



USING E-LEARNING TOOLS TO SUPPORT COOPERATION BETWEEN SCIENCE AND BUSINESS. CASE OF SYNERGY PROJECT

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Abstract:

Cooperation between science, business and business supporting organizations plays significant role in development process especially new members of European Union. Nowadays EU offers many possibilities for creating collaboration between educators, scientists and entrepreneurs. The example of this kind of partnership can be the project called "SYNERGY – MCSU Faculty of Economics students' competences development by gaining practical knowledge", financed by EU funds and realized by Maria Curie-Skłodowska University. The project was organized to minimize the competence gap of students of Faculty of Economics by increasing a level of practicality in education.

This paper discusses the SYNERGY project main goals, presents experiences derived from realization of this project. The article describes: the SYNERGY project, ICT tools supporting realization of the SYNERGY project like WordPress, Moodle and additional implementations. The main subject of the article is to present how ICT tools can be adopted and successfully implemented in the area of business cooperation, education support, project evaluation and project management.

The article is aimed to point out main areas where ICT components can be used by scientists, educators, entrepreneurs that are looking for tools helping to accomplish multilateral projects. The main conclusion of the article is that even free ICT tools like WordPress, Moodle can be easily adopted and can play great role in synergy projects realization.

Keywords: business and science cooperation, synergy, Virtual Platform of Cooperation, e-learning tools, Moodle, WordPress.

1. INTRODUCTION TO THE SYNERGY PROJECT

Research conducted in 2009 by Faculty of Economics Maria Curie-Skłodowska University showed that employers need graduates who have high level of knowledge, skills and attitudes. 78 of examined entrepreneurs said that after finishing studies students are not prepared well to get job and to be effective workers. In spite of that employers have to offer young workers a lot of extra trainings, workshops, ways of getting skills and forming attitudes. Introduction of new worker consumes great amount of money and may be one of the reason for slowing down the employment and company development. Entrepreneurs stated that every young worker must possess three main components: language component (knowledge of two foreign languages), IT component (usage of computer, internet and office software especially spreadsheets), specialist component (strictly related with workstand).

Examined employers consider that students possess high level of attitude (good ethical principles, self-assertion, orderliness, independence), this attitude elements were rated 4,05 in 1 to 5 scale. The lowest rate was given to specialist knowledge (e.g. production planning, customer service, logistics, finance, tax law and human and project management). Average graduate 3,53 point in 1 to 5 scale.

Investigated graduates also don't have enough "soft skills" like: self-presentation, group work, stress management, this gaps reduce their chances to obtain job. To overcome these problems employers recommend following steps:

- increasing level of students' practical preparation,
- developing cooperation between science (education) and business,
- starting study programmes in foreign languages especially in English,
- launching special programs for university stuff, practical trainings in companies.

In opinion of students of Faculty of Economics Maria Curie-Skłodowska University in present study programs there is not enough time for practical elements. Students get a lot of theoretical knowledge but often don't know how to use it in practice. Students want to attend classes conducted by practitioners, need more language courses and projects supported by information and communications technology (ICT).

In response to employers and students needs Faculty of Economics Maria Curie-Skłodowska University started realization of the project called "*SYNERGY – MCSU Faculty of Economics students' competences development by gaining practical knowledge*". The SYNERGY project is co-financed by the European Union from the European Social Fund and will be conducted within five years from 2009 to 2014.

The main goal of the SYNERGY project is to minimize the competence gap of students of Faculty of Economics by increasing a level of practicality in education. The mile stones of the project are:

- increasing a level of practicality in education by starting cooperation with business and business-related organizations,
- enabling students to get practical skills by organizing training programmes and internships in a companies,
- enabling students to obtain job during the studies or after graduation, by organizing bank of job offer for the best students,
- increasing a level of practical subjects in study programme by setting up *Board of Entrepreneurs*, as a advisory board,

- increasing level of analytical skills by founding additional math classes,
- getting new experience by students, by conducting practical projects for companies,
- better preparation of students in the area of soft skills by organizing: interpersonal trainings, communication trainings,
- preparing system that explores a level of students' fit to the market needs and implementing tools for continuous collection data about graduates' career path.

One of the SYNERGY project outcomes is also to create special advisory teams that consist of university workers and students that can prepare analyses for entrepreneurs. Table 1 shows some statistics about the SYNERGY project realization.

Table 1: The SYNERGY project statistics for the period 01.10.2009–31.10.2010

Project service	Number of participants		Indicator (%)
	Planned	Achieved	
Trainings	50	103	206,00
Practical courses conducted by practitioners	188	320	170,21
Trainings in companies	120	125	104,17
Internship in a companies	3	3	100,00
Opening conference	100	215	215,00
The Virtual Platform	400	1167	291,75

Source: Twarowski, 2010, p. 2.

In the first year of operation The SYNERGY project exceeded almost all planed indicators. The biggest surplus was in number of The Virtual Platform users, opening conference members, and practical courses attendants. Recruiting procedure for future services shows that second year of The SYNERGY project will bring similar results, it shows that there is a great need to conduct projects that stimulates cooperation between science and business.

Obtaining of above aims and indicators was largely possible by using ICT tools like web page (www.synergia.umcs.lublin.pl) equipped with content management system (CMS) and The Virtual Platform of Cooperation (www.platforma.synergia.umcs.lublin.pl) based on course management system Moodle. ICT tools played great role in supporting communication process, promotion of the project, improvement of recruiting procedure, training materials publication, project management and project evaluation.

2. ICT TOOLS SUPPORTING REALIZATION OF SYNERGY PROJECT

2.1. Web page

The SYNERGY project main web page is available at www.synergia.umcs.lublin.pl. The web page is based on WordPress¹ largest self-hosted blogging tool in the world. The WordPress is open source project so everyone can work on it, tool can be used not only as blogging system but also as powerful content management system (CMS). The functions of system can be extended by using thousands of themes, plugins and widgets.

¹ WordPress home page <http://wordpress.org>.

The WordPress was used in the SYNERGY project because at the beginning project team quickly needed small tool for promotion, and the material publishing. After short analyses of the web pages market it was found that even simple page prepared by specialized company costs thousands of Euros. The problem was also the future development of web page that cost even more than its installation. The implementation process of web page based on WordPress: project, graphic design, installation and filling in the content lasted only few days, but it were key days for project promotion. The main tool for project support was to be The Virtual Platform of Cooperation but this tool is more complicated and needed more time (counted in months) to implement, so the first step of the project was starting the web page with necessary functions, the second step was to implement main tool The Virtual Platform of Cooperation. Picture 1 shows the main page of The SYNERGY project.

Picture 1: The SYNERGY project main page



Source: <http://synergia.umcs.lublin.pl>.

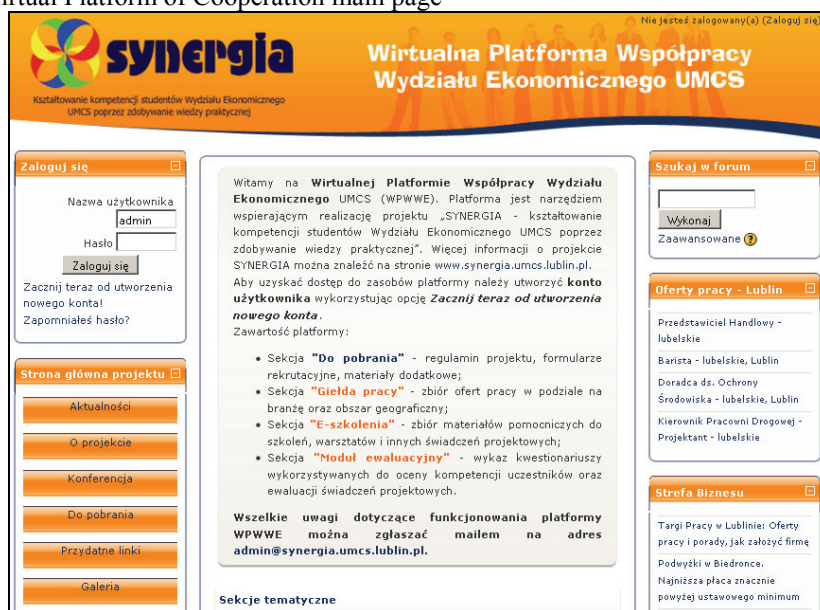
The web page is used to present: news, project information, contact details, offer for students, offer for business, project galleries. The page is also the gate that allows the participants enter The Virtual Platform of Cooperation. After almost two years of usage web page based on WordPress it turned out, this system met almost 100% of project needs. It was adequate at the beginning of the project when the load of data wasn't large, but also after two years of project realization, thanks to great scalability, it can be still used, and that is why nowadays can be used parallel to The Virtual Platform of Cooperation. The main advantages of web page based on WordPress found during The SYNERGY project realization are:

- low cost of implementation and administration,
- short time of implementation,
- great scope of graphic projects (themes),
- good documentation,
- ease of operation,
- ease of administration,
- scalability,
- a lot of useful plugins.

2.2. The Virtual Platform of Cooperation

The SYNERGY project Virtual Platform of Cooperation is available at www.platforma.synergia.umcs.lublin.pl. The platform is based on Moodle² (Modular Object-Oriented Dynamic Learning Environment) open source course management system (CMS). It is very popular e-learning tool used by educators around the world. The platform can be installed on Windows, Mac or Linux. It can be used in small and large learning communities, in school, universities or enterprises. Moodle³ has over 41 million users in 213 countries. The platform is available in 80 language versions. The main page of the Virtual Platform of Cooperation was shown on picture 2.

Picture 2: The Virtual Platform of Cooperation main page



Source: <http://www.platforma.synergia.umcs.lublin.pl>.

The Virtual Platform of Cooperation is main ICT tool supporting realization of The SYNERGY project. The platform acts the role of contact box between organizations and participants taking part in project: students, graduates, educators, scientists, entrepreneurs, business supporting institutions and project team members. Using the platform participants can apply to the project, get access to courses materials, training offer bases, take part in virtual projects conducted by practitioners, attend in virtual seminars or meetings. The platform supports also evaluation process. Thanks to the questionnaire module project team can measure participant's knowledge and skills. Questionnaires also help to collect data concerning labour market needs. Using the platform students and graduates can:

- apply to the project,
- apply to the specific services,
- get access to project databases: trainings, job offers,
- download supporting materials,
- search for employers,
- verify own knowledge and competences,
- quickly communicate with other participants and project staff.

The platform is also a tool supporting evaluation process and generating a lot of helpful statistics. In evaluation area The Virtual Platform allows to:

² Moodle community page <http://moodle.org/>.

³ Source: <http://moodle.org/stats/> (07.04.2011).

- collect statistics about project participants,
- collect data about project material distribution,
- gather participants' opinion about project services,
- collect ideas for future training subjects,
- gather information about level of students' adjustment to employers' needs,
- store information about project progress.

To get access to the materials and functions of The Virtual Platform every participant have to create own profile. Some areas of the platform are additionally protected with the key that is distributed by task supervisor.

The implementation process of Virtual Platform of Cooperation build on Moodle lasted four months. During this period project member have performed, need analyses, market research, platform functional and graphical project and implementation. The main factors that had critical impact on choosing Moodle were:

- huge functional possibilities,
- ease of use,
- good functional and technical documentation,
- zero license cost,
- multi language interface,
- low hardware requirements,
- ease of administration.

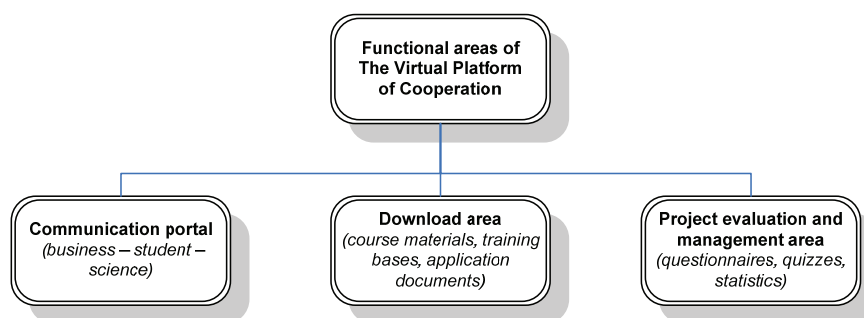
The significant was also the fact that most of students of Faculty of Economics Maria Curie-Skłodowska University know how to use Moodle platform, because they have been trained that at the first year of education. Next argument for choosing Moodle was open source which allows administrator to add new functions to meet future project needs. The final shape of platform was the combination of project needs, Moodle functionality and suggestions of future participants: students, scientist and entrepreneurs.

The users of the platform can be divided into five sets:

- students of Faculty of Economics – including present and future graduates,
- educator and scientists – also workers of universities that want to participate in the project,
- entrepreneurs – including the members of business supporting organizations,
- supervisory authority – staff that monitors realization of the project,
- project team members – project director, project manager, promotion, education, evaluation and business cooperation specialists.

To fulfil needs of all projects stakeholders the platform was divided into three areas. The main areas of The Virtual Platform of Cooperation are shown on picture 3.

Picture 3: The main areas of Virtual Platform of Cooperation



Source: Wiechetek, 2009, p. 3.

Every area of The Virtual Platform of Cooperation is also divided into spaces intended to support different project services. The communication portal area is used to:

- promote project services, news presentation,
- publish information about trainings in companies, publish data bases
- publish information about project events: multimedia reports, slideshows, galleries, audio and video files,
- collect mail addresses of project participants,
- send news to groups of users,
- organize on-line meetings with students, graduates, entrepreneurs, representatives of science and business supporting organizations (communication via chat, forum, mail),
- publish tasks, problems that need to be solved,
- collect responses, files prepared by participants, tasks solutions, documentation describing realization of practical projects (e.g. drop box),
- collect opinions of participants about realized project services and services that might be realized in the future,
- transmission the information from business area to students, graduates, university staff,
- present dynamically acquired job offers to project participants via RSS (Really Simple Syndication) channels.

Download area is used to publish materials supporting trainings, workshops, projects performed in groups or cases provided by cooperating companies. In this area standard Moodle modules are used to:

- create elastic repositories of trainings, where every trainer can put and manage course materials,
- publish supporting materials: schedules, descriptions, entrance and final tests,
- put training tasks, drop boxes, that can be open for some period of time (platform mechanisms automatically make repository of sent documents),
- publish materials that are available only for trainers and project team members like: timesheets, training diary,
- setting up virtual courses conducted by entrepreneur and practitioners,
- monitor courses popularity, tracking materials downloading process.

Standard functionalities of The Virtual Platform of Cooperation are useful also in project management and project evaluation areas. Questionnaire modules, rapport modules, statistics modules are used to:

- collect information about project participants,
- explore level of knowledge and skills of participants,

- collect participants' opinions about whole project and specific project services,
- customize project offer to participants' needs,
- explore students' preparation to labour market needs,
- know demands presented by employers and employees,
- collect information about graduates and their career,
- collect and analyze information about users' activities,
- monitor progress of project tasks and generate reports about delays and deviations.

2.3. The Virtual Platform of Cooperation additional modifications

Though The Virtual Platform of Cooperation offers many functions, standard modules of Moodle didn't fulfil all SYNERGY project needs. The level of requirements fulfilment is presented in table 2.

Table 2: Level of project needs fulfilment by The Virtual Platform of Cooperation

Project area	Level of realization by platform
Education	100 %
Evaluation	80 %
Project management	70 %
Business cooperation	60 %

Source: The SYNERGY project documentation.

In the area of education, promotion, material distribution The Virtual Platform met 100 % needs, almost every need (80 %) was also fulfilled in evaluation area. Platform allows to collect every needed data and presents in graphical or CSV format that is easy to calculate. However in some areas especially in cooperation with business, standard Moodle modules weren't enough. To extend Moodle functionality SYNERGY team decided to project and implement new functionalities. The main additional functionalities were:

- mechanism for automatic rewriting the results of the test to specified fields in user's profile – implementation helps to build participant's competence profile,
- mechanism of differentiation of users profiles – implementation allows to assign different fields to different types of users,
- search mechanism that allows to search users that fulfil, specified criteria (including additional fields in user profile) – functionality helps to select set of users with profile similar to employer's needs,
- mechanism that allows to search questionnaires filled in by specified user – helps to check if the all mandatory questionnaires were filled in by user, allows to select group of users that have to complete project formalities,
- mechanism that allows sending messages to users – helps administration staff to contact with group of users that didn't complete project formalities.

Picture 4 shows main window of mechanism that checks if participant filled in all mandatory project questionnaires.

Picture 4: The Virtual Platform of Cooperation additional mechanism supporting project evaluation process

lp.	identyfikator	nazwisko	imię	11	08	wyb:
1	a.szczepanek	Szczepanek	Adam	✓	<input type="checkbox"/>	braki
2	aaquisiaa	Taran	Agnieszka	✓	✓	komplet
3	adibani1991	Baniła	Adrian	<input type="checkbox"/>	<input type="checkbox"/>	braki

Source: The Synergy project.

For example, all application forms needed in the project, that don't contain personal data (tax number, social security number) are filled electronically and sent by users through The Virtual Platform of Cooperation. Also all questionnaires at the beginning of the project activity and after finishing part of the project are filled in by participants electronically through special web page. After finishing project activity e.g. training, students can get certificates, but to obtain that they have to complete all administrative documents. To check if all necessary questionnaires are filled in member of SYNERGY team (administration specialist) logs in on special web page, signs surname of participant or another identification data (in fields on left top of picture 4), chooses the mandatory questionnaires (on the list on right top of picture 4) and at the bottom of the page he gets information about filled and not filled documents. If all documents are filled participant has green [v] flags in columns representing filled questionnaires and his status is "completed" so administration specialist can give him certificate, otherwise participant has to fill in missing documents.

The additional implementations were prepared to fulfil extra project needs, they automated a lot of project work. The fact is that despite high popularity of Moodle platform it was quite difficult to find company (person) that perform above mentioned implementations. It is also worth to know that performance of additional functionalities that were not extremely complicated costs much more than installation of the main platform (including costs of server, operating system, Moodle implementation and graphical project of platform).

3. CONCLUSION

In the article the author described characteristics of the SYNERGY project and ICT tools that are used to support realization of this EU funded project. The main finding of the SYNERGY project realization in ICT area is that ICT components are very useful in creation and sustain of cooperation between science, education and business. The ICT tools especially e-learning systems can be implemented in short time and act significant role in:

- project services support,
- project promotion,
- project evaluation,
- project management.

Realization of the SYNERGY project showed that simple webpage build on strong CMS system is cheap, time-saving, and powerful tool especially for information and promotion. Building even the simple webpage project managers have to think about its scalability, flexibility and ease of use, above solutions bring a lot of benefits during project realization.

When the project needs are greater, the budget is bigger and project team have more time simple website can be replaced with more powerful instrument e.g. LMS tool like Moodle. This tool offers many great functionalities useful in: communication, education and evaluation area. Experience gained during SYNERGY project realization shows that sometimes these two tools can work simultaneously. On the one hand there is more work to do: update, backup, administration but on the other hand good combination of this tools e.g. hyperlinks, dynamic redirection, coherent graphic project causes that tools are perceived by participant as one system which is more flexible and easier to use.

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