



Implementation of Specific Forms for Improving of Teaching Methods in Education – The Ways How to Improve the Learning Process

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Abstract

Paper discusses the issue of improving the learning process at universities. In his introduction describes the learning process as a key factor in the functioning of any educational institution. The paper deals with the educational process as a process that is needed to improve continuously and adapt it to current conditions. The comparison of important statistical indicators of market development and employment of students are referred. The examination of interdependencies that may indicate a correlation or causality was carried out. Moreover the specific factors of life satisfaction of students and their educational achievement were conducted in the research. In the next part of the paper a concrete example from the practical educational process is mentioned and e.g. laboratory classrooms for automatic identification and their utility for practical teaching of specific subjects. Training processes are compared before the implementation of practical teaching methods and after introducing both theoretical teaching and practical training methods and the opportunities that can be only achieved in the practical teaching of the specific subject are described. Laboratory is described in terms of improving the quality of the study and the subsequent improvement of the image of the study program and improving the image of the University itself. Finally, the paper discussed the new opportunities in the processing of Bachelor and Master Theses which is provided under laboratory conditions. Learning processes in the laboratory conditions were evaluated and new possibilities for improvement of practical teaching methods application are introduced and flexible response to market demands.

1. Introduction

Using new technologies in university education process is a possibility how to increase the attractiveness of technical study programmes at the department and faculty and with the aim to receive better evaluation within the positions of faculties and universities not only in Slovak Republic.

One of the possibilities how to interconnect the theory with practice is the use of AIDC practical laboratory. The use of this laboratory generally covers the requirement of evaluation agencies according to two main aspects according to which the level of individual faculties are evaluated.

All bachelor and Master theses as well as projects and further activities which are solved and designed with the help and support of laboratory lead to increased attractiveness of study programme E-commerce and Management provided at the faculty of Operation and Economics of Transport and Telecommunication and with the aim to achieve the solving of thesis and projects with higher added value than it were in the case without having laboratory conditions and solution of tasks and projects at the theoretical level.

Laboratory promotes a better understanding and solving of the real issues, the research activities and the interconnection on practice which should be reflected in assessments carried out by ranging authorities. Laboratory and its main mission is to interconnect the theory with practice, resulting in improved design of final work, as well as the possibility of obtaining grants and research projects. Its secondary potential covers the marketing potential of the study programme and increasing the attractiveness of the study field.

2. Study programme evaluation

The evaluations carried out by the ranging agencies are a very sensitive factor for deciding the potential student candidates if they decide to study ultimately for the study programme on our faculty and department of Communications. What is the marketing point of view for the faculty of highly sought-after status. The use of this laboratory generally covers the requirement of evaluation agencies according to two main aspects according to which the level of individual faculties are evaluated. The state of higher education and its evaluation, e.g. assessment of universities and colleges in Slovakia is conducted annually by Academic Ranking and Rating Agency (ARRA) in



Slovakia. The number of 109 colleges and universities were rated in 2011, these were divided into eleven groups.

Among economic faculties, the Faculty of Operation and Economics of Transport and Communications of University in Žilina covers the sixth of fourteen universities which were evaluated with the overall evaluation of 41.3 points. According to ARRA the assessments are based on available and verifiable data divided into two main groups, firstly education that includes the number of students per teacher and the interest for in study programme and secondly the research, e.g. number of publications and citations, appropriate grants and doctoral studies).

3. Learning process and curricula in technical study field

From the perspective of students the education is a continuous process. Initial points is an entrance to any type of school levels and endpoint is a successful completion. Because lifelong learning is the only way to maintain a competitive advantage at the labour market. Whether it will have an individual education definitive end depends only on its decision. Learning process in terms of educational institutions is the process is continuous. Some parts of these processes have to react constantly react flexibly to market requirements and needs. Curricula for natural sciences such as mathematics remain mostly unchanged. For other subjects, it is imperative to update the curricula and educational processes every year. Otherwise these subjects would lose efficiency.

Subjects and their inclusion into the portfolio of higher education institution have to react as a living organism that is constantly changing and flexibly respond to market needs. To the most changing fields belong also technical industry. The mobile technologies, automation, information systems, security in which quality requirements are constantly changing and advance steadily forward. Automation, programming, information and others are a solid part of curricula and educational process in technical study field more than 50 years.

But at the same time they are a good example how these sectors have to respond flexibly to market requirements. Market in the field of information technology and automation has changed dramatically in the the recent years. The basic idea in the learning processes remain as a platform on which can be built. So as it was in actual market trends. But without response to the market needs all subjects on automating would have not be included in the learning process.

4. Employment of graduates

Employment of secondary or higher education is becoming a significant problem not only in Slovakia but throughout the European Union. Increasingly graduates can not find a job after graduation. Interconnection of higher education to the industry sphere and real vocational training is still a problem in Slovakia. Most exposed countries are currently also Spain and Greece where according to the International Labour Organisation (ILO-International Labour Organization) 55 percent of Greeks and 53.2 per cent of Spanish young people under 24 years old are unemployed. Young people (age 15-24) are a risk group are statistically three times more likely to be unemployed than other adults. The problem for young people to find work in the field which they studied and so that this would be a stable paid and full-time work (not internships, jobs or partying).

The actual statistics are even slightly less favorable because not all young people are in the records of the competent authorities. Some young people go out from records after not having found a work through a longer period. Of course a good quality of education process does not automatically mean the creation of jobs in the market. But appropriate education can be a key factor that can mean a competitive advantage over other students accomplishing universities with diploma. This is important from the point of view of an individual a particular moment when he or she needs to be integrated into society and to find a stable job after continuous training.

In terms of collective and competitive the education is important in competing countries in the future. For the preparation of the student it is important how he or she is prepared in certain study programme. There are crucial questions which have to be answered. Will be my graduation from the "theoretical" position needed in the practice? Is there a demand for my graduation sphere? Learning processes respond sufficiently flexibly to constantly changing market?

2nd quartal 2012	Country	%
1.	Macedonia	54,90
2.	Spain	53,30

3.	Croatia	37,00
4.	Portugal	35,50
5.	Italy	33,90
6.	Ireland	33,70
7.	Slovakia	31,70
...
30.	Austria	8,40
31.	Germany	8,10
32.	Switzerland	6,10

Table 1 Youth unemployment [1]

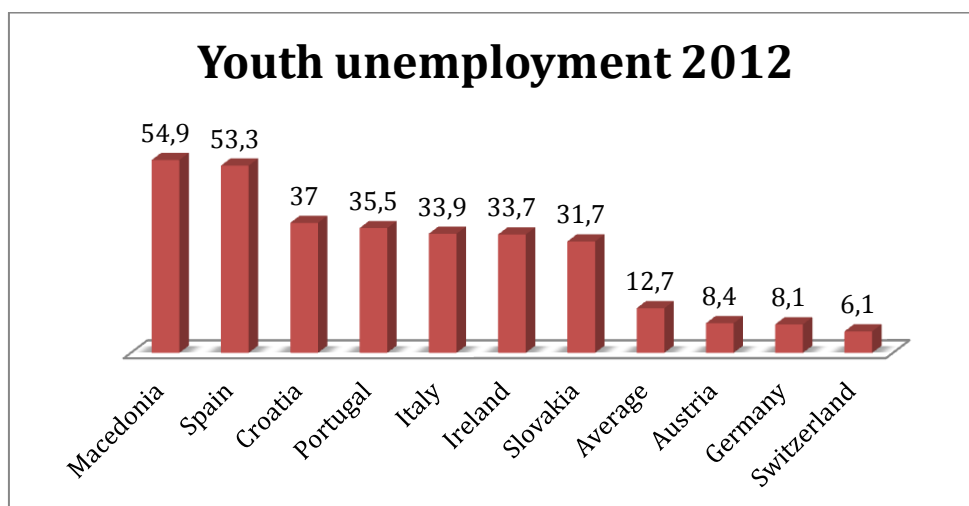


Fig. 1 Youth unemployment 2012 [1]

Youth unemployment							
Year	2006	2007	2008	2009	2010	2011	2012p
Percentage	12,30	11,60	11,70	12,60	12,70	12,60	12,70
Absolute number in millions	74,90	70,30	70,80	75,40	74,80	74,50	74,60

Table 2 Youth unemployment 2006-2012p [2]

The graphs show global youth unemployment (%) in some countries in Europe and Slovakia. There is clearly seen that the trend of unemployed in Slovakia in the period from 2006 until 2011 and the trend of unemployment in Europe. It can be concluded that the conditions that cause unemployment in Europe are global and local measures in Slovakia had an impact on the development trend (whether these measures were positive or negative). But this does not mean that state in Slovakia is optimal or acceptable in Europe. Because the trend in unemployment may be the same in Slovakia as in Europe, but there is a significant difference in the percentage of unemployed young people. The average in 2012 reached 12.7 percent, according to statistics youth unemployment to 31.7 percent.

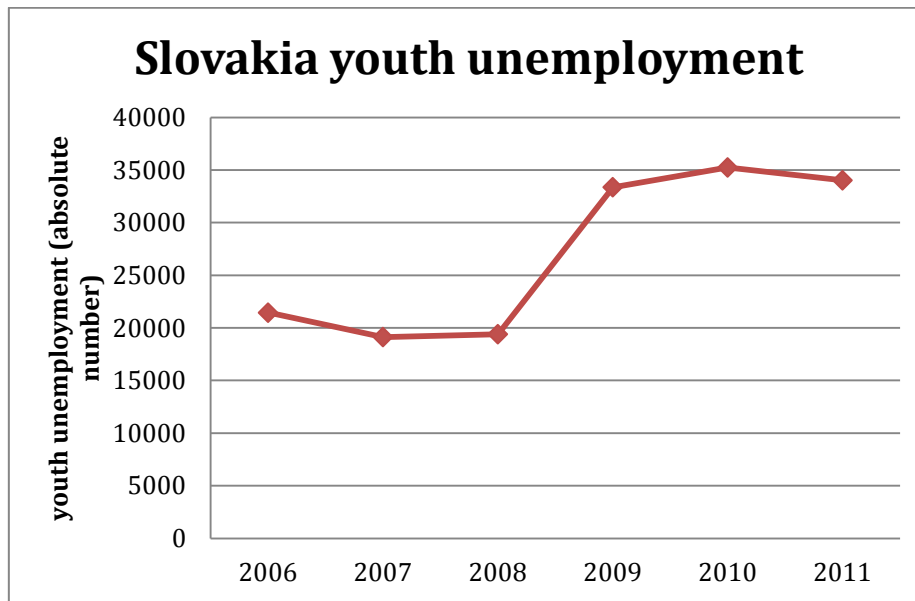


Fig. 2 Slovakia youth unemployment [3]

Unemployed young people in Slovakia are therefore more significant problem, because unemployment is three times the European average.

Group of study fields	Sum
<i>natural science</i>	431
<i>Technical Sciences</i>	11 811
<i>Agriculture and Forestry and Veterinary Sciences</i>	1 358
<i>Medical and Pharmaceutical Sciences</i>	865
<i>Social Sciences and Services</i>	18 506
<i>Sciences Culture and Art</i>	849
<i>Military and Security Sciences</i>	205
<i>Sum for all study fields</i>	34 025

Table 3 Number of job applicants [4]

According to the statistical office is "seeking employment graduate school" a person who is unemployed, younger than 25 years and ended up continuing vocational training full-time for less than two years and earned a full time job (the tables above). Most job seekers are registered within 3 months and then the number decline.

5. RFID laboratory case study

Radio-frequency identification (RFID) laboratory

RFID technology belongs currently to widely used contactless communication technologies. Its implementation in practice is almost inexhaustible and almost everyone is confronted with this technology every day, whether the contactless payment by credit card is concerned or payment by attaching the phone device to the reading terminal (NFC-Near Field Communication) or simply for opening door of some building with a card reader . The laboratory was built to help to bring all these technologies closer to students. All subjects whose practical part is covered by this laboratory, grew up on older forms of identification, e.g. using optical visibility (one dimensional bar codes). Educational



processes had to react flexibly to the changing market and new Technologies (or massive implementation of known technologies). Laboratory was equipped by passive RFID technology and later also with active RFID technology and currently is equipped also with NFC technology. An important interconnecting part of the RFID sub-system which consists of RFID readers and RFID tags is the software that is needed for further processing, that is so-called middleware. The work with the software was previously carried out only "from the table" meanwhile all the processes had to be artificially simulated by using fictional devices. Nowadays all processes can be performed in the AIDC laboratory with real readers, real identifiers and in real conditions which often differ from those which are simulated.

In this way students come into the contact with all the essential elements of the the basic RFID structure starting from the hardware and ending with the software programs without those the hardware is basically useless. All the simulation processes that are designed by the students during theoretical hours can be later verified in practical environment and subsequently these can be adjusted so that they reach the desired result in real conditions.

The students can see not only the real use of RFID technology but also the use of systems without those its usage were useless, e.g. the middleware and the database. Database systems are the primary elements of each data processing according to the state the data is entered, processed, or we need to get the desired results as long as the criteria are concerned. The RFID laboratory combines all these elements and create not a theoretical but a practical demonstration of the real practice.

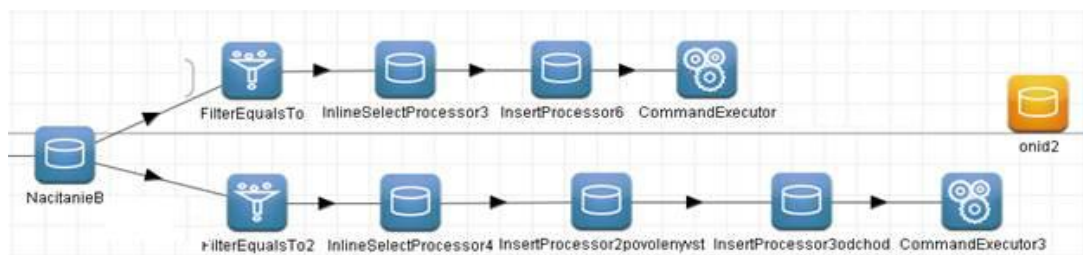


Fig. 4 Exaple of RFID middleware (Source: Author)

6. Conclusion

The economic crisis has exacerbated the number of unemployed people. One of the most vulnerable groups are young people under 24 years. A key factor for the application of the individual and the competitiveness of the whole country should be education, science and research. The future of education is closely related to connecting to the practice and real labor market. Learning processes should be flexible and sufficiently respond to market changes. Linking higher education to practice, it seems necessary not only in Slovakia. Quality education is closely linked with the later quality of life of individuals and of the whole country.

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