

MANAGING THE ERP TEACHING PROCESS

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Abstract: Enterprise Resource Planning (ERP) systems are commonly used in many kinds of organizations. Due to including ERP courses into study programmes in some universities, some practical aspects of the didactic process can be noticed in order to enhance the learning effects. Proper management of this process gives the chance of better efficiency in teaching. Even though new, modern, alternative teaching methods require more effort from the teachers, they're worth applying because the results for the students (their knowledge and skills) are more solid and permanent. In this paper some experiences in the field of ERP teaching were described, selected didactic methods were compared. The aim of this article was to emphasize the role of proper didactic method selection in the teaching process management. Project-Based Learning (PBL) was presented as the preferable method of ERP teaching at the university level. On the basis of own survey, the students opinions and their attitude to ERP learning was shown.

Key words: Enterprise Resource Planning (ERP), Xpertis, teaching, Project Based Learning, PBL, managing education process

Introduction

Designing and implementing innovative learning methods as well as pedagogical methods facilitating learning is one of nowadays challenges that business schools and universities face. Understanding the work of enterprise systems and integrated business processes is required by still more organizations. Many business schools and universities incorporate Enterprise Resource Planning (ERP) systems into their study programs to accomplish this need. As Davenport (1998) wrote, ERP systems are *"integrated software solutions, typically offered by a vendor as a package that supports the seamless integration of all the information flowing through a company, such as financial, accounting, human resources, supply chain, and customer information"*. They cover many activities of the organization then (Kot et al, 2015). The importance of the ERP systems leads the higher education establishments to incorporate them in study programs (Hepner and Dickson, 2013). Efficient learning of these vital topics means appropriate collection of didactic methods and materials. As (Grabis et al., 2015) say, a lot of traditional training materials do not allow the students to gain a good understanding of the ways processes are executed in practice. Moreover step-by-step instructions (which are though widely desired by the surveyed students) reduce the need for in-depth exploration of the features of the ERP systems. To manage the process of teaching effectively, to enlarge the interest of learners, their preferences and educational

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needs should be recognized as they can be a wide source of priceless knowledge on designing the teaching process. In this paper a survey on students' approach to ERP learning has been described.

The survey was conducted in June 2015. The criterion of respondent' selection was purposive sampling, students of the Economics and Sociology Faculty, who had the ERP course in the academic year 2014/2015 were asked to answer the questions in a form. The request was sent to 73 students, 27 of them (13 male, 14 female) answered. All the respondents were 20-21 years old. On the basis of one semester experiences, both: teachers and students can indicate some tools and methods that seem to give the best learning results in the terms of motivation and sense of success. As a result, some guidelines can be prepared for designing the process of ERP better education. The culture of learning is changing. As Poikela and Poikela (2012) say, we are moving from the "alone" model, where students were learning alone and the teachers were teaching alone, into collaborative ways of working and thinking. The idea of this paper is to show how a change in the approach to ERP teaching can influence the education process. Implementing Project-Based Learning (PBL) appeared to be more motivating and interesting for the students, though in the first stage it required more effort from the teacher.

ERP Course at the University of Lodz

There are many ERP systems with different technologies and philosophies available on the market (Leyh, 2012). One of them is Xpertis that has been introduced to the studies program at the University of Lodz. The subject's name is "Integrated Systems", it is realized on a few majors at the Economics and Sociology Faculty at the University of Lodz.

The aim of the ERP course is to show the students selected aspects of applying the system in processing approach. Two thematic blocs, realizing different goals can be distinguished in the frames of the course. They include understanding the functional capabilities of the ERP system in the fields of:

1. Human Resources (the use of Personnel Module in order to manage and control the HR),
2. Logistics transactions (the use of the Logistics Module in order to carry out procurement processes and customer service).

While training the students should learn how to operate the system in the terms of defining the most important, basic data and documents registration. Then these operations should be put into a business process. Another skill is the ability to briefly find requested information and prepare a report.

The first thematic block includes HR operations. In this part the students focus on planning the employers' tasks, managing their card index, absence, holiday card, and finally reporting. The second thematic block concerns the logistics transactions. Training in this field begins with introducing basic data to the system: suppliers and customers, and then sample entries (goods and services) associated with the selected industry. The introduction of new data is usually preceded by

a discussion of the appropriate operations, corresponding to the previously defined example. After entering basic data, selected processes are performed. In this step another discussion is needed to determine the steps of the processes (procurement and supply customer orders) so that the students knew what is the purpose of the various exercises and how to realize them with the use of the system. Supply orders and customer orders can be implemented in various ways, depending on the terms and conditions of purchase and sale. While realizing the orders, students are supposed to gradually find the possibilities of searching selected, linked information using various queries and reports that the ERP system provides. The ability to find requested data is essential and it is the user (in this case the student) who can point what information should be taken from the huge data base of the system. This skill partly depends on the student's involvement and open mind. The result of this part of the training should be the ability to analyze inventory transactions and their financial equivalent in the accounts. Depending on the complexity of the assignments, described training concepts can be implemented in within about 24-28 didactic hours.

At first, the assumption of ERP teaching was just like with the other subjects – with the use of traditional didactic methods, like: frontal lecture as an introduction and exercising together with following the guidelines. The Xpertis system is available to the students only in the computer laboratories of the Economics and Sociology Faculty of the University of Lodz. This means that the students couldn't practice home between the classes, they could only train once a week for two hours. After a few weeks it was noticed that the effectiveness of learning was very slight and the students were not able to remember for long the actions they performed during the tasks realization. Even the students, who were very smart and did most of the exercises briefly, couldn't repeat most of the functions and processes they had done the previous week. The teaching process was defective then. This led to introducing another solution, based on project – PBL.

Assumptions of Project Based Learning Method

Even though traditional methods of teaching are still dominant (Grabara, 2014), in today's universities reality, new methods have to be implemented in order to allow the teaching process comply with the market's needs. Producing own competencies, as well as participating, acting and thinking actively, is possible in the Project-Based model of learning (PBL). Among many definitions of PBL, the one given by (Hallermann et al., 2011) seems to include the essence of the concept: *“Project Based Learning is a systematic teaching method that engages students in learning important knowledge and 21st century skills through an extended, student-influenced inquiry process structured around complex, authentic questions and carefully designed products and learning tasks.”* The point is to teach how to solve a problem together and how to create a “product” (i.e. project) together, in a team. PBL method has become very popular in Canada, Australia, USA, and also in Great Britain. An example of good practice in PBL

implementing comes from Denmark, University of Aalborg, where this method was the basis of the education system (Lubina, 2005). Most of higher education institutions tend to incorporate this method in their teaching programs (Adamowski et al., 2006). In Poland as well as in other European countries modern teaching and learning methods are still more commonly introduced. Not always are they well accepted by the students, who often prefer traditional learning, with its “knowledge providing” scheme (Prewysz-Kwinto, 2013). Nevertheless most study programs include this method. The standards of PBL enable to compare its effects in Polish universities; the only thing that is still missing in this area is the general survey that would deliver more complex information about projects’ impact on the education process. The success of PBL depends on composing proper assignments given to the students according to their actual state of knowledge, finally giving new experiences that let the learners find a new approach to problems solving.

Covering the teaching standards at the universities often means rushing through topics instead of teaching them thoroughly. For the students it means just memorizing the material for test by test. In a week, month or a year they often don’t remember what they were supposed to learn. In PBL, students still need to gain content knowledge and use academic skills, but they understand concepts more thoroughly and retain what they learn longer. The point is that they have to spend some time thinking about how to create a solution, solve a problem.

The process of teaching in Project – Based Learning method must be well-planned, well-organized. Some essential elements of it are presented below (Fig. 1).

Each of the elements was included while applying the PBL method into ERP course, which is described in the further part of this article.

Project Based Learning Method Applied in the ERP Course

As it was mentioned in the previous paragraph, the process of ERP teaching wasn’t perfect. Thus an alternative educational path was needed. Because no structural changes are allowed during the semester, the only possible thing to do was to broaden the scope of the final test but in a way that wouldn’t be objectionable. There were created 2-3 persons teams (1 dean group divided into two laboratory groups 17 persons each gives 11 teams). The teaching process of ERP is illustrated below (Fig. 2). It includes 15 classes (2 hours each) and two Xpertis modules (Human Resources and Logistics). The middle part of this scheme shows the didactic methods and students’ activities during the ERP course.

The students were instructed how to prepare the documentation of the project and they got some fictitious economic events to apply in the system. They had 10 didactic hours to do the project. They used exactly the same system menu, they did the same actions that before, but the result was quite surprising: in the first stage the actions were their goal, now the actions became just a tool. Thus the students were able to use the instructions from previous classes (available on an educational platform) to fulfill the tasks that they managed themselves.

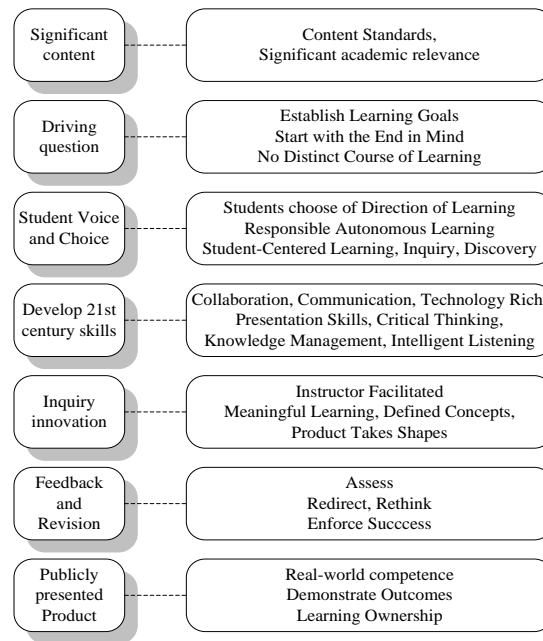


Figure 1. Essential Elements of Project-Based Learning Method (Mayo, 2013)

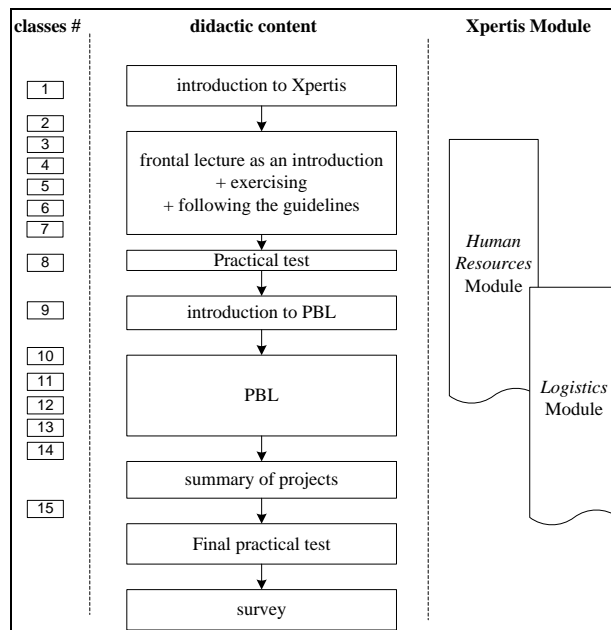


Figure 2. ERP teaching process in two Xpertis Modules: HR and Logistics

The teacher’s role apart from preparing the instructions was to give some guidelines and technical support. During each of the five 2-hours classes the teacher (the author of this article) spent about 15 minutes with each of the teams working on a real problem. That allowed to be well acquainted with each of 11 projects and meant that the teacher worked approximately 75 minutes with each one. Thanks to this checking the documentation delivered by the students was easier as well as grading. Participating in the work of the teams the teacher was able to estimate the contribution of each student.

After the final practical test, when all the projects were already graded, the survey was conducted. It’s assumptions and results are briefly presented below.

Survey on ERP Learning Process

After the semester, the students were asked to answer a few questions concerning ERP learning. The questions were put into an online form. In this survey the students were asked to give their opinions on the didactic process of best effectiveness. They rated the methods implied during the semester and then evaluated PBL method.

The survey was sent to the students enrolled to the course “Integrated Systems” at the Economic and Sociology Faculty of the University of Lodz. They were 4th semester students, from Analytical Economics major. The survey was conducted after the course. The survey wasn’t obligatory and had no impact on the students’ grades.

None of the surveyed students had any experience in ERP systems before the semester, some of them (45%) even hadn’t heard of it. When asked about preferred style of learning, the surveyed students declared that they liked to get specified tasks and problems, they expect getting instructions and tool to solve the problems (Fig. 3).

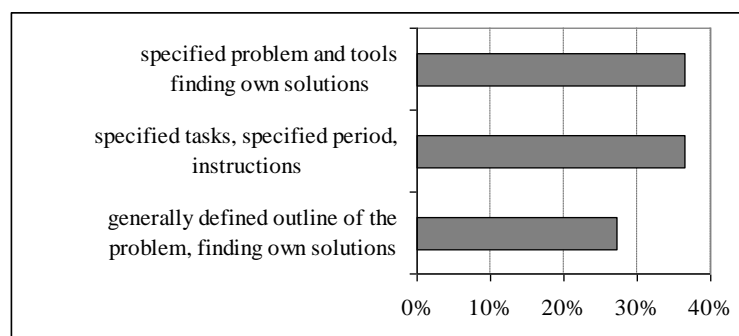


Figure 3. Preferred style of learning

The students expect the teacher to be rather the guide, not the person giving ready-made solutions. They also didn’t point “easy final test” as the most desirable thing

in the course. The most important role of the teacher is giving the support and counseling, also providing “step by step” instructions. The responses to the question about the expectations from the teacher are presented on the graph (Fig. 4).

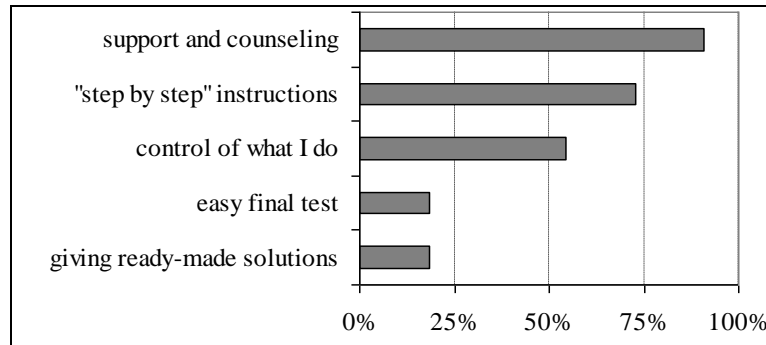


Figure 4. What the students expect from the teacher

Almost all of the students (90%) consider PBL a very good method of ERP learning. In their opinion the project is more engaging and time consuming than preparation to the traditional test (64%), while 36% of surveyed students say the effort to prepare the project is comparable to preparing to the final test.

Only a few students graded the very high or very low level of difficulty of the project. Most answers (63%) indicated the level of difficulty as “medium”. Quite common method of teaching is giving detailed instructions to the students. In the survey they graded this method (of executing subsequent commands according to the teacher’s instructions) not really attractive nor motivating (both got average grade 3.5/5), but quite effective (av. grade: 4), which is shown in Figure 5.

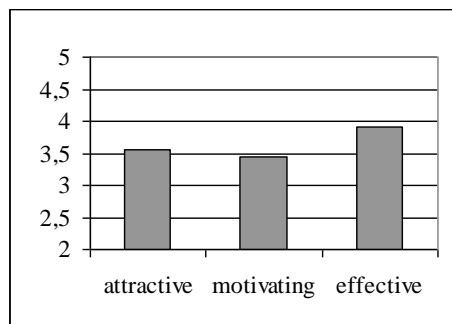


Figure 5. How students see the method of executing subsequent commands according to the teacher’s instructions

PBL requires from students more self-reliance and independence, while performing instructions is more teacher-relying. Thus PBL method seems to be in opposition to performing instructions.

These two methods were put in a comparison in the survey. Also another method – lecture – was put into this set. The question was “How would you grade (in the scale 2-5) the effectiveness of following methods of ERP teaching?”, where 2 means very poor and 5 – very good. Surprisingly the surveyed students liked both kinds of methods (instructions and projects).

The projects in the survey were divided into two groups: 1) own projects – only the main idea is outlined by the teacher; 2) specified projects – the teacher suggests the tools and the final “product” which should be obtained in the project’s realization. The responses show that in this group both passive (instructions) than active (projects) participation in the classes were preferred, though the students were quite well motivated to do their own projects. The lecture doesn’t seem to be very effective method as learning ERP requires lots of practice, but during the lecture the introduction and theoretical knowledge is provided, which is not the topic of this article though. In Figure 6 the responses on effectiveness of the didactic methods are shown.

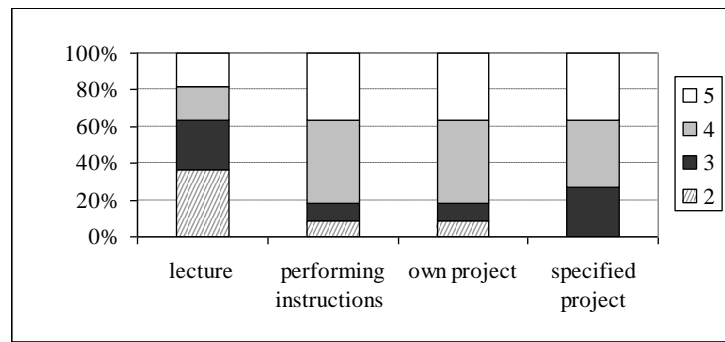


Figure 6. The grades of effectiveness of selected didactic methods in ERP teaching

The survey included also some questions about the social side of the PBL process. This part of the results will be presented in another article. It’s worth mentioning, that another benefit from PBL was that the students do learn interaction skills. They work in groups/teams, try to solve problems together. As the survey shows, most of the students appreciate the possibility to talk and discuss during the project. They felt quite free and relaxed while doing the exercise together.

The future idea of the ERP teaching process can be collaboration in virtual teams without (the benefit of) synchronous face-to-face interactions. This could start at the university level, and then transform into international cooperation.

Some survey results (Rosemann et al., 2000) show good impact of these activities on students’ involvement, though it requires a lot of preparation and is a big challenge for the teacher. The necessity to spend “tremendous time and effort to prepare handouts and practice” as the difficult role of teachers and other faculty members engaged in the process of ERP teaching has been also pointed in (Lee et al., 2006).

Conclusions

One of the aims of the universities is to equip the graduate students with skills enabling them to find a good position in changing labour market. Therefore the teaching programs should be the answer to the real needs of the employers. This is complied in the *Teaching Standards*.

As surveys results show, the most important competencies from this point of view are: ability of problems solving and cooperation ability. Also abstract perception of reality should be taught (Jelonek and Stepniak, 2014). These can be developed by activating learning methods, among which PBL has been distinguished. It is assumed in PBL method that the main “actor” of the process is the student (not the teacher), and the content is not as important as the education effectiveness (Savin-Baden, 2003). The learners work in groups, they have the right to make mistakes. They gain the knowledge by own experiences and research. They are supposed to become emotionally engaged in real problems solving. Higher schools can introduce these rules with PBL. The expected results are better skills in: critical thinking, interpersonal communication and decision making. The teacher is more like an observer, supporting the team and inspiring to further work. The change of learning reality means for the teacher mainly becoming a coach instead of the person who delivers knowledge. In presented article some survey results have been presented to emphasize the role of student’s own work in the effective didactic process while project based learning of ERP system. The results indicate that PBL can be a very involving method, giving the students possibility to actively gain practical knowledge working independently or in a team. This can be a very important factor when starting a new job after graduation as most of modern organizations require both: professional skills and interpersonal abilities.

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ZARZĄDZANIE PROCESEM NAUCZANIA SYSTEMÓW KLASY ERP

Streszczenie: Rosnące zapotrzebowanie na znajomość systemów klasy ERP zauważalne jest w wielu rodzajach organizacji. Przedmioty zawierające treści dotyczące systemów zintegrowanych od kilku lat pojawiają się w ofercie szkół wyższych. W celu usprawnienia procesu dydaktycznego i zwiększenia efektywności nauczania nie tylko obsługi systemów ERP, ale także i zasad ich funkcjonowania, w odniesieniu do procesów biznesowych, niezbędne jest odpowiednie zarządzanie procesem dydaktycznym. Nowoczesne, alternatywne metody nauczania wymagają zwłaszcza od nauczyciela dodatkowego wysiłku, jednak są one warte rozważenia i wdrożenia, gdyż w rezultacie dają praktyczną i trwalszą wiedzę. W artykule przedstawiono doświadczenia dotyczące nauczania studentów systemu klasy ERP z wykorzystaniem wybranych metod dydaktycznych. Zwrócono uwagę na metodę opartą na projekcie – ang. *Project-Based Learning* (PBL) jako tę, która w największym stopniu angażuje uczestników zajęć, dając trwalsze efekty nauczania. Opisano także wyniki badania dotyczącego opinii studentów na temat nauczania tą metodą.

Słowa kluczowe: systemy zintegrowane, Enterprise Resource Planning (ERP), Xpertis, nauczanie, Project Based Learning, PBL, zarządzanie procesem nauczania

駕馭機構資源規劃教學過程

摘要：企業資源規劃（ERP）系統通常用於在許多類型的組織。由於包括ERP課程，為在一些大學的研究項目，在教學過程中的一些實際問題，可以發現，以增強學習效果。適當的管理這一進程給出教學更好效率的機會。儘管新的，現代的，另類的教學方法需要從教師付出更多的努力，他們的價值將因為結果為學生（他們的知識和技能）更堅實的和永久的。本文對ERP教學領域的一些經驗進行了描述，選擇教學方法進行了比較。這篇文章的目的是為了強調正確的教學方法選擇在教學過程管理中的作用。基於項目的學習（PBL）是作為ERP教學在大學階段的最好方法。在自己調查的基礎上，學生的意見，他們的態度，ERP的學習結果表明。

關鍵詞：企業資源規劃（ERP），Xpertis，教學，基於項目的學習，PBL，管理教育的過程。