

Realization of the LAMS WZiEU Project

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This presentation will describe a LAMS implementation in the Department of Management and Economics of Services at the University of Szczecin. The main aim of this article is to present a brief summary of the realization of the second stage of the LAMS WZiEU Project which explores the didactic, methodological and technical aspects of designing and creating e-courses. It shows the process of designing and creating two new e-courses: History of Economic Thought (e-learning course) and Strategic Management (blended learning course). The choice of e-learning techniques and mechanisms will be discussed as well as the range of technical work. The presented model describes the flow of work and task allocation that was necessary to realize the e-courses. The presentation will also present some information about the directions of evolution of the LAMS WZiEU Project concerning synchronous learning techniques & integration with MOODLE.

Keywords: LAMS, e-course, Learning Design, MOODLE

The characterization of LAMS WZiEU Project

The beginning of the LAMS WZiEU Project was in 2006, when contact was established between the Department of Management and Economics of Services of University of Szczecin and the Macquarie E-Learning Centre of Excellence (MELCOE) of Macquarie University in Sydney. This collaboration involved a scholar visit by the author to Macquarie University, resulting in the creation of the Polish version of LAMS system (Learning Activity Management System) and the first implementation of the Australian e-learning and blended learning platform in Poland. In April 2007, the LAMS WZiEU project team was founded to realize the first stage of LAMS WZiEU Project. The table below shows the main goals of that stage.

Table 1: Aims of the first stage of LAMS WZiEU Project

<i>Period of time</i>	<i>Description</i>
April 2007	Final test of Polish version of LAMS system
May 2007	Implementation of LAMS system on e-learning server in WZiEU network
May 2007	Selection and essential elaboration of issues of the Computer Science subject for teaching using blended learning method
May – June 2007	Elaboration of internet website LAMS WZiEU
June – August 2007	Elaboration of e-learning training (methodology and electronic materials)
September 2007	Test and verification of e-learning training, evaluations

The first stage of the LAMS WZiEU Project is finished. The overall efficiency assessment of applied e-learning methods was positive in the opinion of both students and teachers.

Realization of the Second Stage of the LAMS WZiEU Project

The second stage of LAMS WZiEU Project started in March 2008. It consisted of: the purchase and installation of a new e-learning dedicated server, the installation of the next version of LAMS (with branching features), evaluation of the Computer Science subject, the design and implementation of the next two subjects for e-learning and blended learning and integration with the available, open source LMS system.

Development of technical infrastructure

In connection with building a wider conception of e-learning implementation on WZiEU, the decision about the purchase and installation of the new e-learning dedicated server was made. The crucial requirement was the ability to provide efficient and stable access to LAMS for at least 300 active users. The choice was a solution from Fujitsu Siemens – Primergy RX300 S4 server. The most important technical details of the server are:

- Chipset: Intel 5000P
- CPU: 2x Intel Xenon Quad-Core 2,83 GHz
- RAM: 16 GB DDR2 PC2-5300F
- HDD: 6x 300GB SAS
- LAN: 2x Gbit Ethernet

During the first stage of the LAMS WZiEU project, LAMS was installed on a low efficiency server. Because of that it was extremely important to optimize configuration of the server. After several tests it was recognized that a factor which had great influence on server performance was the java virtual memory setting. Increasing default settings of XMX, XSS and XX memory size caused noticeable improvement in server performance. This modification was also applied to the dedicated server.

Another crucial factor is internet connection capacity. WZiEU uses symmetric internet connection with 1Gb/s bandwidth. The minimum available bandwidth allocated to the e-learning server is set to 100Mb/s. Internet connection capacity does not pose a threat in distributing content to LAMS users. In regard to the use of the LAMS platform at WZiEU, it should be assumed that WZiEU is technically well prepared.

Creation of new e-courses

Content preparation for the two new e-courses was preceded by: source document analysis, selection of a learning model in view of time (synchronous, asynchronous), the way content was to be distributed (e-learning, blended learning), choice of tools to present and verify content, and interaction with students (taking into account essential features of behavioral and constructiveness approach). Two new subjects were designed:

1. History of Economic Thought (HoET) – e-learning course. Thirteen didactic sequences were designed to cover material previously using traditional methods. These materials will be gradually accessible in LAMS. At the end of all the didactic sequences, knowledge verification in the form of an e-learning test using LAMS will take place in computer laboratories. Because of the specific character of the course, the main information resources used are:
 - Text resources
 - Flash animations
 - Simulations, quizzes, interactive exercises
 - Multimedia resources (videos, audio recording, pictures)
 - Virtual mentor.

In addition, the e-course includes elements such as: test, surveys, discussion forums, supplementary materials like source documents and the possibility of sending files to the teacher.

2. Strategic Management (SM) – blended learning course. Theoretical lectures are carried out using traditional methods (30 hours in the semester), while verification of the theoretical knowledge in form of an e-learning test using LAMS will take place in computer laboratories. Furthermore a summary of each lecture is available for students in LAMS. The practical part is carried out in the classroom (30 hours in the semester). During the classes, students divide into small groups to solve tasks connected with the economic situation of virtual enterprise in the aspect of a chosen issue within the subject. At home students are obliged to do exercises sent by teachers via LAMS. It is assumed that

students work in group of four and use synchronous or/and asynchronous mechanisms to communicate and solve tasks. Sequence gates enforce students to do the exercises in the time specified by the teacher. Because of the specific character of the course, the main information carriers are:

- Text resources.
- Graphics (pictures, charts, diagrams).
- Forum or/and chat activity with the scribe function.

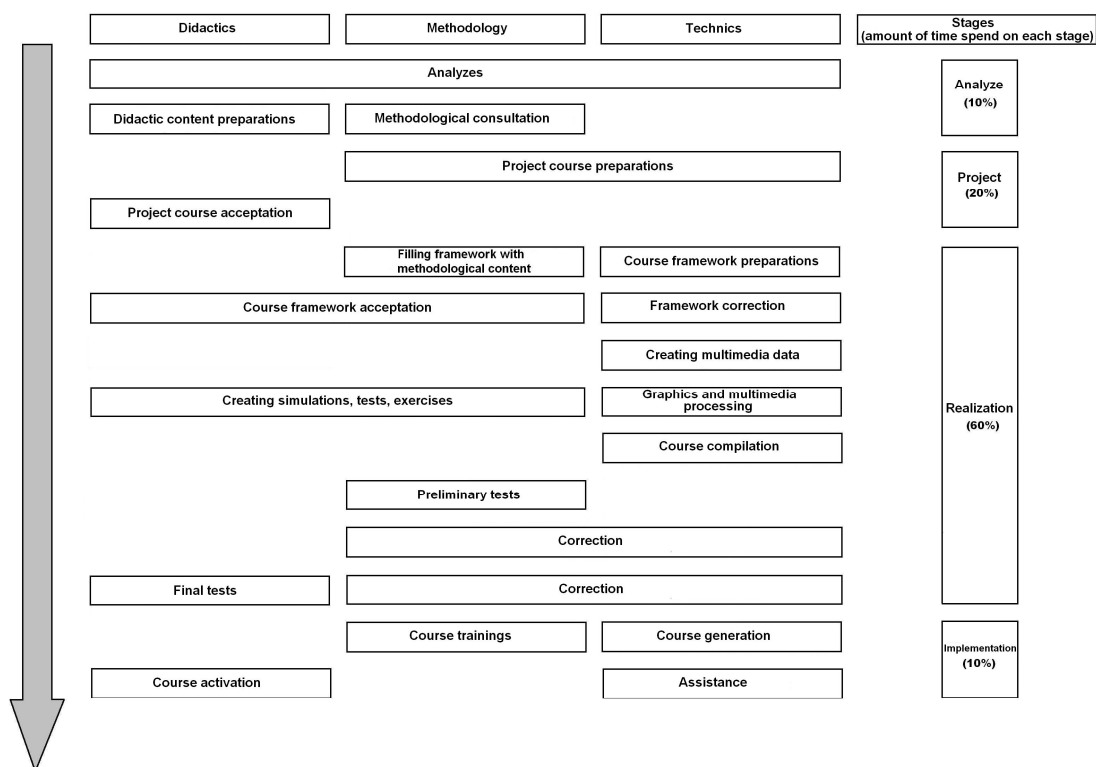
Electronic materials include additional elements such tests and polls, supplementary materials and the possibility to send files to the teacher, which can be found in the e-course.

During the process of designing the e-course, we concentrated on three aspects, acknowledging their strong interaction with each other:

- Didactic – accuracy of the e-course content.
- Methodological – converting content into manageable knowledge segments.
- Technical – providing accurate, accessible knowledge through the e-learning system.

The figure below presents the flow of work and task division that are necessary to realize the e-course (e-learning or blended learning) and outlines the time needed to build particular stages of the course.

Figure 1: Process of e-course creation



The team responsible for preparing the didactic content of the e-course was interdisciplinary in character and consisted of specialists from different provinces. WZiEU research workers were allocated to develop the didactic part of the course. In regard to the high costs of preparing the course in the technical and methodical sense, it was resolved to use the Australian and Polish experience and to design and implement subjects with the LAMS WZiEU project team.

According to general principles of on-line course building, the training was organized before the source material preparation. The aim of the training was to clarify the e-learning

requirements. Participants of the training agreed that understanding e-learning enabled efficient and effective work towards the didactic design and implementation of course content and improved the quality of the course in a technical and methodical sense: prepared source documents did not need profound structural changes, as they already contained interesting multimedia and interactive teaching approaches and contained a variety of exercises and tests.

The biggest challenge was transforming didactic content into e-learning format so the choice of techniques and mechanisms of remote teaching could help achieve training aims in the best way. The methodological experts were responsible for the quality of the prepared course. The table below shows the structure, e-learning instruments, basic components of prepared e-learning courses and the software used to implement them.

Table 2: Elements of e-course

	<i>History of economic thought</i>	<i>Strategic management</i>
<i>Learning model</i>	E-learning	Blended learning
<i>Activities (main course components)</i>	<ol style="list-style-type: none"> 1. Content presentation <ul style="list-style-type: none"> • Noticeboard • Share Resources 2. Content verification <ul style="list-style-type: none"> • Multiple Choice • Submit Files 3. Interaction with students <ul style="list-style-type: none"> • Question & Answer • Survey • Notebook • Voting • Forum 	<ol style="list-style-type: none"> 1. Content presentation <ul style="list-style-type: none"> • Noticeboard • Share Resources 2. Content verification <ul style="list-style-type: none"> • Multiple Choice • Submit Files 3. Interaction with students <ul style="list-style-type: none"> • Question & Answer • Survey • Notebook • Chat & Scribe • Forum & Scribe 4. Sequence management <ul style="list-style-type: none"> • Sequence Gates • Grouping • Optional Activity
<i>Methods of content presentation</i>	<ol style="list-style-type: none"> 1. Text resources 2. Graphics elements 3. Flash animations 4. Simulations 5. Quizzes, interactive exercises 6. Virtual mentor 7. Multimedia resources <ul style="list-style-type: none"> • video, • audio recordings, • pictures 	<ol style="list-style-type: none"> 1. Text resources 2. Graphics elements
<i>Communication methods</i>	Asynchronous	Synchronous, asynchronous
<i>Used tools</i>	<ol style="list-style-type: none"> 1. Commercial <ul style="list-style-type: none"> • Adobe Captivate • SwishMAX • Microsoft Office • Adobe Photoshop 2. Non-commercial <ul style="list-style-type: none"> • HyperSnap • Hot potatoes 	<ol style="list-style-type: none"> 1. Commercial <ul style="list-style-type: none"> • Microsoft Office 2. Non-commercial <ul style="list-style-type: none"> • Gimp • HyperSnap

Technical competence is essential to transform content delivered by didactic experts and organized in teaching methods by methodological designers into an e-learning course. The following table presents the range of technical work essential to elaborate described courses and the number of hours needed to accomplish them.

Table 3: Range of technical work

<i>Issue</i>	<i>Amount of work (hours)</i>		<i>Description</i>
	<i>HoET</i>	<i>SM</i>	
<i>Design of course structure</i>	60	20	Graphical design, navigation framework programming, creating relations between elements of a course etc.
<i>Development and verification of source documents</i>	12	4	Language verification and content integrity, possible corrections
<i>Home page</i>	3	2	Visual and technical home page development
<i>Flash animations</i>	80	0	Creating set of animations which make the content more attractive and interesting; visualization of a problem essence
<i>Virtual mentor</i>	10	0	Development of mentor profile and comments connected with course content and students achievements.
<i>Filling course with information content</i>	15	6	Inputting text, graphics and multimedia resources, content processing
<i>Filling course with multimedia content</i>	14	4	Providing interactive exercises, pools, tests, simulations – tools that activates trainee, possible corrections
<i>Graphics processing</i>	16	4	Making content visually attractive, visual integrity affirmation, improvements of particular elements
<i>Hyperlinks</i>	4	2	Hyperlinks to additional materials, dictionary, indexes etc.
<i>Verification, tests, improvements</i>	30	6	Didactic, Methodological , technical verification, improvements, tests (especially interactive elements)
<i>Total amount of work</i>	244	48	

The same approach as shown in Figure 1 can be used to build e-learning or blended learning courses. Similar activities were used when preparing courses, which allows us to claim it is the subject characteristic that determines the choice of required activities rather than form of transfer of the knowledge. Both courses apply asynchronous communication mechanisms, additionally the Strategic Management course offers the possibility of synchronous communication by a chat activity. The basic difference in elaborating electronic courses is the time needed to prepare the multimedia and interactive elements for e-learning courses. Lack of trainee contact with the teacher highlights the need for the implementation of innovative, interactive learning forms, which engages the trainee and facilitates acquirement of knowledge. That is why the use of more advanced, commercial authoring tools and dedicated programs for multimedia capturing and processing is necessary. The costs incurred while preparing e-learning courses are higher than blended learning courses. Taking into account Polish conditions and the fact that WZiEU has just started to use remote teaching techniques, the choice a blended learning model seems to be the correct one.

New directions of the LAMS WZiEU project

The main reason for the second stage of LAMS WZiEU project installing LAMS on a dedicated server, was the implementation of the new electronic courses and the popularity of LAMS in academic and business environments. Moreover, other activities were undertaken:

- to use synchronous learning techniques,
- to integrate with Moodle system.

WZiEU has got branches located in neighbouring cities, where classes are carried out in external mode. To limit frequent trips by WZiEU academic teachers, actions were taken to apply synchronous learning techniques. Within the second stage, there will be on-line consultation in the Computer Science subject. Because LAMS does not have any inbuilt tools which enable synchronous communication (apart from chat), it was decided to use two free of charge programs:

- Skype – a popular communicator which enables talks and audiovisual conferences.
- TightVNC – a program which enables remote work with one or more computers.

Conducting the following on-line consultation is possible because of the mechanisms implemented in programs mentioned above:

- synchronous video transmission,
- voice transmission (VoIP),
- virtual blackboard,
- desktop sharing.

LAMS allows integration with several LMS system. As a result of functional analysis of available systems (only open source systems were considered), the decision to select Moodle was made.

The process of Moodle integration (ver. 1.9.2+) has been successfully finished. Combining benefits of the Course Management System (Moodle) with the Learning Design system (LAMS) might significantly enhance effectiveness of the didactic process and create a new generation of e-learning technology. As part of the second stage of the LAMS WZiEU Project, intensive tests of the Moodle-LAMS platform will be conducted before it is accessible to teachers and students.

Summary

The end of the second stage of the LAMS WZiEU Project is planned for February 2009. To summarise second stage of LAMS WZiEU project there will be used factors specifying costs incurred by WZiEU and educational factors specifying the didactic quality of running blended learning and e-learning courses.

Taking into consideration the fact that there are more academic teachers interested in using LAMS with their classes, the LAMS WZiEU team is preparing to formulate foundations for the next stages of the LAMS WZiEU Project. The third stage will assume the use of the integrated Moodle-LAMS platform and ensure e-learning will be the future direction of didactic evolution at WZiEU.

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Biographical notes

Marcin is an assistant in Department of Management and Economics of Services of University of Szczecin, Poland. His main research interests lie in the area of application of IT in economy and impact of e-learning methods on student performance. He is a member of LAMS WZiEU team and administrator of LAMS WZiEU platform. He also co-operate with the biggest Polish IT firms as an independent consultant in field of ERP systems implementation.

Adam Stecyk is a lecturer in Department of Management and Economics of Services of University of Szczecin, Poland. His research plans are focused on IT in economics and management. He is a translator of polish version of Learnig Activity Management System and he coordinates LAMS WZiEU Project.

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