Changes in Higher Education Process towards Better Relevance to Practice

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Abstract

The problem of higher education in Slovakia is low interface between theoretical education and needs of practice. As a consequence, there is insufficient success of graduates in the labour market. How to improve readiness of students for practice and the professional life and if implementing software applications is the right way for increasing the quality and relevance of higher education are main research questions. The aim of paper is to present changes in education process of economic courses of the study programme „Business Economics and Management" at Technical University in Zvolen. To propose changes correctly, initial information were acquired as follows: course evaluation by students; questionnaire survey focused on finding out employment of graduates; inquiry carried out with managers of important companies; analysis of digital skills of lecturers; analysis of courses´ contents, consequences and interlocks. Results of carried out surveys led to proposal of changes in education process towards provision of knowledge and skills for work with business information systems. The integrated system of implementation of IS into education process across core study courses was suggested. The solution consists in using the same database platform of model enterprise in education of all selected study courses and acquirement of economic knowledge and user skills via working out assignments in enterprise information systems. Provided possibility to gain competencies and skills for work with business and management information systems in the study branch Business Economics and management is the reflection of higher education quality and relevance to practice.

1. Introduction

The main aim of higher education is to produce graduates prepared to practice knowledge in a future occupation. University study of high quality and relevance should provide the students not only the

theoretical knowledge, but also practical skills they need to success on the labour market after graduation.

The European Commission supports university institutions in EU countries in modernization of study programmes, so that they could be able to educate graduates with employable skills and competences needed for professional life. The reform and modernisation of higher education in the European Union depends on the abilities and motivation of lecturers. The high quality academic staff needs to be kept and attracted through better reward of teaching and scientific results, improving working conditions and continuing professional development. (http://ec.europa.eu)

The European Parliament adopted the official documents dealing with recommendation for cooperation and quality assurance in higher education which introduced the use of the European standards for education quality. The key recommendations for improving the quality of university study have been determined in a report produced by the European working group on the modernisation of higher education. Reports on progress in quality of higher education in EU countries are being published in periodical reports of the European Commission. (http://ec.europa.eu)

Each university should have a strict system of education quality assurance, assessed and checked by external agency. Standards for quality evaluation of higher education institutions in EU and also in Slovakia are more oriented to research and scientific activities, the importance of education is reflected very poor. The object of interest is acquirement of projects, grants and number of publication outputs. Such set up rules force education institutions to formalism, unification and resignation to the most important mission – improvement of quality in education process. As a consequence, too few European universities are recognised as world class in the current, research-oriented global university rankings.

The problem of higher education in Slovakia is a low interface between theoretical education and needs of practice. University curricula are not flexible enough and they are not able to reflect the changing needs in the economy and employers. The second problem is a low quality of high education due to lack of financing funds supporting activities of scientific workstations which are able to find out and provide the latest knowledge in particular scientific areas, own know-how and innovations. As a consequence, there is insufficient success of graduates in a labour market.

The changes in the university education relate to building connection between the disciplines required by the needs of practice. Very popular is the connection between economic and informatics knowledge and skills. Suitable teaching method is a project teaching which enables finding solutions to both technological and economic issues. (Ďurišová, 2013)

The quality of higher education is also affected by the evaluation of teaching results focused on finding the progress of students in their abilities and skills for successful access to employment. The new innovative evaluation methods are needed. For example, using the method of 3S – meeting the objective, accuracy of solution and summary of processing – quality, by evaluation of student´s projects is more effective than traditional written exam. (Ďurišová et al., 2015)

According to the European Commission, to improve quality and relevance of higher education, the learning approaches and methods need to be more flexible and innovative. One key way seems to be exploitation of modern information and communication or other new technologies to make teaching and learning experiences more attractive.

Every university is looking for the ways and tools how to improve readiness of students for practice and the professional life. It deals with the question, if implementing and using ICTs and software application is the right way for increasing the quality and relevance of higher education. The second task is a choice of the most suitable information technologies and software products which are relevant to the branch of study.

The aim of the paper is to present changes in education process of economic and management courses of the study programme „Business Economics and Management" at Technical University in Zvolen, Slovakia. The changes were focused on creating the complex, integrated system of implementation ICT and business information systems to education process to improve interface between education and practice.

2. Materials and Methods

2.1. Background of the Issue

According to the Communication of the European Commission (Document 52011DC0567), to improve relevance of higher education there is a need to design and deliver the study programmes in cooperation with employers and labour market institutions. Support of staff exchanges, involving practical experience in courses can help adapt curricula to current needs of employers and entrepreneurship. The contribution of higher education to jobs and its international attractiveness can be encouraged through ***close, effective links between education, research and business***. (COM 567, 2011)

The key areas of education policy EU for higher education included in "Document 52011DC0567" are as follows (COM 567, 2011):

- *Encourage a variety of study forms* (e.g. part-time, distance learning),
- *Higher utilizing the potential of ICTs* to enable more effective and personalised learning, teaching and research methods and increase the use of virtual learning platforms.
- Encourage the development of *entrepreneurial, creative and innovation skills* in all three degrees and promote innovation through more interactive learning methods.
- Stimulate *partnership and cooperation with business as a core activity of universities.*

The Communication of the European Commission (COM 654, 2013) 'Opening up education' proposes actions towards more open learning environment in purpose to make higher quality and efficiency of education and thus contributing to the Europe 2020 goals through better skilled workforce. The Communication EC follows that (Document 52013DC0654):

- *EU education is failing to be abreast with the digital society and economy.* Nowadays learners expect more individual approach, cooperation and better links between formal and informal learning by digital-supported learning. Learners expect to gain the digital skills for the 21st century.
- *Information and communication technology (ICT) offers the opportunity to improve efficiency in education.* Benefits if ICT: students can easily search and achieve knowledge from other sources than their teachers and institutions; new groups of learners can be formed because learning is not limited by classroom timetables or methods. Technology makes possibilities to

develop personalised learning and it allows teachers to have a more accurate monitoring of each student.

Utilization of ICT and digital content has differed in the EU countries. Many universities have realised the positive impact of ICT on education process and many e-learning initiatives started up. However, activities were fragmented and isolated. Experiences show, that only implementing technology into classes is insufficient. To assure an education offer keeping innovation ability, creation of an integrated approach is necessary, where ICT infrastructure, access to digital content, the required level of digital skills are secured. (Document 52013DC0654)

According to Fulková (2004a) implementation of the latest information technologies into education requires not only building the technical infrastructure, but also principal changes in an actual education process at universities. It is necessary to regard the paedeutic and psychological impacts by using ICT because of its positive and negative aspects. Among positive aspects belong: the student can choose his own tempo according to his ability and speed of learning; by working with didactic software can be chosen also learning method by student; the feedback is prompt; multiple repetition of programme is possible; emotional impacts of graphical and sound effects included in presentation of learning materials; continuous evaluation of the student. However, it is necessary to mention also some negative aspects of using ICT in education process: technical limitations; insufficient digital literacy; lack of social contact with teacher a schoolmates; higher financial costingness.

The student should be able to use acquired knowledge and skills to work with ICT also in other situations and events. The success of education process using ICT depends on a positive approach of a student to work with new technologies, to individual work and to acquiring new knowledge.

The goals of sing ICT in higher education can be defined as follows (Fulková, 2004b):

- Development of cooperation and communication abilities: work planning, statement of partial problems, shifting the tasks, combining of partial solutions, public presentation of results.
- Development of personality and creativity of student: be able to choose a suitable medium for creation and expression of ideas.
- Development of metacognitive competence: learning by discovering, constructing, and thinking about own abilities.
- Development of formal and logical thinking, recognizing methods for problem.
- Development of abilities needed for research work: realization of simple scientific project.
- Respecting intellectual property.

Technical University in Zvolen disposes of modern ICT equipment in classrooms and library, technical conditions for using ICT in education process are created. Students and teachers work with university information system. As for teaching economic and management courses, only few teachers use e-learning by assessment of students and providing all study materials. An active using software application in education process is absent.

Graduates of the study programme „Business Economics and Management" at a bachelor degree should be able to analyse simple economic events and processes in the enterprise and its environment and to make simple managerial decisions in the area of costing, budgeting, production management and organization of business process. Graduates of master degree should be able to solve complex business

problems, to manage, make decisions and propose solutions in wider context by achieving business goals.

2.2. Methods

Coming out from the graduate profile, the needed changes in education process were identified. To propose changes correctly, initial information were acquired as follows:

- The course evaluation by students: acquirement of a feedback from students who evaluate quality of education in study courses. Evaluation form is available in the university information system to each student and the results are available to each teacher and managing staff.

- Questionnaire survey focused on finding out employment of graduates. The questionnaire form is available on the university website and the results are processed and published by management of the university.

- Inquiry carried out with managers of important companies in the region Banská Bystrica and the Slovak Republic. Structured interviews were performed in aim to find out knowledge and skills of graduates needed for work in the firm.

- Analysis of digital skills of lecturers and abilities to work with modern information technologies and software products.

- Analysis of courses´ contents, consequences and interlocks of courses in aim to identify possible duplicities, so that the education process could be synchronized.

The goal of changes of higher education process in the study branch "Business economics and management" is to make education process more attractive and more interconnected with current needs of practice. The implementation of business information systems into education process across core study courses was suggested.

3. Results

3.1. Results of the Surveys

Results of the course evaluation of students in the period 2013 – 2016 show positive evaluation of course "Simulation managerial game" based on using simulating software, courses based on elaboration of the projects by using simple software programmes in MS Excel and using e-learning due to availability of study materials in electronic form.

Survey of graduates' employment has been carrying out annually since 2014. The survey sample was 62 graduates. The results of graduates in the study branch "Business Economics and management" show, that:

- 68 % succeed on the labour market but most of them are entrepreneurs; 55 % are employed in the branch they graduated;

- acquired knowledge during the university study were evaluated as satisfied in 75 %,

- 60 % utilized knowledge and skills acquired at university in practice.

Inquires via structured interviews with managers of representatives companies were carried out in years 2014 and 2015 in 20 companies of wood processing, furniture, automotive and construction branches. Findings are as follows:

- The requirements to new employee are divided to three areas: 25 % is advanced using of PC and software products and foreign language knowledge, 40 % are professional knowledge and 35 % managerial skills.

- Present graduates miss knowledge and skills for working in business information systems, reporting and using databases.

- The employers miss persons at economic departments and management position who are skilled in both: economic and informatics knowledge There is a need of employees who understand economic and financial data and along with they are able to work with information system having basic programming skills.

3.2. Proposal of integrated education system using ICT and business information system

Results of carried out surveys led to proposal of changes in education process towards provision of knowledge and skills for work with business information systems.

The proceeding by creation of integrated education system based on implementation of software products was as follows:

- Improvement of digital competencies of lecturers: passing the courses and education training concerning work with ICT technical equipment, business and management information systems and software Statistics.

- Analysis, selection and implementation of the most suitable software products: business information system for courses in bachelor degree and management information system for courses in master degree. In this phase, consultations with representatives of companies offering software solutions of information systems were carried out.

- Selection of study courses in bachelor and master degree for implementing IS and synchronizing the contents towards creation of required consequences in education process.

- Creation of a model company and its database platform common for all study courses.

- Creation of assignments for students in each study course.

- Proposal of e-learning support: user manuals, study materials.

The solution consists in using the same database platform of model enterprise in education of all selected study courses and acquirement of economic knowledge and user skills via working out assignments in enterprise information systems. The structure of implementation of IS in education process and study courses is shown in Figure 1.
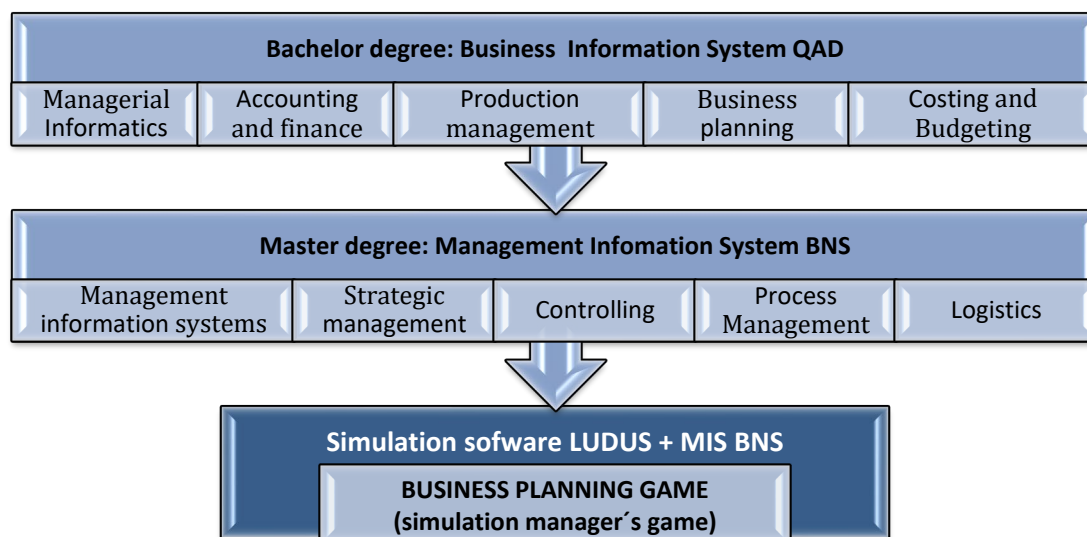
Bachelor degree: Business Information System QAD				
Managerial Informatics	Accounting and finance	Production management	Business planning	Costing and Budgeting

Master degree: Management Infomation System BNS				
Management information systems	Strategic management	Controlling	Process Management	Logistics

Simulation sofware LUDUS + MIS BNS
BUSINESS PLANNING GAME
(simulation manager´s game)

Fig. 1. Structure of implemented IS in education process

IS QAD Enterprise Applications are intended for the management of companies. They include the planning and management of production, sales, purchasing, warehouse management, financial management, and services management. QAD focuses not only on the management of material and information flow within the company, but also on the bonds between the various subjects of a large enterprise and on the management of the supply chain. (http://www.minerva-is.eu/en/qad-enterprise-applications-en.html)

Study courses at the bachelor degree of the study branch "Business Economics and Management" where IS QAD will be used:

- Managerial Informatics: user introduction to behaviour and work with IS.
- Accounting: accounting practices in individual accounting classes, data analysis, and elaboration of financial statement.
- Finance: modelling, analysis and interpretation of financial indicators.
- Costing and Budgeting: elaboration of different types of business calculations and budgets.
- Production Management: planning, preparation of production in purpose of maximal production capacity utilization.
- Business planning: creation of purchase, sale and financial plans.

Management information system "Business Navigation System" (BNS) provides complex support of management and planning. Software solutions are focused on development of companies and well managed processes under the framework of Business Intelligence are designed for CEOs, CFOs, sales managers, controlling managers and IT managers. BNS constitutes an integrated set of methodical and software tools focused on long-term as well as short-term planning, strategic projection of changes and results analysis. The model makes use of tools for support of change control (Balanced Scorecard or Strategic projects) combined with the integration of main corporate processes - sales, production or

services and financing. It facilitates the evaluation of deviations between planned and actually achieved goals (controlling) and their exact analysis. (http://www.inekon-systems.com)

Study courses of the master degree with education using MIS BNS are as follows:

- Management Information Systems: user introduction to behaviour and work with MIS.
- Strategic Management: creation of Balanced Scorecard and strategic plans.
- Controlling: identification of deviations between planned and real parameters, proposal of corrections and changes.
- Process management: business process modelling, process performance analysis, process controlling.
- Logistics: optimization of material flow, supply and warehousing.

The final semester of the master degree study includes study course "Business Planning Game". The students can use all knowledge gained in previous courses by making managerial decisions in a competitive environment of eight virtual enterprises and analysing the impacts of decisions on financial results. The goal of the game is to reach the best economic result. Business Planning Game runs on simulation software LUDUS interconnected to MIS BNS which enables visualization and analysis of achieved results.

4. Conclusion

The problem of Slovak high education consists in insufficient interconnection between education and a real current practice where the graduates will be employed. The education methods mostly used at Slovak universities are traditional: lectures and seminars. Lecturers use prepared presentations in MS Power point. However, the graduates as prospective managers must be able to work with business information system and the software products and they should be prepared a skilled for it. It was the main ground for creating an integrated education system involving use of IS and modern business software products. This solution brings to education process in the university study branch "Business Economics and Management" several benefits:

- Implementation of education in IS necessitates a synchronization of study course contents and enables elimination of duplicity.
- The study programme becomes more attractive
- Individual and creative work of students is supported.
- The work with the same data platform can help understand connections and relations between knowledge of partial study courses much better.
- Better readiness of graduates to professional life and management jobs: gained skills needed for work with business information systems currently existing in companies.
- Higher chance of graduates to succeed on the labour market: the needs and interests of employers were reflected.

The expected results after implementation of proposed changes: higher interest in study and higher number of students and increased number of employed graduates. The success of implementation of suggested changes depends on its limitations and risks consisting in insufficient motivation of lecturers

to perform changes and insufficient reward of providing higher quality of education from the university management.

Provided possibility to gain competencies and skills for work with business and management information systems in the study branch Business Economics and management is the reflection of higher education quality and relevance to practice. Higher education in this study programme will contributes to filling the strategy EU in education policy, as well as to long-term objective of the university.

Acknowledgements

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