Using LAMS to facilitate an effective blended learning project at University of Szczecin (Poland)

Adam Stecyk
University of Szczecin
Chair of Efficiency of Innovation
Faculty of Management and Economics of Services

Abstract:
LAMS WZiEU Project began in 2006. The biggest challenge of adopting an elearning learning environment was the methodological and electronic development of chosen parts of the Computer Science subject and transferring didactic content delivered by traditional methods into elearning language. As is shown from the executed analysis, the general rating of efficiency and quality of blended learning was twice as high as the traditional method. According to the students, blended learning is better in every element of the educational process, except communication. It seems that it is very important to find which must be taken into consideration when other e-courses are designed. Essential are solutions for synchronous communication (i.e. chat, not only forum) or, going further, e-consultation tools (i.e. audio/ video on- line). The general rating for the efficiency of the method was positive for both students and teachers. The LAMS platform is not faultless, but is an interesting alternative for commercial solutions, especially at the beginning of elearning route.

The LAMS WZiEU Project

LAMS WZiEU Project had its beginnings in 2006, when contact was established between the Department of Management and Economics of Services of University of Szczecin and MELCOE (Macquarie e-Learning Centre Of Excellence) at Macquarie University in Sydney. The result of this co-operation was the author's visit to Macquarie University, creating a Polish version of LAMS (Learning Activity Management System) and the first implementation in Poland of an Australian-style elearning and blended learning platform.

In April 2007 the LAMS WZiEU project team was established and its goals were:

- Final test of Polish version of LAMS – April 2007.
- Implementation of LAMS system on elearning server in WZiEU network – May 2007.
- Selection and essential elaboration of issues of the first subject for teaching using the blended learning method – May 2007.
- Development of LAMS WZiEU internet website – May- June 2007.
- Development of elearning training (methodology and electronic materials) – June- August 2007.
- Test and verification of elearning training, evaluations- September 2007.

There are several main barriers to elearning implementation mentioned in elearning literature: financial limitations of the organization, lack of suitable infrastructure and mental barriers, considered as lack of knowledge and simple anxiety for changes by all concerned groups (teachers, students and technicians, organization administrative body). To avoid these problems on the beginnings of the elearning path, the following decisions were made:

- Financial barriers – the elearning platform used at WZiEU must be a free tool, however it must fulfil the basic needs of a modern model of education. After several consultations, the team project decided that it would be the open source (GPL licence) LAMS system.

- Technical barriers - LAMS was implemented on one the servers in Department's network with enough power for full functionality. After verification and evaluation of the first stage of the project, a new dedicated elearning server was purchased.

- Mental barriers – implementation of elearning philosophy will have an evolutionary character ("small steps" method), will be a bottom-up initiative, and will be conducted only when class leaders (teachers) acknowledge that an elearning system would raise teaching effectiveness and help in the organization of academic work. Furthermore, inquiries and polls were to be executed to analyse students' reactions to the new teaching methods.

- Blended learning would be the main training model (traditional teaching combined with up-to-date IT methods and tools). The first subject for blended learning was Computer Science was carried out at computer laboratories from 1 October 2007. The project team was responsible for the description and development of the chosen subject.
- Methodology, form and content - because of the high costs of methodological, graphical and electronic development of the subjects, it was decided to use both International and Polish experiences and to compile the first subject within LAMS WZiEU project team. Because of the usage of the Learning Activity Management System, the project was named LAMS WZiEU, and had its own website linked to the WZiEU main site.

The biggest challenge was the methodological and electronic development of chosen parts of the computer science subject and transferring didactic content delivered by traditional methods into elearning language. While working on the electronic version of the course, the following decisions were made:

- **Lectures -** Theory lectures were to be carried out using traditional methods, 15 hours in a semester, while verification of the theoretical knowledge took place in computer laboratories using LAMS in the form of an elearning test. Furthermore a summary of the lecture was available for students in LAMS each time it finished.

- **Computer laboratories -** the practical part was carried out in computer laboratories, 45 hours throughout the semester. The traditional content of the subject includes the basic Office applications: text editor (word processing), graphic presentation, calculation sheets (spreadsheets), data base, and internet communication). The subject was divided into two blended learning groups: 70% traditional delivery in laboratories and 30% online (students' homework).

- **Computer Science subject -** the main information carrier in the electronic course was graphic animations (tutorials, guide books), showing the "step- by- step" use of Office applications. Guide books were created using open source (i.e. winks) or commercial (i.e. SwishMax) programmes for building FLASH animations. Furthermore, students verified acquired knowledge through the homework (files) completed in Office applications (i.e. homework for using logic functions in MS Excel).
- **Additional elements -** electronic materials were included in additional elements which can be found in e-courses, such as test and polls, discussion forums and file submission tools.

The electronic materials for Computer Science were developed by the project team and were placed on the LAMS platform. Classes had both **stationary character** (computer laboratories) and students' homework (self- education) and were planned to achieve following educational goals:

- **To equalize the level of the students' basic (initial) knowledge** involving development of graphical tutorials (guidebooks), allowing quick familiarization of basic knowledge for students with limited experience in Office applications at the beginning of the semester.

- **Standardization in sharing the knowledge** in traditional form - using LAMS during "live" classes for presenting training content consistently by all the teachers.

- **Students homework -** development of elearning activities to allow content presentation (graphic tutorials, summary texts; students were able to copy notes to notepad – a LAMS system tool for students) and its verification through application files (file submission tool), test surveys and multiple choice questions.

- **Communication with students** - every activity sequence to be completed by the student in any time between one and another meeting with the teacher, contains a mechanism for asynchronous communication mechanism (Forum) for exchanging questions, notes and suggestions as well as a mechanism for delivering completed tasks (application specified documents) to the teacher (Submit files).

- **Knowledge verification -** monitoring students progress (exchanging documents, file marks), monitoring and marking answers on the forum, tests, questionnaires and open questions. Weekly verification of partial knowledge and complex test (i.e. theoretical knowledge test about Computer Science).

Evaluation of LAMS WZiEU Project

For the evaluation of the first stage of the LAMS WZiEU project, the following factors were used: Economical factors (costs in person-days) and Educational factors (quality of the elearning process and satisfaction of teachers and students). Table 1 contains information about costs incurred while preparing work to start the project and initiate the first subject in blended learning.

	Task	Person/days
1	Development and testing of Polish language version of LAMS	30
2	LAMS system installation	10
3	Subject development	15
4	Methodological and electronic course development	80
5	Test and verification	5
	Total	**130**

Table 1. Costs of LAMS WZiEU project   **Source: Own study**

While analysing information coming from other elearning projects undertaken in Poland and worldwide, one can observe, that the majority of costs are absorbed by methodological and electronic elaboration of the course. It was the same with the LAMS WZiEU project. As is apparent from presented information, the majority of costs were incurred during the conversion of the traditional subject activities into elearning language tools (animations, tests, forum, tasks etc.). However it must be underlined that, in the case of purchase (or subscription) of a commercial elearning platform and development of educational materials by an external company, the incurred cost would be much higher.
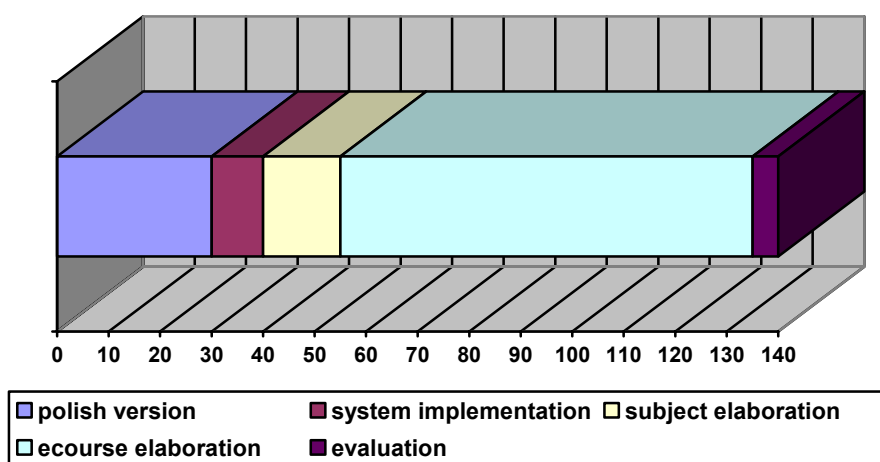

Chart 1: Costs of LAMS WZiEU project

There is a question about the quality of the solutions used, the functionality of the chosen platform and effectiveness of the developed e-course. The answer was determined by analysing data from surveys, (carried out in LAMS) in which students (satisfaction and quality of e-courses) and teachers (platform functionality) participated.

	Traditional method	Blended learning
Creating plan for laboratory classes	3	3,5
Development and distribution of didactic materials for „live" classes	2,3	4
Development and distributions of homework and self-educational materials for students	2	5
Knowledge and homework verification	1,5	5
Communication with students	1	4
Administration	2	3
Total	**11,8**	**24,5**

Table 2 : Methods comparison - teachers' surveys   Source: Own study

Questionnaires were completed by a group of 7 teachers using LAMS for teaching a Computer Science subject using the blended learning method. Of course the small number of respondents may show a lack of objective results, nevertheless the achieved results may be starting point for deeper analysis. The main advantages raised by teachers were: realization of the subject in the same way by all teachers, comfort of carrying out classes (most of didactic materials were developed previously), ease of knowledge and file distribution, and communication with students after "live" classes etc. As shown in Table 2 which compares traditional and blended learning methods, the benefits of the latter is clearly shown (teachers gave marks in scale from 0 to 5).

What was an interesting finding in open questions about the disadvantages of blended learning was that the comments were not about the method itself but the elearning platform. The most common comments were about: easier groups and users' administration and a greater number of tools helping in didactic process, like individual and cumulative statistics. The final conclusions are very pleasing. Both the elearning platform and the way of conducting classes were accepted and appreciated by teachers. A return to traditional methods is unlikely.
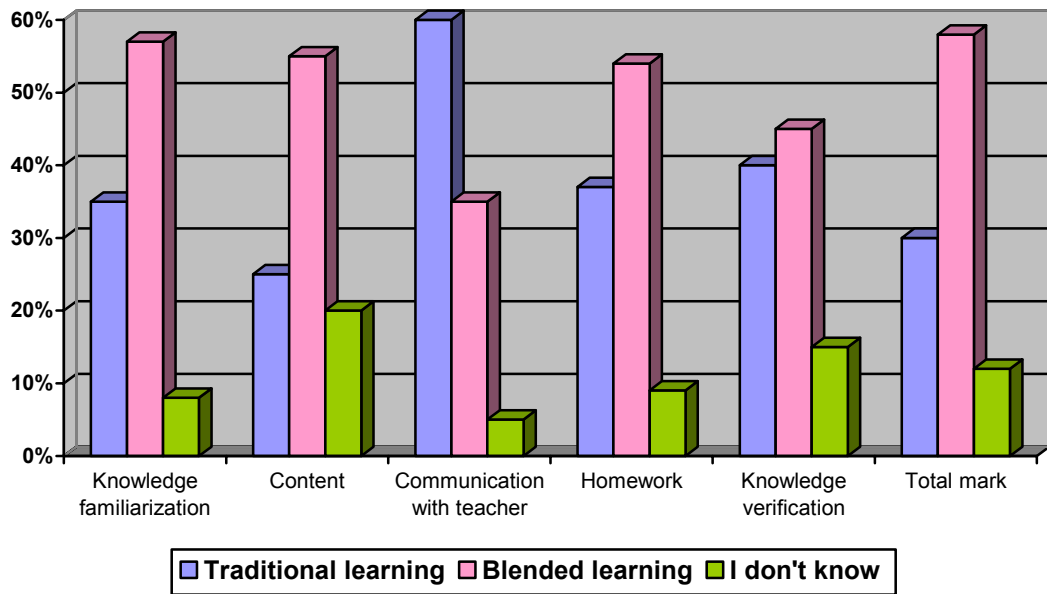
Chart 2: Methods comparison - students' surveys

It is very hard to judge educational quality of performed training, especially its efficiency. As a starting point to the analysis of the issue, surveys for students were adopted. Questionnaires were completed by a group of 150 students who participated in schooling delivered with blended learning.

As is shown from the executed analysis, the general rating of efficiency and quality of blended learning is twice as high as the traditional method. According to students blended learning is better in every element of the educational process, except communication. It seems that it is very important to find which must be taken into consideration when other e-courses are designed. Essential are solutions for synchronous communication (i.e. chat, not only forum) or, going further, e-consultation tools (i.e. audio/ video on-line).

The research findings from the questionnaire also showed that the most helpful tool for students were animated tutorials (FLASH animation – board tool). The Forum and tool for www sites explorations (Shared Resources) were also very popular, as a "natural" method of searching and gaining information for students between 19 and 25 years old. Tools for downloading and submitting files to the teacher were rated at 30%.
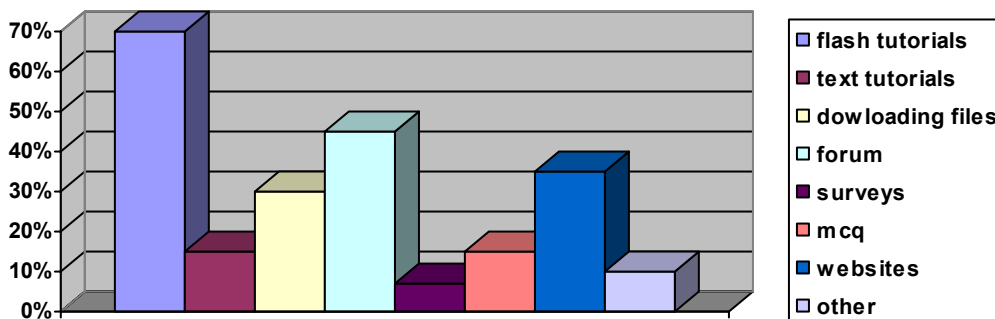

Chart 3: Tool comparison - students' surveys

Our research proves that students use interactive tools (animations) and those, which give unlimited possibilities to exchange information and communication (forum, exploration of www sites). The general rating for the efficiency of the method is positive for both students and teachers. The LAMS platform is

not faultless, but is an interesting alternative for commercial solutions, especially at the beginning of elearning route. In March 2008 the second stage of the LAMS WZiEU project started and this consists of: the purchase and installation of a newer elearning dedicated server, installation of the next version of LAMS (with branching features), evaluation of the Computer Science subject and the development of the next two subjects for blended learning.