

Integrating Economic and Managerial Skills with an Emphasis on Needs of Labor Markets

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Abstract

The paper aims to provide insight into the current state of education in economic and managerial knowledge on Faculty of Civil Engineering of the Technical University in Košice. Students use the information to acquire the necessary habits in the branch of management and economics in building. The paper characterized the courses where students come into contact with the problems of management and economics in the building during university studies. The point of paper is to highlight the frequency of articles focused on economic and managerial knowledge. Based on the cooperation between the school and the practice was to measure, a new study Realisation Department of traffic engineering. Combination the three basic pillars of branches of study (department of engineering, construction and road building, construction and industry economics and management) brings an integrated interdisciplinary knowledge for graduates. This knowledge graduates can use for prepare and manage demanding projects of road construction. Such graduate will not only be a good expert in the design of civil structures, but they will also be able to prepare and manage this building. This knowledge is in construction practice required.

Keywords: *managerial skills, economic skills, education process, labor markets*

1. Introduction

The paper deals with the analysis of cooperation between universities and practice, in order to show the current status of training courses in the field of construction. The linking practice with educational process of the study program Technology and management in construction is provided mainly through student experience, lectures by experts on specific companies, the introduction of current subjects in study programs and reaching out to practitioners for leadership of the bachelor and engineering works. This paper presents various forms of cooperation used by the Faculty of Civil Engineering in Kosice. On the basis of the cooperation in specific subjects, they have been created with the curriculum, so as to meet the practical requirements, in the preparation and construction management. Specific subject in the preparation iand management structures with the curriculum were created with the cooperation with practice. The requirements of practice are discussed at various scientific and research publications [1;2;3;4;5]. In the framework of the educational process is possible to meet with different opinion about level of graduates some departments. Readiness of students in practice is very individual and also depends on the students themselves, from their efforts and from their attitude toward future careers. Many students work in the form agreement on temporary work during the summer holidays. For students it is a possibility to short time work in the construction departments. They can try application of theoretical knowledge in practice. Students are mostly placed directly into building production or to the department of the technical preparation of production. Students will receive directly the first knowledge about creating and controlling budgets. Most companies see deficiencies in absence of practical knowledge among students in this sector. Companies perceive that academics will derogate from the practice, which affects the knowledge of the students. In the article is presented the cooperation of university teachers and construction practice in the subject of the estimating and costing, which does not confirm the deficiencies. The study is

aimed, among other areas also on areas of estimating of building and costing of building materials as well as the gradual acquisition of knowledge and skills of estimating practice. Students can capitalize of the gained knowledge in practical training and transform them for obtaining skills for estimator office, assistant construction managers, and project managers or in other positions in investor and supplier organizations. Students acquire the necessary habits of estimating in the exercises, lectures from practice, in the subject of Construction site experience and completion of compulsory excursions. From graduate is expected, that they will have the all the skills as Estimator who have a few years of practice. But this is cannot be obtained only with theoretical study, but only with a few years of practice.

The accreditation of a new study Realisation Department of traffic engineering was created based on communication with companies dealing with the implementation of road construction and the current state of superior road infrastructure in Slovakia. Road infrastructure in Slovakia is characterized by insufficient coverage of the territory and access to the network of motorways and expressways. Dificulte task of our society in the preparation and implementation of transport infrastructure projects points to the need for professionals able to perceive a wide range of technical, technological, environmental management, and managerial context, supporting the improvement of investment activities in transport infrastructure projects.

2. Methodology

New branch of study called “The implementation of traffic engineering” was concluded after analyzing the needs of the construction market and after communicating with construction companies which are involved with the implementation of civil engineering. Graduates will have complete objects from his department IKDS (Institute of Structural Engineering), but which will be reinforced by technological and economic subjects in the branch of construction. The construction market is currently demand for such graduates. For the created a new program was made project KEGA “031TUKE-4/2015 Using the interdisciplinary knowledge in new programes aimed at improvement of investment activities of transport infrastructure projects”. The project is aimed at creating new interdisciplinary study curriculum for 1st and 2nd level of higher education in the branch of integrated operations for the preparation, execution and economy of road construction. The project use interprofessional knowledge from all departments on Faculty of civil engineering (engineering, construction and road building, construction a sector of the economy and management). The focus of the project is consistent with the priorities of the call KEGA 2015. The KEGA is oriented to the area of content integration and diversification of university studies with a focus on practical needs. From analysis of the current state of our society in the preparation and implementation of demanding transport infrastructure projects clerly show the need for professionals. The professionals have to be able to perceive a wide range of technical, technological, environmental, ecological and not least management context, supporting the improvement of investment activities in transport infrastructure projects. Traditional education of students in the branch of road construction is on the faculty in the study branch of engineering, construction and highway construction structures (number SB 5.1.5). The branch witch focuses on the design of supporting structures of civil, land and water engineering and the design and implementation of civil engineering, which include highway construction (roads, bridges, railways). The project aims to create new curricula in the first and second degree of college education that combining the knowledge and capacitive potential of other two branches of study. New project significantly strengthens the faculty less developing segment of civil engineering - highway construction structures. Interdisciplinary focus of the experts in transport infrastructure requires an interdisciplinary knowledge from two other study branches: Civil Engineering (5.2.8) and sectoral economics and management (03/03/20). Study branch construction has a long tradition no tohe faculty of civil engineering. Study branch civil engineering is focused on the preparation, implementation, reconstruction and use of all types of buildings. In this branch students will be able to solve problems with the theory construction, technology, quality, security and economic structures. Economics and management objects to study are taught in the civil engeneering branch. Wide-

spectrum based study branch internally specifies the objects of social science, economics, management, typological, technological and including building construction. The combination of these three study branch will bring integrated interdisciplinary knowledge for graduates, forming a strong theoretical and practical foundation, supported by the latest techniques and technology for the solution of engineering tasks about management the projects of road construction.

In this part of the paper are presented the selected subjects taught on Faculty of Civil Engineering in Kosice. The aim is to link the subjects taught with experience in the calculations, budgeting and pricing of construction work. For master students, who have completed these subjects, was created research about the number of taught economics subjects in their field. Poll was involved in two departments: Theory Buildings and Environment and the Department of Technology and Management in building industry. Characteristics of selected items:

2.1. Construction site experience

In this subject, student must participate in the three-week practice. The passing shall be evidenced with written confirmation from the responsible person and is necessary to draw up a report in a predetermined format. Originally, this subject was included only for students from the department for buildings implementation. After subsequent consideration of the lack of contact with practice, this subject was included in all the study programs. Students are enrolled as assistant construction managers. In this position, they are faced with the task of to study design documentation of the building and budget of course.

2.2. Costs and Prices

The goal is an explanation of the formation of bidding prices of construction works and emphasizing of creation of price variant of the construction process. In this subject is emphasis on the function of registration of the production factors and detection of building production efficiency. Students have to process right bill of quantities from the project documentation and acquaint with regularities calculation for any construction works. Students receive a database of the labor process, from which they draw budget lines for making budget of the family house. Some of the lectures are taught from company Kros, dealing with the creation program called Cenkros Plus.

2.3. Budgeting and costing

The students in this subject learn to handle the budget for the simple construction in software Cenkros plus. This software is the most widely used in practice in Slovakia. Student receives basic knowledge of budgeting as search of the necessary items in the database of works and materials with average indicative prices. Subject highlights the importance of the calculation of own costs and calculated methods used in estimating building. It deals with the procedure and principles of construction budgets, production costing, production and sales invoices and monitoring of the consumption costs. Similarly as in subject „ Costs and the prices“ in this subject is dedicated space for teaching lectures colleagues from practice (as the company Kros and CENEKON), but issues are focused on more in depth.

2.4. Controlling

The goal of this subject is convey the knowledge of controlling as an effective tool for managing profits, reducing costs and increasing competitiveness of construction companies. The subject brings knowledge and practices focused on the application of selected tools for operational management a construction company costs and the costs for building process.

To mention the controlling as a tool of profit management and cost decreasing, competitiveness increasing of Construction Company, mainly after the enter SR into the EU.

2.5. Building economy

The aim of the course is to understand the importance of the strategic importance of the economy in construction practice. Understanding the specifics of economic construction in the analysis, planning, setting goals and strategies. Explain the process of organizing, planning and construction management using economic methods, standardization and pay in the construction industry. Emphasize the importance of prices in the construction industry particularly in terms of activity in the construction market. Highlight the importance of cost as a basic component of prices, features and emphasize their role in the design and operation of the works.

2.4. Construction Project Management

The aim of the subject is to obtain the basic information about project management, which presents the management philosophy of unique and unrepeatable activities. This theory is especially suitable for building industry, can be apply at complex management of investment building projects, at management of construction projects, construction technological projects, at more particular subprojects, which are necessary at preparation and realization all building activities as well.

3. Discussions

For student’s Full time master study, who have been subject to the budgeting calculations, was conducted research on the number of teaching hours in their departments. Polls were involved in two departments: Theory Buildings and Environment and the Department of Technology and Management in building industry. In this chapter are the results from the realized survey how much and what concrete economic subjects are taught at various study degree in all construction faculties in Slovakia. The results are summarized in Table 1. In the fourth column is the frequency of courses dealing with economic and managerial skills in the original study branch engineering, construction and road building. Introduction a new study branch will have these subjects strengthened with technological and economic subjects in the branch of construction. Frequency of economic subjects in the new branch is completed in the fifth column of the table. In bachelor degree study is the number of economic subjects remained unchanged. Master degree has been added to the two economic subjects. Together, the bachelor and engineering study student completes five courses dealing with economic and managerial expertise from the previous number 3 items.

Table 1 The frequency of courses focused on economic and managerial skills Source: author

DEGREE PROGRAM	BUILDING			BUILDING CONSTRUCTION			STRUCTURAL ENGINEERING AND TRAFFIC CONSTRUCTION			REALIZATION OF TRAFFIC CONSTRUCTION (new program)		
	Bc	Ing	spolu	Bc	Ing	spolu	Bc	Ing	spolu	Bc	Ing	spolu
<i>SvF TU Košice</i>	3	8	11	3	0+1	3+1	2	1	3	2	3	5
<i>SvF STU Bratislava</i>	3+3	4+1	7+4	3	0+1	3+1	1	2	3	program does not exist		
<i>SvF ŽU Žilina</i>	3	4+2	7+2	2+1	2+1	4+2	1+1	2	3+1	program does not exist		

x+y ... compulsory subjects + optional courses (some of which are in the choice of subjects other fields, so that when

the selection of these items reduces the number of articles addressing economic and managerial knowledge)

Next part of the research was a survey student’s opinions on the frequency and importance of economic subjects to the existing studz branches. Results of surveys and responses to individual questions that were asked students after the course budgeting and costing are evaluated in tables (tab.2) and graph (Fig.1). Differences between departments resulting from their focus. Department TBaP focused on designing buildings are quite negative to the economic field. This is confirmed by answering to a question that economic subjects are required to a lesser extent (response 1B - 26 responses). On the question of whether the subjects focused on the economy sufficient amount, 25 students answered yes (2A - 25 responses) and 10 students said they wasted a lot of these subjects (2C - 10 responses). On the third question whether use of the knowledge of the subject budgeting and costing in employment after graduating 28 students responded positively (3A), 5 students answering that information will be used in private life (3B) and 4 students have said that such information is not needed any the sphere of his life (3C). Conversely, TMS department considers these objects as necessary (A1-13 responses), the number of economic subjects considered sufficient (B1-13 responses) and the whole department knows that this knowledge will benefit in employment (C1-14 answers.) Both unions are full-time study. It is to consider the attitude of future designers (Department TBaP), who do not care costs that the prospective investor to make the realization of a building which designed.

While the award for design work recommended SKSI (Slovak Chamber of Civil Engineers) set of ZRN (basic budgetary costs) building design coefficient and a performance phase of the project. If they are not interested in these costs, how can set the cost of the project? The investor is also always made of several structural variations, which almost always is at the top of the costs of future construction, and it solved by the designer.

Table 2 Number of replies from department TBaP and TMS. Source: author

	Odpovede								
Odbor	1A	1B	1C	2A	2B	2C	3A	3B	3C
TBaP	8	26	3	25	2	10	28	5	4
TMS	13	1	-	13	1	-	14	-	-

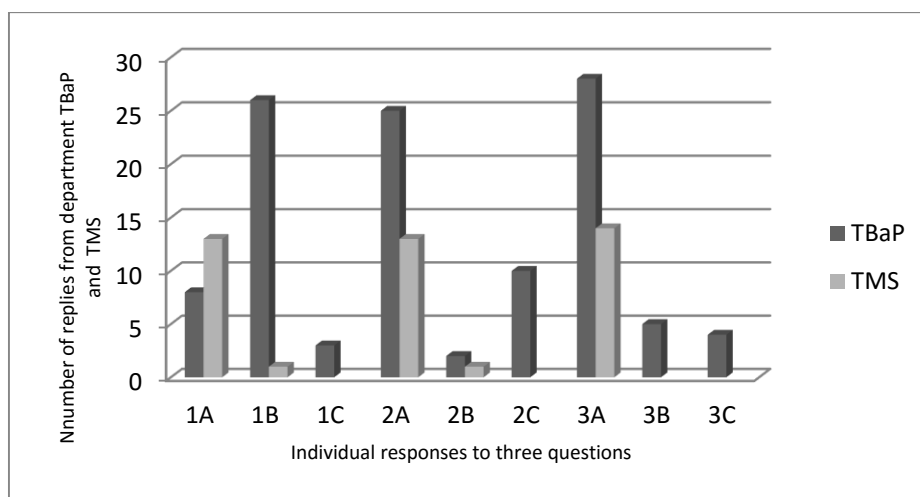


Figure 1 Evaluation of the replies to the importance of instruction in economics at the Faculty of Civil Engineering in Kosice
Source: author

4. Conclusion

From graduate it is expected that it will have the necessary knowledge, but should not be expected to have all the skills to solve given tasks that cannot be obtained theoretical study, but only a few years of practice. In

addition to theoretical knowledge, it is necessary to provide students with the practical skills that are provided by hosting also lecturer practitioners in the field of pricing and budgeting. Study department development of transport engineering was created from the requirement of building market and from the basis of communication between faculty of civil engineering and practice. The combination of three study branch (department of engineering, construction and road building, construction and industry economics and management) will bring integrated interdisciplinary knowledge for graduates, forming a strong theoretical and practical foundation, supported by the latest techniques and technology for the solution of engineering tasks about management the projects of road construction. Accredited this new department is regularized the absence of the subject of economic specialization in the branch engineering construction and road building. The vision is continuing to seek and implement new projects for the next developing cooperation between industry and universities for the educate graduates to the practice requirements.

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