

The Prospects for Blended Learning in Croatian Academic Institutions

Goran Bubaš, Dragutin Kermek
Faculty of Organization and Informatics, University of Zagreb
gbubas@foi.hr, dkermek@foi.hr

Abstract

This paper reviews some of the factors that influence the development of e-learning content in Croatian academic institutions. It also analyses the advantages of blended learning and the prospects for the use of web-based communication and instructional technologies for the advancement of the e-learning experiences of students.

Keywords: e-learning, blended learning, instructional design, instructional technology

1. INTRODUCTION

Blended learning is a broad term that denotes learning solutions that are based on a combination of face-to-face lecturing, self-paced e-learning, and the use of various Internet-based or other technologies (audio, video etc.) to deliver the learning content. The closely related term *hybrid learning* refers to the learning environments where e-learning is used together with traditional teaching and/or human tutoring (and where face-to-face communication with students is mixed with computer-mediated interaction). There are many definitions and concepts of blended learning, but it is certainly not just a simple method of linking classroom learning and e-learning. The essence of blended learning lies in the increased *sensitivity to the needs of learners* and greater insight into both the *advantages and disadvantages of different media and communication technologies* that can be used in the teaching and learning process for a specific topic. Another important element of blended learning is the *utilization of most effective instructional design* in the context of: (a) available technologies, (b) the attributes of instructors and learners, and (c) the specific learning content or subject area.

Several *basic categories of blended learning* can be identified in terms of the way offline and online activities are combined (see: Clark, 2003):

- *Component blending* with associations of separate content delivery channels in a simple, stand-alone blend, where they could function independently. This type of blend could combine the blended components in a *serial* or *parallel* manner.
- *Integrated blending* where components are associated in a *mutually supportive structure*, e.g. activities related to different delivery channels joined in an undivided learning unit.
- *Collaborative blending* in which the main goal is to ensure greater *cohesion* among learners, and group effectiveness in performing learning tasks with the sharing of information and mutual support.
- *Expansive blending* goes beyond traditional formal learning to implement and adopt diverse resources like offline print media, electronic media, internet/web and mobile technologies in

combination with real world learning goals and tasks that are typical in project-based or workplace learning environments.

Blended learning can provide both faculty and students with an opportunity to benefit from face-to-face interaction, and also help them avoid the difficulties related to the online delivery of complex content and potential problems related to technology adoption. Also, there could be more *individualization* with the use of self-paced learning, and with the flexible use of content delivery and communication media in relation to the learning styles and communication preferences of learners. Furthermore, the decision regarding the "optimal blend" could also be made on the basis of *cost-effectiveness* and *availability* of different resources (technology, learning content, faculty, support staff, etc.).

Before presenting some observations regarding the potential to implement blended learning in Croatian academic institutions it may be opportune to review some of the recent trends regarding e-learning and university education.

Academic institutions in Europe and the United States currently provide hundreds of courses in diverse subject areas <<http://www.worldwidelearn.com/>>. A review of trends in distant education has outlined several important changes in academic learning environments (Howell *et al.*, 2003):

1. There is growing demand for distance education programs tailored to the needs and preferences of non-traditional students.
2. Traditional faculty roles are evolving toward providing various types of support for technologically based distance learning activities.
3. Faculty members are faced with an increased workload related to online interaction with students and also with a demand for the adoption of new education technologies.
4. Instruction is becoming learner-centered, with more emphasis on competency than on course completion.
5. Learning environments are becoming more technologically supported and Internet based, and ICT literacy is an essential requirement for the performance of academic activities for both faculty and students.
6. The cost per student of a high quality distance learning program is equivalent to that of traditional education in a physical environment.
7. The Internet dominates distance learning media and there is less difference between distant and local education.
8. There is need for effective course management systems and for the implementation of learning and teaching strategies that utilize the potential of diverse ICT in educational environments.

2. E-LEARNING AT CROATIAN ACADEMIC INSTITUTIONS

Even though online education has been evolving for more than a decade, by the year 2004 there were about one hundred courses in Croatian academic institutions with online learning content (see courses listed at the following web sites: <<http://www.mzos.hr/virtus/>> and <http://webct.carnet.hr:8900/webct/public/show_courses.pl>). However, none are known to be fully delivered online.

The development of online courses can be more profitable than education in the physical environment when a large number of students are enrolled in a time span of more than one or two years (see: Bates, 2004). Still, for the more widespread application of e-learning in

Croatian academic institutions, two problems may be of significance. First, because of the economic environment in Croatia there may be insufficient funding for the extensive development of courses that are fully delivered online (including compensation and reward for academic staff). Second, most quality e-learning courses go beyond a text-only type of learning content, simplistic use of courseware and solutions that do not pay much attention to instructional design methods. Quality online education should include advanced *multimedia elements* and *sophisticated pedagogy* to enhance the attractiveness and effectiveness of e-learning experiences. However, such courses would need (a) highly educated academic staff with motivation and skill to develop them, or (b) support teams for academic staff, for instance in *university centers for the advancement of teaching and learning*, which would provide help in planning and in instructional and multimedia design, and also in the utilization of information, communication, and educational technology.

Even if Croatian academic institutions found the resources to overcome the funding problem, it is unlikely that in the next few years a sufficient number of support teams would be constituted at Croatian academic institutions to help the development of a substantial number of e-learning courses. Still, some support is provided by the *Croatian Academic Research Network* – CARNet – by providing the resources for the use of *WebCT courseware* <<http://edupoint.carnet.hr/webct/>> for online course development and academic education, as well as by its *Pilot Projects*, *Educational Projects*, and *Reference Centers for E-learning* <<http://www.carnet.hr/projects>>.

There are numerous advantages of e-learning in comparison with traditional academic education, but the weaknesses of online course delivery should also be taken into consideration before deciding to switch entirely to the Internet as an educational medium (see: Illinois Online Network, 2003). Online courses enable education "*any time, any place and at any pace*", with easy access to resources, and they also provide the opportunity for a more *student centered and creative education*. But the following potential weaknesses are equally challenging (and also possibly present in the academic learning environment in Croatia): lack of Internet access and limitations of technology, as well as insufficient computer literacy of students; students need to be self-disciplined, well organized and motivated; lack of online facilitator skill and experience; problems with courses that are not transferable online; inadequate instructional design and curriculum development for e-learning.

It must be noted that there are numerous other probable barriers to the development of web-based courses (CSU, 2000):

- Faculty members who are unfamiliar or uncomfortable with novel educational technology.
- Inability of faculty to envisage how new technology could enhance student learning.
- Frustration of faculty members with large enrollments and increased teaching load.
- The need to master courseware in less time than is necessary for its comfortable use.
- Intellectual property and copyright issues related to web-based course material.
- Lack of technical assistance for instructional design.
- Time needed for online course development and compensation issues.
- Lack of state-of-the-art equipment and support to apply novel technologies in class.
- Development of e-courses does not positively affect faculty merit and advancement.
- In some departments faculty members may not be assured that their e-courses will be included in the curriculum.

Numerous internet-based technologies are commonly used in an online course (see: McVay Lynch, 2002): e-mail and/or mailing lists, web pages, user authentication and student tracking, discussion board or forum, chat room, whiteboard, student and teacher file management, computer aided assessment tools, content management system (CMS), learning management system (LMS) etc. Nevertheless, it must be emphasized that members of the Croatian academic faculty may find it difficult to implement on their own many of the listed technologies.

Numerous *teaching and learning strategies* may be transformed to make use of the diverse ICT and e-learning technologies (Daniels, 2001): lectures, seminars, tutorials, discussions, demonstrations, workshops, group/individual mentoring, assignment feedback, motivation, evaluation, counseling, advising, etc. Still, to implement and/or perform more than a few of such activities online may be a time consuming and overwhelming task for individual faculty members in Croatia who, at most colleges, are without adequate support in the application of e-learning technology and instructional design and, probably, without assistance (e.g. additional teaching staff) for online tutoring and mentoring of online classes that are attended by a large number of students.

The motivation for developing online course material in Croatia is related to the needs and expectations of students, as well as to the potential for creative and student-centered education. However, the obstacles can be found in insufficient funding, institutional resistance to change, inadequate technical/pedagogical support, lack of faculty motivation and competence, and also insufficient computer literacy of students and their inability to access the Internet.

3. ADVANTAGES OF BLENDED LEARNING FOR CROATIAN ACADEMIC INSTITUTIONS

Blended or *hybrid* learning could be a suitable means of implementing e-learning solutions in the Croatian academic environment. This approach combines the best practices of both traditional and online education, bearing in mind the following factors: specific attributes of course content; available resources; level of faculty competence to develop online educational material; instructional design models; and the number of students and their readiness to access, adopt and effectively utilize online course material. Studies have demonstrated that blended learning can overcome the gap between traditional and e-learning solutions, and also surpass both of those approaches in terms of effectiveness and student satisfaction (for example, see: Riffie, 2003). Instructors can utilize diverse models for blended learning (Valiathan, 2002) and strategies for its implementation (Rossett *et al.*, 2003). An interesting example of a trend toward blended learning can be found in Silicon Valley at the San José State University (SJSU) <www.sjsu.edu>. Even though there were several hundred WebCT based e-courses available at SJSU <http://courses5.webct.com/webct/public/show_courses.pl?1000749588>, at least one of the SJSU projects in 2004 was aimed at introducing blended learning that combines video lectures with online instructional exercises, discussion boards, and other internet-based learning tools, while the students also had on-campus sessions where they interacted face-to-face with their professors <<http://www.sjsu.edu/acadtech/projects/>>.

It may be opportune for Croatian faculty to set e-learning goals close to the concept of blended learning and to develop online educational material that meets the following criteria

whereby it is: complementary to the offline educational activities; best suited to course content; time and cost effective, bearing in mind the available resources; in accordance with at least some of the expectations, needs and competencies of students; not in conflict with copyright policies; unlikely to become outdated too soon; flexible enough to fit in well within a curriculum that usually changes every few years. It must be noted that the use of numerous online resources on blended learning (for instance: Babson College, 2002) and e-learning in general (see: <<http://www.carnet.hr/referalni/obrazovni/mkod/linkovi/sadrweb>>) could considerably improve the outcome of such efforts. Also, academic institutions could greatly benefit from introducing formal faculty development programs for teaching blended/hybrid learning courses and also from providing sufficient time and support for the redesign of traditional courses. Recent projects of the Pew Learning and Technology Program <<http://www.center.rpi.edu/pewhome.html>> demonstrated that it is possible to increase learning effectiveness and reduce the cost of education by introducing various means of blended and distributed learning (see: Twigg, 2003). Some of the common principles applied by the successful projects of this program were: (1) active learning methods and environments; (2) access to computer-based resources; (3) orientation toward mastering competencies in specific domains; (4) on-demand help for different types of problems provided to students. Interestingly, different models of course redesign were applied in these projects that fall into the following categories (adapted from Twigg, 2003):

- *Supplemental model* (adding out-of-class computer-based learning activities to traditional educational content delivery modalities).
- *Replacement model* (only selected face-to-face interaction and traditional teaching methods are replaced by their online equivalents).
- *Emporium model* (self-paced use of online material is introduced that eliminates classroom teaching and tries to serve best the individual student's needs through personalized online and offline contacts).
- *Fully online model* (all course material is delivered online and interaction with students is also entirely online).
- *"Buffet" model* (there is no "fixed menu" of teaching strategies and learning environments; students can choose among online and offline content delivery, various instructional methods, as well as between online and offline contacts).

Several questions need to be asked to produce "*optimal blends*" in the efforts to implement blended learning (adapted from Clark, 2003):

- Do we have the competencies and equipment for blended learning?
- What are the possible "components" of the blended course?
- What criteria should we use to create an optimal blend?
- What types of blended learning are commonly found or recommended?
- How do we discern "bad blends" from "optimal blends"?

When deciding upon the components of blended learning, it is crucial to bear in mind the strengths and weaknesses of different types of media in relation to *specific instructional goals* (skill development, attitude change, competency building). An important goal in blended learning course (re)design can be to combine the best of face-to-face teaching and traditional educational media with online learning and internet-based technologies in order to enhance both the *effectiveness* of instructional efforts and the *satisfaction of students* with their learning experiences.

The decision regarding the optimal blend of media and activities could be based on several criteria (adapted from Rossett *et al.*, 2003):

- *Stability of learning content* (more stable content puts an emphasis on extensive development of online resources, while less stable content gives more importance to synchronous e-learning, online assessment and collaboration).
- *Time to implement instructional units* (a longer development cycle is usually associated with more complex content and interactive web-based multimedia, while simple delivery methods, text based material and webcasting need much less time to implement online).
- *Necessity of human interaction* (self-paced and learner-led online instruction designs are opportune when there is little need for student-instructor and student-student interaction, but in most cases some form(s) of one-to-one, one-to-many or many-to-many interaction would be needed to enhance learning experiences and outcomes).
- *Cost* (this is one of the most important issues, and some form of return on investment must be considered when planning the components of blended learning).

4. A CASE OF BLENDED LEARNING

Several blended learning courses have been designed and evaluated at the Faculty of Organization and Informatics in Varaždin (Kermek *et al.*, 2003). The following conclusions could be made from the practical experience and surveys performed during two years of teaching blended learning courses:

- Face-to-face interaction was a necessity during the *initial adaptation* of students to the learning management system (LMS) that was developed for the course.
- Complex learning content was best explained in a traditional "*lecture plus exercise*" format, and *retention* was significantly improved when this was followed by *further online learning and practice outside class, as well as by projects that were obligatory for all students and submitted online*.
- Some students rapidly became independent of face-to-face lectures, but the majority preferred *combined content delivery* in both face-to-face and online learning.
- Not all students used both face-to-face communication and forum for interaction with the lecturer; some students preferred one channel over the other.
- *Newsletters* proved to be an important tool for *course management*, and the online *forum* was used more often when students were engaged in team projects since before that there was regular class attendance by most of the students.
- Most of the students evaluated highly their *blended learning experience*, even though course requirements were not easily dealt with and it took a lot of effort to pass the courses.
- Students acknowledged that additional *multimedia* content and an *online archive* (in streaming video format) of class lectures would have a positive impact on the learning effectiveness.

5. CONCLUSION

Blended learning could more rapidly move distant education in Croatia closer to the previously listed e-learning trends in more advanced academic environments. However, it would take a significant effort of both the faculty and academic institutions to improve the level of use of instructional technology and pedagogy and to enhance the learning experiences of students.

Various forms of blended learning are a means to reach such objectives more fully, with acceptable costs, and in less time.

6. REFERENCES

- Babson College (2002). *Blended Learning Best Practices Guide: Delivery Options*. Curriculum Innovation and Technology Group (CITG), Babson College, Wellesley, Massachusetts, Retrieved 1 September 2004, URL: <http://fusion.babson.edu/citg/docs/blendedlearningguidev2.pdf>
- Bates, A.W. (2004). *Upravljanje tehnološkim promjenama: Strategije za voditelje visokih učilišta*. CARNet, Zagreb.
- Clark, D. (2003). *Blended Learning* [White paper]. Epic Group, Brighton, UK, Retrieved 1 September 2004, URL: http://www.epic.co.uk/content/resources/white_papers/blended.htm
- CSU (2000). *Task Force on Courseware Development Final Report*. Information and Educational Technology Coordinating Committee (IETCC), California State University, Fresno. Retrieved 1 September 2004, URL: <http://www.csufresno.edu/digitalcampus/IETCC/TaskForceFinalReport.html>
- Daniels, L. (2001). *Teaching & Learning Strategies Matrix*. College of Education ETSU, Johnson City, Tennessee, USA, Retrieved 1 September 2004, URL: <http://coe.etsu.edu/departments/cuai/danielsh/5850/strategies/IDWebmatrix.htm>
- Howell, S.L., Williams, P.B., & Lindsay, N.K. (2003). Thirty-two trends affecting distance education: An informed foundation for strategic planning. *Online Journal of Distance Learning Administration*, 6(3), Retrieved 1 September 2004, URL: <http://www.westga.edu/~distance/ojdla/fall63/howell63.html>
- Illinois Online Network (2003). *Strengths and Weaknesses of Online Learning*. Illinois Online Network and the Board of Trustees of the University of Illinois, Retrieved 1 September 2004, URL: <http://www.ion.illinois.edu/IONresources/onlineLearning/strengthAndWeak.asp>
- Kermek, D., Vrčak, N., Bubaš, G. (2003): Efficiency of a learning management system in hybrid learning. *Proceedings of the Conference Computers in Education, 16th International Convention MIPRO 2003*, May 19-23, pp. 50-55, Opatija, Croatia.
- McVay Lynch, M. (2002). *The Online Educator: A Guide to Creating the Virtual Classroom*. RoutledgeFalmer, London.
- Riffie, W.H. (2003). Putting a faculty face on distance education programs. *Syllabus Magazine*, February, Retrieved 1 September 2004, URL: <http://www.syllabus.com/article.asp?id=7233>
- Rossett, A., Douglass, F., Frazee, R.V. (2003). *Strategies for Building Blended Learning*. Learning Circuits, American Society for Training and Development, Alexandria, USA, Retrieved 1 September 2004, URL: <http://www.learningcircuits.org/2003/jul2003/rossett.htm>
- Twigg, C.A. (2003). Improving learning and reducing costs: New models for online learning. *EDUCAUSE review*, 38(5), pp. 28-38, Retrieved 1 September 2004, URL: <http://www.educause.edu/ir/library/pdf/erm0352.pdf>
- Valiathan, P. (2002). *Blended Learning Models*. Learning Circuits, American Society for Training and Development, Alexandria, Virginia, Retrieved 1. September 2004, URL: <http://www.learningcircuits.org/2002/aug2002/valiathan.html>