of their studies, many international students lack knowledge about the general and study culture within Dutch HE. They are not enough aware of the fact that the new educational culture they have to work and live in can differ vastly from their previous experiences. Furthermore, they often lack specific knowledge and skills (notably in English and maths) to enable them to smoothly start in their new programs This causes a high drop-out rate and malfunctioning in the international classroom.

As a response, HE institutions often offer cultural induction and remedial programs. Unfortunately, international students participate in these only after arriving in the Netherlands. Not all students do follow these induction programs, and remediation does not come at an appropriate time.

Goal of the project

The NAP-project Acculturation develops online remedial courses, combined with the process of acculturation. The ambition of the project is to increase the quality of the incoming foreign students. This is realised by supporting students through online remedial courses. Following these courses international students are given the change to participate in Dutch HE on a more equivalent level. Besides this these students are able to gain more out of the offered courses. Linked with this ambition, the aim of the project is as follows:

International students strengthen their quality, by preparing themselves for their studies, online and in groups, before arriving in the Netherlands. They participate in specially designed programs to remediate specific knowledge and skills, and get acquainted with Dutch educational (academic) culture. Furthermore a social network is built up.

[16] Netherlands Organization for Cooperation in Higher Education

To realise this goal a consortium of nine institutions and NUFFIC will develop nine online pilots. These pilots are offered to international students who will study in one of the, in the project, nine participating institutions. The students will follow online remedial courses (language, science or other subjects). And in these remedial courses the students will be acculturated, which implies that:

- they will be acquainted with the (academic/educational) culture in the Netherlands;
- they will start with a online social network by participating in a community.

Project Results

The project will achieve the following results:

- Within the participating institutions, nine different online pilots are developed and executed. In these pilot courses, acculturation and remediation are combined. The pilots are described as 'good practices'.
- To make this possible, existing content is shared by all participating institutes. The content includes remedial and acculturation materials (in the form of learning objects).
- The content of the pilots (lesson plans, assignments, etc.) is placed in an online repository.

We expect that the projects will improve the study results of the students and contribute to the quality of the international classroom. We expect that more international students will choose a study in Holland, because of the well developed online support they can get during their preparation period.

Project Approach

The project covers work packages, to support the process of realising the main goal:

- Work package Repositories.
  After finishing the project this work package will have produced an online filled repository. The content is the developed pilot-materials.
- Work package Pilot.
  After finishing the project this work package will have produced nine online pilots. Linked with these pilots also hand-outs and instruction reports are developed.
- Work package Sustainability and Dissemination.
  After finishing the project this work package will have produced work-conferences, to support the process of the project. Also this work package is responsible for the PR and dissemination activities of the results.
- Work package Impact Measuring
  After finishing the project this work package will have produced instruments to measure the effect of the pilots. Based on these research activities articles are written and published.

Questions for discussion

Some intriguing issues to be discussed during the round table session:

1. Which strategies can be used to reconcile acculturation with remediation? And under which conditions can they be implemented in an online learning situation? The conceptual challenge here is that remediation as such is the acknowledgement that the student needs to repair or compensate an earlier learning deficit, while acculturation rests upon the notion that different cultures need mutual adaptivity in order to go well together.
2. Which internationalization goals in Higher Education do institutions want to achieve? Are they economical goals or do they just mitigate the costs of the mobility and subsistence costs?
3. How do we know if international students are well enough prepared to study abroad? From the perspective of the study itself as well as academic and educational culture.
4. Are all international students obliged to prepare themselves on the academic and educational culture in order to increase one's academical integration.

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Hybrid Learning as a Facilitator to Bridge Cultural Differences

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Abstract: E-learning and student mobility are topics of concern to most universities. As learning is culturally and socially defined, delivery of academic learning is made more complex by the increasing mobility of the learner population. The notion of life-long learning may not be the same for everyone. As Europe moves towards a Pan European identity, it has to deal with biases, stereotypes and unresolved tensions between the countries and individual cultures. Educational systems are changing. Student learners are changing. Academic content and delivery methods are evolving. The authors present an analysis of a unique asynchronous discussion forum tool used in an MBA Business Ethics class in France as a facilitator for bridging cultural differences for future life-long learning.

Introduction

With increasing globalization, being savvy about others' cultural background when engaging in business is a critical skill. Cross-cultural communication and communication styles continue to be central themes in research on cross border negotiations (Requejo & Graham, 2008). With Hall's (1976) introduction of cultural context as an explanation for communication differences, research into understanding the process of intercultural communication increased the complexity of variables necessary to evaluate causal relationships. We now understand that verbal communication styles can be explained by message characteristics such as indirect/direct, elaborate/succinct, contextual/personal, and affective/instrumental (Luthans & Doh, 2009, p. 187).

The importance of cultural context plays out in the way people communicate and process communication. According to Hall (1976), "A high-context communication or message is one in which most of the information is either in the physical context or internalized in the person, while very little is in the coded, explicit, transmitted part of the message. A low-context communication is just the opposite; i.e. the mass of the information is vested in the explicit code" (Hall, p. 91). When processing communication, culture will affect the accuracy of the sender-receptor exchange (Gudykunst, 2005).

Globalisation and the wide adoption of information technologies make it evermore important for higher education to open up to multi-culturalism. In the classroom, the days of mono-culturalism are *passé*. Students are confronting their peers from all parts of the globe. It is indispensable for them to hone their interpersonal and cross-cultural competencies. To meet the needs of this changing and increasingly diverse student body, the instructor needs teaching materials which are adapted to the mixed cultural backgrounds. While the "one size fits all" offers of the textbook publishers are improving, they are not able to keep up with the speed with which the student body is changing. Additionally, institutional infrastructures are slow to adopt the communication tools of the modern student.

There is little doubt that the integration of e-learning tools is beneficial for higher education. A substantial body of research has developed in recent years. According to Banks (2006), "E-learning is seen as part of globalization to build capacity in 'borderless' education (…), thus improving the competitiveness and marketisation of higher education and impact on international cooperation and student mobility" (Banks, 2006, p. 72). Most providers of e-learning platforms, such as Pearson Education's Course Compass, Blackboard or WebCT, use asynchronous online discussion (AOD) to create interaction among students as peers and students and their instructors. The AOD board is a virtual communication forum, which allows students to post and respond to messages at their own rhythm without temporal limits. AOD "enables groups that are separated in time and space to engage in the active production of shared knowledge by offering an opportunity to enhance collaboration and interaction" (Vonderwell, Xin, & Alderman, 2007). Other scholars suggest that online discussions are used more frequently in 'traditional' classroom settings to promote student critical thinking, knowledge construction and learning autonomy

(Lim & Chai, 2004; Marra, Moore & Klimczak, 2004; Wang & Woo, 2007). Overall, research associates asynchronous discussions with deep and critical learning (Kanuka & Garrison, 2004; Osman & Herring, 2007). This type of "deep learning", which entails seeking understanding by relating new information to existing knowledge and experience, is an improvement on rote learning (Osman & Herring, 2007).

Cultural difference and asynchronous online discussion

Educational behaviour can never be completely dissociated from a learner's cultural background. In asynchronous online discussion, often based on written communication in English, participants from high context cultures may be hesitant to express their opinions in a direct fashion. It might be easier for them to write their thoughts rather than to submit themselves to classroom confrontation, which might lead to the loss of face. Native English language speakers and students with fluent English skills are at a considerable advantage over their less able peers who may be unfamiliar with the direct communication often associated with the English language.

The advantages of AOD include that they engage students in discussions, which promote critical thinking, problem solving and knowledge construction (Marra, Moore, & Klimczak, 2004; Wang & Woo, 2007). It has also been pointed out that participants succeed in establishing meaningful interpersonal connections before they are asked to engage in cognitive tasks (Beuchot & Bullen, 2005). Virtual discussion can be seen as a bonding exercise with a positive impact on the general in-classroom atmosphere. Students who might not have discovered each other in-class often will begin a relationship virtually through the use of a discussion board forum. According to Morse (2003), characteristics of good discussion forums include: flexibility, equality of opportunity for participation, openness of discussion, potential for post participation review. Additionally, the discussion forum can be used for team-building skills, since it can be set up so that students belonging to the same group/team can collaborate with each other.

There are drawbacks to discussion forums. Research by Tiene (2000), Wang and Woo (2007) has shown that there are four problematic areas: (1) Access- referring to technology frustrations; (2) Timing- AOD is time-consuming, as learners need more time to reflect upon their responses; (3) Mode of expression-written communication does not convey the nuances of the voice, which might be more significant than the content of the message; and (4) Visual cues- people rely a lot on gestures or body language when interpreting verbal messages.

As DeVito argues (DeVito, 2007, p. 181), the absence of body kinesics and notably the lack of affect displays and facial expressions, might be confusing resulting in students spending excessive time and energy trying to decipher the meaning of a particular message. Emoticons are helpful, but on the whole, they reveal insufficiently the subtleties of human communication. Communication is three-dimensional and "meanings are in people...words don't mean, people mean" (DeVito, 2007, p. 136).

Asynchronous online learning in a multi-cultural MBA environment

Drs. Wulf and Pence have collaborated since 2002, experimenting with the use of hybrid learning in classes of internationally diverse students. While both professors are natives of low context culture countries, they have extensive experience living and working around the world. Professor Wulf is German and was educated in the USA, Canada, and France. Professor Pence is American, born in Japan, and was educated in Italy and the USA. As children and now as adults, sensitivity to cultural differences has been an essential part of their personal skill sets. Both have had extensive experience in the business world, Dr. Wulf in television and Dr. Pence in international trade. The motivation to use hybrid learning techniques in the classroom settings has come from these years of experience in bridging cultural communication differences.

In general, cultural context communication does not lend itself to spontaneous, in-class interactivity. We have found that critical reflection is easier to obtain through written communication. In this study, we used AODs for four basic reasons: (1) In-class time was insufficient to finish student debates concerning complex ethical issues; (2) In order to stimulate critical thinking and to encourage those students who were disinclined to express themselves during F2F lectures; (3) To remove the barriers which

are commonly associated with high cultural context such as participant preference to withhold personal opinions during F2F situations; and (4) To enhance the student's cross-cultural learning experience.

AOD and our research experience

Using one of our courses, MBA Business Ethics, which was taught in the classroom by Dr. Wulf in 2005 and supervised online by Dr. Pence, we examine the learning outcomes evidenced in the course's online discussion forums. The MBA students in this class were typical of those we continue to have enrolled in our current classes in Europe and the USA. Predominantly from high context cultures, there were twice as many females as males enrolled. Typically, students were in their mid-twenties with some prior working experience. Interestingly, the countries represented in this class covered all of the major continents with the exception of Antarctica. Few students knew each other before entering the MBA program; however, most have remained in contact as evidenced by their Facebook and LinkedIn pages.

In Paris in 2005, electronic learning management systems as well as the necessary technological infrastructure were readily available to our MBA students. This gave us the opportunity to develop extensions of the classroom through virtual activities. Classes met once a week for 11 weeks with a total of 33 hours of in-class work per course. Online work in each class added an additional two-three hours per week to the required class work. The online discussion forum was imposed upon this class, initially as a way to engage the learner when outside of the classroom. Given that Paris is a city with many activities to distract from academic concentration, the use of online forums permitted the student to stay engaged at his own pace and in his own time frame. The only obligation made upon the student was to participate at least twice per week in the online forum. This accounted for 30% of the final course grade.

Using this hybrid learning approach, the course objective was for students to discover each other's distinct view point regarding business ethics, thereby educating each other about their different personal, cultural and moral value sets. The discussion forum consisted of four different ethical dilemmas (see Appendix): (1) corruption in the airline industry; (2) escalation of interpersonal conflicts in a small publishing company; (3) loyalty towards one's friend in a tough-going economy; (4) whistle blowing in the workplace. Each mini-case contained a cliff-hanger, which required student resolution. Hooked by these scenarios, students interacted with apparent ease on the forum. There was no evident need for the instructors to guide the discussion or to interfere with their opinions and suggestions. In fact, we chose not to participate with our students' discussion threads. By removing ourselves from the conversation, students discovered themselves via the forums without the distraction of feeling the need to respond to the power position of the professor. Eventually we guided in-class debates, but we left it up to the students to figure out, when they were online, what they wanted to say.

From a clinical perspective, we can evaluate the evolution of cultural awareness as it leads toward individual and group consensus. Documenting this learning process gives us a better understanding of the significance of the cultural contexts in communication and therefore about the acquisition of certain competencies, which are useful outside of the classroom. It is important to note that only one of the student participants was a native English language speaker. All of the others were at differing levels of English language competency, though they did communicate in the written language with more facility than in verbal communication. The in-class and online forums were conducted exclusively in English.

Analysis of AOD within our MBA Ethics course

Each of the discussion forums was analyzed according to the following five criteria: (1) Starting position in the discussion forum (early, middle, late); (2) Explanation of point of view (no, yes); (3) Responsiveness to a an individual or group of individuals' threads (no, yes); (4) Expressed opinion to the ethical issue (none, against, for); (5) Length of individual response threads (low 1-5 lines, medium 6-10 lines, long 11+ lines). The resulting conclusions are illustrated in the following tables:

Table 1. Participation analysis by Male/Female

Criteria	All Males Together	All Females Together
1 Start position	Tend to start in the middle of the discussion	Tend to participate very early in the discussion or very late
2 Explanation	Explain their point of view	Explain their point of view
3 Responsive	Are mixed in their consistency to respond to others in the discussion thread	Respond to others in the discussion thread
4 Opinion	Tend to agree with the ethical case but vacillate between no decision and disagreement	Indecisive with respect to the ethical issue
5 Thread length	Wordy responses	Less wordy responses than males

Table 2. Participation analysis by communication-context cultures

Criteria	Low Communication-Context Cultures		High Communication-Context Cultures	
	Males	Females	Males	Females
1 Start position	Tend to start early in the discussion	Either jump in from the beginning or wait until the latter part of the discussion	Tend to let others express themselves before beginning to participate	Some start, others tend to wait until dialogue has begun
2 Explanation	Explain their point of view	Explain their point of view	Explain their point of view	Explain their point of view
3 Responsive	Not consistent in responding to others	Tend to respond to others in the discussion thread	Do not consistently respond to others in the discussion thread	Mixed consistency in responding to the discussion thread
4 Opinion	Mixed ethical responses but take a firm stance early	Divided on the ethical issue	Tend to agree with the cases –line up on the side of the short-term business solution	Divided on the ethical issue
5 Thread length	Somewhat wordy	Wordy responses	Wordy responses	Very wordy responses

Table 3. Individual forum participation analysis by communication-context cultures

Forum	Low Communication-Context Cultures		High Communication-Context Cultures	
	Males	Females	Males	Females
1	Entered midway in the forum	Joined early or in the middle of the forum	Entered midway to the end in the forum	Started very early or very late in the forum
	Defended positions	Rarely discussed	Discussed later	Tended to discuss later
	Held firm opinions from the beginning	Maintained original opinion	Maintained opinion-lengthy early on	Changed opinion during the forum
	Lengthy responses	Concise responses	Concise at the end	Concise responses
2	Jumped in very early-stayed in	Joined the discussion early or very late	Entered the forum in the middle to end	Started toward the end of the forum-one early
	Imposed opinions	Did not discuss	Tended to discuss	Tended to discuss
	Maintained their decision throughout	Maintained their original opinion	Maintained their decision throughout	Changed their opinion during the forum
	Concise or verbose	Wordy	Reasonably wordy	Wordy
3	Continued to let others discuss first before expressing	Joined early and late to the discussion	Entered the discussion late- one exception started the discussion	Began late with the exception of one student
	Provided analysis of their opinions	Provided analysis of their opinions	Provided little analysis of their opinions	Explained their opinions rarely
	Discussed	Discussed	Discussed little	Tended not to discuss
	Maintained original point of view	Maintained original point of view	Maintained original point of view	Maintained original opinion frequently
	Somewhat concise	Concise responses	Concise responses	Concise responses
4	Entered late to the forum	Started early or nearer to the middle and end	One began the forum, rest in the middle to end	One started, rest began middle to late
	Did not discuss	Prone not to discuss later in forum	Discussed very little	Did not discuss
	Were firm from the beginning with their opinion	Changed their opinions as the discussion advanced	Maintained their opinion from the beginning	Explained but maintained their original opinion
	Concise responses	Very wordy	Reasonably concise	Reasonably wordy

Interestingly, as we evaluate the responses in more detail, we see that the females tended to be more conciliatory toward their peers, expressing interest in the other's point of view. They consistently explained their decisions to others. They entered into the discussion more frequently early on, but a few still waited until the last third of the discussion to join in. They were concise in their narrative and opinionated concerning the ethical dilemmas, though these opinions were divided between dissention and agreement.

The male students as a whole, however, took their time entering the discussion until midway through. They, too, tended to explain their point of view on the forum though they did not consistently recognize the opinions of their colleagues. They were prone to agree with the proposed solution of a particular ethical issue, when it was in support of the company or the individual's success. In general, their explanations were lengthy.

Conclusion

We investigated the impact of AOD as a means to stimulate collaborative learning and thereby foster students' interpersonal and cross-cultural skills. For this study, the asynchronous online discussions took place in a hybrid postgraduate learning environment, which mixed face-to-face (F2F) instruction and online learning. The discussion forum has the advantage of appearing to be anonymous, thus providing a "safe environment" for those participants who come from high context cultures to express themselves with less personal confrontation. Though the students eventually established relationships with each other outside of the classroom, the discussion forum was one of the first places where this contact could be

established, nurtured, and brought to fruition without having physically to go anywhere or confront anyone F2F. In general, the level of participation in the forums was good, and certainly more evenly balanced than if class time had been required to explore the issues. It appears that this communication medium provided an acceptable environment for both sexes of high and low context communication to expose their opinions. Surprisingly, we saw little of the "yes/no" response with no justification for the opinion. Of course, students realized that they were being graded on their participation but with no direct feedback from the professor, they seemed to communicate with each other because of interest in the topic and the existence of the virtual platform.

Our original basis for using the discussion forum to expose opinions, points of view, and debate was that the context-communication make up of the classroom precluded the possibility of meaningful dialogue. People from low context environments tend to voice opinions with ease. Those from high context environments are more reserved and deferential in their responses. They tend to refer to the professor's power position and therefore respond as they believe would be expected from them or would choose to remain silent. In the world outside of the classroom, the student will be obliged to work with many different cultural-communication contexts. The importance of having the experience in a safe environment such as academia was significant. To be able to voice an opinion without sanction was a relatively novel concept for many of these students. As time is an important factor in communication across cultural contexts, the discussion forum setting made it possible for those more hesitant to respond spontaneously to express their opinion and to enter into dialogue with their peers.

Future Research

As business ethics comes into its own as a serious field of international research, availability of quality educational materials and learning platforms for global business training will increase in importance. With growing international student and workforce mobility, educators have a rare opportunity to shape the evolving global business landscape both with research and with teaching. Sophistication of content and content deployment methods will continue to increase as physical and virtual borders merge. The traditional homogeneous learning environment is fast receding into the archives of academia. Now that the asynchronous forum is a mainstream learning tool, the next study will address the effectiveness of the individual forum scenarios for exposing differences of ethical reflections based upon culture context communication. To design scenarios which elicit reflection, good dialogue, and life effective learning without being dogmatic or biased is challenging. It will require the skill sets of the content designer to include cross-cultural sensitivity, generational relevancy, and academic proficiency in order to create effective material which will motivate the multi-cultural learner who will occupy the physical and virtual classrooms of our networked world.

Appendix

Business Ethics Discussion Forum Cases

Ethical Issue 1: Corruption in the airline industry

TPOG Aviation Services manufactures small aircrafts in the 20-40 seat range for civil aviation. In the past, they counted long-established, prestigious companies such as Lufthansa, British Airways and Air France among their clients. Recently, TPOG developed a new model, the TPOG LA 533 aiming at optimizing life cycle and maintenance costs of the aircraft. However, their former clients are no longer interested in buying this type of aircraft. Therefore, TPOG needs to explore new markets. Now they're negotiating a very important option for a contract for 15 aircrafts with Flying High Inc., a largely state-owned company in country X. Yet country X has a corrupt government; bribery and special compensation schemes are common practice. There are also three other competitors behind this contract. TPOG knows that one of them who has already been working in this country for a long time has been involved in this kind of practice. During the negotiations executives of Flying High Inc. hinted to TPOG that "special compensations could enhance the chances of getting the contract." On the one hand TPOG has the reputation to have very high ethical standards, on the other the company is in a very tight financial situation

because of the huge investment in developing the TPOG LA 533. If they don't get the contract, the survival of the company will be jeopardized. What should TPOG do?

Ethical Issue 2: Escalation of interpersonal conflicts in a small publishing company

Carla Sandrini is the director of a small magazine publishing company with 20 employees in Rome. Because of a complicated pregnancy, Carla has been confined to bed. While absent from the office, Isabella di Angelo and Marina Monti, two of the editors start to "rock the boat", complaining to the colleagues that they're all underpaid and should look for all possible reasons to engage union and legal action. To top it off, Isabella writes her own name in the editorial, pretending to be editor-in-chief of one of the magazines. Carla feels betrayed. She suspects that Marina, who only wants to speak with her in the presence of her lawyer, is the origin of the conspiracy and managed to "contaminate" Isabella as well. However, Isabella, a good friend, whom Carla has "saved" years ago from taking drugs by offering her a stable job inside the publishing house, is reacting abusive, too. Once, when Carla tried to talk to her on the phone, Isabella slammed the phone down, refusing all communication with her boss and friend. Carla would like to get rid of both of them but is sure that Isabella will relapse and take drugs again if she fires her. What would you do, if you were Carla?

Ethical Issue 3: Loyalty towards one's friend in a tough-going economy

Tom and Martin have been friends since their college days in Canada. Both of them graduated with honours' degrees in mechanical engineering, returned back to Germany and now are directors of respective family companies. After long years of hard work and expensive research, Tom, along with his team, discovered new procedures that outweigh by far those of his friend and competitor. Tom knows that as soon as these new procedures would be applied to the machines his friend's company would go bankrupt. What should Tom do?

Ethical Issue 4: Whistle blowing in the workplace

Chantal Leroux works as a clerk for Avco Environmental Services, a small toxic-waste disposal company. The company has a contract to dispose of medical waste from a local hospital. During the course of her work, Chantal comes across documents that suggest that Avco has actually been disposing of some of this medical waste in a local municipal landfill. Chantal is shocked. She knows this practice is illegal. And even though only a small portion of the medical waste that Avco handles is being disposed of this way, any amount at all seems a worrisome threat to public health. Chantal gathers together the appropriate documents and takes them to her immediate superior, Dave Lamb. Dave says, "Look, I don't think that sort of thing is your concern, or mine. We're in charge of record-keeping, not making decisions about where this stuff gets dumped. I suggest you drop it." The next day, Chantal decides to go one step further, and talk to Angela van Wilgenburg, the company's Operations Manager. Angela is clearly irritated. Angela says, "This isn't your concern. Look, these are the sorts of cost-cutting moves that let a little company like ours compete with our giant competitors. Besides, everyone knows that the regulations in this area are overly cautious. There's no real danger to anyone from the tiny amount of medical waste that 'slips' into the municipal dump. I consider this matter closed." Chantal considers her situation. The message from her superiors was loud and clear. She strongly suspects that making further noises about this issue could jeopardize her job. Further, she generally has faith in the company's management. They've always seemed like honest, trustworthy people. But she was troubled by this apparent disregard for public safety. On the other hand, she asks herself whether maybe Angela was right in arguing that the danger was minimal. Chantal looks up the phone number of an old friend who worked for the local newspaper. Questions for Discussion: What should Chantal do? What are the reasonable limits on loyalty to one's employer? Would

it make a difference if Chantal had a position of greater authority? Would it make a difference if Chantal had scientific expertise?

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Virtual Learning Communities and Continuous Classrooms

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Abstract: The adoption of Web 2.0 technologies to facilitate delivery of some modules at the School of Architecture and the Visual Arts (AVA) at the University of East London has proved both pedagogically interesting and successful so far in all its variety. This paper focuses on the use of the Social Networking Site, Facebook, integrated with other Web 2.0 technologies, as used by one particular tutor. The paper first outlines the reasons for choosing Facebook as the central software in the AVA context and contrasts it with the most established learning technology in Higher Education, the VLE. The paper continues with a description of a particular project within a Third Year module where Facebook is being used in combination with blogging software for the project activity, with the project outcome posted to the media-sharing site, YouTube. Lastly, the module tutor describes his personal experience of using Facebook within this module and in other contexts.

Reasons for adopting Facebook as the chosen technology

The original use of Web 2.0 technologies, and Social Networking Sites in particular, originated from feedback in the Student Satisfaction Survey administered annually by all Schools at the University of East London. A point made in the 2007 survey was that communication systems could be improved and, in particular, the rapid dissemination of information amongst the AVA community.

Improved communication systems seemed to necessitate the greater use of online communication in order to improve fluency and rapidity in both one-way and two-way communication. It was possible that the university Virtual Learning Environment could have been used in this regard since a VLE can:

(a) disseminate information at short notice e.g. such as room changes via 'Announcements';
(b) provide core and extended learning resources in a variety of media and formats;
(c) facilitate communication via tools such as systems e-mail, instant messaging, 'chat rooms' and a discussion board.

In many contexts, the VLE successfully acts as a 'one stop shop' for students' online study needs. However, there were a number of potential drawbacks in using the VLE in some of the AVA learning/teaching context, which are discussed below.

The field of Digital Arts and Visual Communication within AVA intentionally utilises learning experiences which are firmly based in social constructivist theory and the dialogic model which Laurillard (1993) recommends in all Higher Education contexts. The use of this model is partly because of the nature of study. As Seely Brown and Alder (2008) point out "learning to be a professional in the field" requires social learning, and this accretion of professional expertise is a central part of all programmes of study within AVA. Groups at module, year, or programme level therefore constitute various communities – both Communities of Practice in relation to their professional development, and Communities of Enquiry (see, for example, Rorke et al (2006)) in relation to their study. Within these parameters, the learners themselves are a resource to each other. They provide, for example, peer guidance and feedback, shared experience and perspectives, and not only more traditional learning resources but also such things as alerts to relevant exhibitions and events in their field. The VLE does not easily allow anyone but those within the development and delivery team to upload information or resources. This means that students have not got a means to disseminate information to each other, or to contribute to the bank of learning resources.

Many courses of study within AVA require students to produce work in various media. The ability to share work-in-progress or examples of completed work (either with their tutors or with other students) is therefore something that technology needs to facilitate. In addition, future employment necessitates a

facility with technology as an employability skill. Part of developing professional skill is therefore achieved through integrated experiences of online publishing (as in the case study below).

A VLE obviously requires intentional log-in and many academic staff cite as a problem the fact that not all students log on sufficiently frequently to module sites on the VLE in order to take advantage of e.g. recently posted resources or information updates. In part, this can be because the students are not sufficiently familiar with a VLE as a piece of software. The choice to experiment with Social Networking Software (SNS), and Facebook in particular, was partly based on the fact that many students are familiar with using this software and are frequently logged on to it anyway. As Sclator (2008) comments: "Students are using Facebook anyway". This is supported by some recent research within the School. Of the 226 students who completed a survey about which technologies they had previous experience of when they joined AVA this semester, 70 knew of the existence of VLEs, yet only 31 had previous experience of using one. In contrast, 202 knew of Facebook and 165 currently use it. All 37 respondents studying the BA in Graphic Design knew of Facebook, with 35 of these already using the site. The need for support in developing expertise with an unfamiliar technology is therefore considerably reduced and the technology is not a barrier to easy communication.

In addition, as a Web 2.0 technology, Facebook is not only designed for sharing, collaboration and communication (which, as stated above, matches the pedagogical approach) but it is also web-based. Every HE institution must have experience of a VLE being less than easily accessible because of network slowdown or even unavailable because of problems with servers. Students can find this extremely frustrating but it is not a problem that exists with Facebook.

Facebook seemed to offer some of the advantages of the 'one stop shop' virtue of a VLE in that it also allowed the same

(a) dissemination of information
(b) core and extended learning resources in a variety of media and formats;
(c) communications systems.

But it had, in addition, such advantages in our context as:

- It allows students to easily share multimedia resources with the group which they find relevant or interesting.
- Information on relevant events (such as exhibitions), can be posted by both tutors and students.
- It allows a wider and more varied group than the traditional group, including those traditionally 'locked out' of a VLE because they have no password - such as alumni, practitioners and potential employers. Perhaps most crucially too, External Examiners.
- It allows students to 'publish' work both for critical appraisal and as an aspect of developing professional practice.
- The number of students with previous experience of using Facebook means that the majority already are competent users of that technology, reducing the need for student support and training.
- Facebook readily allows you to 'bolt in' other Web 2.0 technologies such as wikis or blogs, as required via links.

An internally-funded research project has allowed deeper investigation into the educational affordances and risks related to the use of Facebook. Analysis of the literature is being followed by both qualitative and quantitative research into the experience of three senior members of staff at AVA and their respective cohorts of students. Kolek and Saunders (2008), for example, note that there is a lack of evidence on the successes and failures of using social networking software in Higher Education on which to base our decisions and actions. Although there is literature that relates to the history and main uses of social networking sites (such as boyd and Walker (2007)), few examples currently relate to their use within course

or module delivery for teaching/learning purposes. The aim is therefore to contribute our experience to the body of knowledge in the field.

Findings from the literature and experience so far can be summarised as follows.

Advantages

- Ease of use
- Convenience
- Greater ease of communication with students
- Greater sustained communication with students during module delivery
- Greater sustained communication with students throughout their programme of study – both during holiday periods and also when students are taking a period of time off from study
- Relevant skills development in relation to the future world of work and employment
- Creation of communities which are not purely AVA staff and students but can include other interested parties or stakeholders
- A more personalised learning environment
- A collaborative learning environment which suits the pedagogical approach within AVA

Students have reacted very positively to the use of Facebook, supporting Mazer et al's (2007) research conclusions that there is a positive impact on motivation and attitude from merely the self-disclosure of a tutor's limited profile.

However, the literature's concern with guidance on use in order to protect both students and staff is something that is an increasing concern within AVA. Despite the success of the use of Facebook, it is not something that can be significantly extended before the university's policy on use is in place. New technologies can require new skills and Mason and Rennie (2008), for example, discuss the educational opportunities of Facebook use but also that guidance and skills development. One that they cite is that effective practice with social networking sites provides opportunities:

- to discriminate content on social networking sites,
- not to accept profiles at face value,
- to realise that in addition to one's peers, others – marketers, university authorities, law enforcement personnel can and do access profiles
- provide opportunities for discussion about profiles – how to construct them and what it means to 'present' oneself online.

Policies, 'good practice guidelines' for both staff and students, and skills development therefore all have a part to play in ensuring both safety and quality.

Year 3 Four Week Project

Students were given the following information:

> "Graphic Design 3 will be on Mondays in the GD Studio with Pete & Jon from 10.30 starting 29th Sept
>
> Here is the project description for Project 1:
>
> You each will create a 30 second video advertisement which you make with an online animation programme and then post on YouTube.
>
> All students need to set up a Web presence for this academic year. I suggest using Wordpress or Indexhibit Blog or Site for your work and for tutor interaction about your work. You can post your work-in-progress to this site. Then I'll set up a Project blog where we can all access everyone's work through links to your blogs. And you'll be able to talk things over via the Facebook site.

The subject of the advertisement is "Notions of Beauty and Responsible Design". So you'll need to research the topic yourselves. At the end of four weeks (on 20th October) all students will have created the advertisement. Since the Project is part of your final year mark, this has to be completed to pass.

Here are some links to start you off.

Dove Campaign by Ogilvy Mather
see links:

http://www.campaignforrealbeauty.com

http://www.youtube.com/watch?v=iYhCn0jf46U "

The idea of the project was to provide experience of the short period for development and need to produce on target which is a common facet of the industry, developing their practice as professional designers since in a very short time they will be entering that industry. In addition, it was designed to raise awareness of personal responsibility within their practice. Although the industry is regulated, personal ethical positions need to be considered. Choosing notions of beauty obviously required them to take a position on how the fashion industry manipulates self-image and how the design industry technically produces images which are manipulated according to various notions of 'perfection'. In completing the project, therefore, students had to consider and articulate their own position within the context of producing and publishing their own original work. An anonymised version of the project blog where work can be viewed is available at http://designerdesigner.wordpress.com .

In relation to the use of Facebook within this project, students used it as a means of getting help and support from their peers as well as their tutor, as the following examples show. Structured loosely on Problem Based Learning principles, achieving the desired product within the time-limit became the problem which students had to solve, including choosing their desired production method and software. As such it again mirrored common professional scenarios.

Account of the tutor's personal experience of using Facebook

"It was a colleague who asked me if I was on Facebook. I knew about it because my daughter used it, so I added a profile and was amazed how fantastic it was at a 360 communication, multi-level communication. I started trying it out - talking to people, seeing what they were interested in - and thought that I would follow my colleague's example and set up a study group for my students. Basically because they had indicated in a Student Satisfaction Survey that communication was not as good as they would like. So I thought "Let's see if this works". After all, it's their world and it's a natural communication medium for them.

I created 'Graphic Design BA Hons @ UEL' for all Graphic Design students. Last year I had one study group for each year but this year I have one that encompasses all years and allows them to see, for example, what 3rd Years are doing if they are a 1st or 2nd year student. This encompasses the students on three 20 credit modules.There are 136 members and more to join yet.

I also created 'AVA Illustration @ UEL'. All years in the same group again but within these are separate study groups such as Editorial Illustration (Year 2). There are about 50 in this group.

'UEL Graphic Design Force' is for external use – alumni, possible future students, and other interested parties.

I've also set up Facebook groups for specific purposes. The 'Graphic Design Degree Shows 2008', for example, was to help marking with last academic year's degree show and to keep a structure on a complex piece of logistics. It's an advantage that external examiners can access the same site.

I don't set up all the groups. The 'Lambo-Biro Drawing Machine Project' was set up by a student for our Year 1 short project, for example.

I suppose this year I'm trying to do it on two main groups because otherwise it would get too complex - but there are always splinter groups that link in (like the Lambo-Biro group just set up).

Facebook has been a revelation. I believe it certainly it wouldn't be possible to achieve the same result in any other way. It would take so much administration and labour, but with Facebook the administration is minimal. Integration is a key word. I can organise all the blogs they have set up around the group, I can post information or resources, I can chat at any time and deal with possible problems in a direct and human way.

Some people feel that an online presence is not so human as personal interaction but I don't agree. It is very human and we are real in our different presences. Zizek (2006) talks about having real presences online:

> 'true self is much closer to what I adopt as a fictional screen-persona, while the self of my real-life interactions is a mask concealing the violence of my true self? Paradoxically, it is the very fact that I am aware that, in cyberspace, I move within a fiction, which allows me to express in it my true self - this is what, among other things, Lacan means when he claims that "truth has the structure of a fiction.'

Students seem very comfortable with a variety of personas and it's true that they do reveal more of themselves on Facebook. You get an insight into how they play as well as how they work - and they see something of me and my interests, even if its only in my status - like "Pete is loving the 5-0.Come on Chelsea!", which is up today.

I think the following illustrates how human the interaction is. Students contact me using the Facebook e-mail or chat about their concerns and get the reassurance and support they need very quickly.

Student A
October 16 at 4:08pm
hi pete , ill be in next week .. im getting a taxi paid for by the uni to take me .. im on crutches, waiting for an operation on my knee as ive torn the muscles in it and possibly have mini fractures in it...but ill be in. i heard everyones in groups now.. would that be a problem for me?
see you tuesday !
A

Pete Nevin
October 16 at 4:45pm
No problem. There are a few people that have not been in for various reasons so lets see at the time and maybe you can join a group or maybe Ill start a new one. Pete.

Student M
October 10 at 7:04pm
Hi pete ive just found out ive got my next set of infusions on tuesday so i wont be able to make it in again!! Not to happy about that .. so would you be able to give me some work for me to do in the hospital that day or before then, any drawings or what is the brief?
thanks and sorry again

M

Pete Nevin
October 10 at 8:46pm
Hi M

We have a project to design and make a drawing machine over the next two weeks. You could design and invent a fantastic machine like those that Heath Robinson designed. You should think about the machine like something you buy at IKEA with all the diagrams of construction. Use your imagination. And don't worry.
Pete

This rapid communication has advantages over the traditional university systems of phones or meetings. The phone can be intrusive and would certainly impose on my private life at evenings and weekends, but Facebook allows me to choose when to communicate. Face-to-face meetings require appointments that are often difficult to fit in at short notice. But by regularly checking the Facebook sites, I can deal with things swiftly and quickly. Students appreciate the swift response and they can see that we care. And I feel that this is an important part of student retention. Pastoral as well as academic tutor support is improved. I can see people saying "Dont you find this is an imposition?" but it only requires you to restructure your work patterns a bit. If you didn't want to be as available as I do, you could chose to say "I'm on Facebook at these times". But we are often at our computers at work and the conversation on Facebook is often fairy brief. 'Chat' sessions may be longer, but still not time-consuming. The 'chat' function can be extremely useful and a good example of this is a student going into his final year suddenly had a job offer and was really unable to make up his mind and needed guidance. Using 'chat' I was able to give that guidance immediately. Certainly, it could have been done via a phone call, but in these conversations actually writing can help to clarify thoughts and understandings. Unlike a phone call, too, you can keep a record of the conversation when you need to.

Security is a topic that always comes up when discussing Facebook and, yes, I'm sure there are unscrupulous people out there that misuse it. One point is that I am using something that the students already use and where the norms of use are already established. I have come along after, so to speak, and said "Lets use this because they are already there". But I do ask everyone to make sure they do the privacy settings properly and I tell them such things as the attachments for 'poke' and others are not absolutely secure.

You have to be aware of the copyright implications, too. We avoid people losing the rights to their work by making sure that they only post photos and not full scans of the work. I am careful about what goes on Facebook and that's why the students have set up independent blogs for their main works and not put them on Facebook.

X's Wordpress Weblog entry:
I am unsure what the issues are on music about the U.S Laws as on One True Media, they have this link to music where you can add these samples (like in this movie). As this is just a first edit, there is no writing yet. ...

Facebook communication:

Student Y
October 16 at 11:57pm
Hi Pete.. I am concerned as I did not hear the conversation concerning the Laws on music on Youtube. I have had many troubles over Jump cuts, so have been frantically figuring out One True Media. I then had my own WMA sound files, but as I cannot (and will try to convert to) MP3 format, this was unsuccessful. So then I saw they had music on a menu, and had these samplers... Do you know (or will I have to research this?) as to whether this would infringe the copywrite for Youtube?

Any advice will be much appreciated

Y

P.s, could you please give any advice to my movie to help it along in any way... (the harsher the better). Thanks.
[url to the work on her blog given]

Take care...

October 18 at 12:37pm
You will have to try and get your sound files to work, Your own sound is what you need. The copyright laws are the same everywhere so don't use the work of others. If the site provides samples then I would imagine you can use them if its open source media. Pete

Student X
October 18 at 12:57pm
cheers pete...yes, not happy with the text either. Have just re done the text, so just about to see if those have worked better. The music worked better when there was no text, now there is, I hate the music!!!

Thanks for your help.

see you monday

Conclusions

This paper was designed to illuminate the educational potential of Facebook through discussion of the context of use and why it was selected, a particular case study, and the illustrated narrative account of one tutor about his experience of using Facebook. Within the project described in the case study, it is clear that the web as a resource and Web 2.0 technologies provided learning resources which enabled both the problem-based-learning design of the activity and also the successful completion of the project by all the students before the assignment cut-off date. It also illustrates how students became resources to each other, just as they will be within their professional communities of practice, through social networking. The aim now is to shift the focus from the tutor to the learners. Current and future research centres on the students' attitudes towards the use of such technologies and their perceptions of value.

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