

EDUCATION OF LOGISTICS AT MANAGEMENT AND PRODUCTION ENGINEERING STUDIES AT CRACOW UNIVERSITY OF ECONOMICS

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Abstract

The development of the logistics sector in Poland has contributed the rapid development of logistics education in the country in recent years. The growing demand for employees with logistics meant that more and more universities launched faculties and departments related to this field. Universities logistics personnel are trained in bachelors and master's degree majoring in logistics and logistics of various specializations offered in the economic and technical fields of study. As part of the currently valid classification of occupations Polish labour market needs also in the group of occupations engineers for the industry and recognized profession logistics. One of the fields of studies educating engineers just such a major in Management and Production Engineering. This direction should be the area of education in the social science and engineering, with learning outcomes leading to a vocational engineering competence.

The aim of the work is the presentation of the learning outcomes of education in the profession of logistics developed for this direction led to the Department of Commodity Science at Cracow University of Economics.

Key words: logistics education, professions, learning outcomes

1. INTRODUCTION

At present, logistics is considered to be the basis of functioning of every modern business. It became, not only a chance, but a requirement of modern times, in which the processes connected to the goods exchange are more and more complex and the necessity to adapt to the needs and the purchasers' requirements goes with compulsory lowering of activity costs in order to face up to the competition on the markets.

In Poland, the logistics sector is developing very dynamically. During the last 25 years of economic changes, Poland, beginning from the outsider position in Europe, found itself among the logistics leaders. The domestic logistics and transport companies' income scale proves that the logistics sector significantly develops. They reach 100 billion zlotys very year, which is 5 percent of the Polish GDP. The sector employs about half a million people. According to the Central Statistical Office, there are over 140 thousands of companies on the Polish market. They can be included to the TSL sector. Most of them provide only transport services and these are enterprises, which employ up to nine employers. On the other hand, there are some enormous logistics operators offering extended services, which significantly outreach beyond transport and storage. They can extensively satisfy the needs of even the whole chains of supplies (Olechowski & Jabłonowski, 2013).

The logistics sector in Poland is developing. It proves the fact that many Polish manufacturers and traders have created their own logistic systems and advanced chains of goods' supplies have been organized. Poland also owns the base of modern warehouses. What is more, it is in the lead of the best localizations of such investments in the world. (Stefaniak, 2014)

Simultaneously, as the analyses from the range of the labour market needs show – in the coming years the global problem will be the phenomenon of the specialists shortage, including the ones from the logistics range. According to the report prepared by the World Economic Forum with the cooperation of *The Boston Consulting Group* (BCG), to 2020 and to 2030 year, in 25 countries, 13 sectors and 9 categories there will be a problem of employers shortage. It is estimated that the biggest deficiency is predicted, among others, among engineers and most work offers will come from logistics-transport sector. It is assessed that in a few years' time Poland may lack 46 000 - 70 000, and even 100 000 engineers, and in the countries of the European Union 2 million. The majority of them will be from logistics sector. (Brzeziński, 2012).

Additionally, the first ten in the ranking for the best profession in 2013 year, published by the Forbes, shows that a logistician was on the sixth place of the most wanted jobs. (Młynarczyk, 2014).

The growing need for employees with logistics education caused that more and more higher schools launched fields and specialisations connected to this area. The schools educate logistics staff on the I and II

degrees studies in the field of Logistics and different logistics specializations offered as part of economics and technical field of studies.

What is more, the logistics knowledge is also taught at postgraduate studies and participants of logistics trainings (including e-learning ones). The occupation of a logistician is becoming more meaningful. It proves the fact that two higher schools with the logistics profile have been created: Poznan School of Logistics and the International University of Logistics and Transport in Wroclaw.

Educating logisticians is directed on getting jobs connected to abilities of doing different logistic tasks and to do the scope of duties, which have been placed among jobs and specializations for the needs of the labour market.

At present in Poland, the Ordinance of the Minister of Labour and Social Policy from 27 April 2010 year, is in force. It concerns classification of occupations and specializations for the labour market needs and the range its use, in which the classification from the International Standard of Classification of Occupations ISCO-08 has been accepted. The classification is a five level, hierarchically arranged set of occupations and specializations which appear at the labour market. On its first level, there are occupations belonging to the group of the representatives of national public authority, higher officials and managers. However, on the second level, there is a group called specialists. Among the occupations and specializations included in the subgroup of occupations of trade and production engineers, the job of a logistician has been taken into consideration.

This occupation, regarding its classification to the group, requires possessing vocational knowledge, ability and experience in the scope of technical, nature, social, humanistic science and the related. The main tasks standing before the ones doing this job is introducing scientific concepts and theories, enlargement of existing knowledge by the research, creativity and systematic education in this scope. A logistics engineer must possess adequate qualifications (knowledge and skills) got in the result of the education process.

At the fields of study educating such engineers is Management and Production Engineering. This field belongs to the area of education in the scope of social and technical sciences, with the learning outcomes leading to get engineering competences.

The aim of this work is the presentation of learning outcomes concerning education in occupation of a logistician elaborated for the above field at the Faculty of Commodity Science at Cracow University of Economics.

2. THE LEARNING OUTCOMES AT MANAGEMENT AND PRODUCTION ENGINEERING STUDIES AT CRACOW UNIVERSITY OF ECONOMICS

When the new amended act started to be in force, in 2011 year – higher education law and executive acts defining the rules of introducing, at Polish Universities, National Qualifications Framework (KRK in Polish), conditions favouring better adaptation of didactic offer to the needs of the labour market have been created. The benefits connected to introducing KRK result from acceptance of the concept of describing qualifications by assuming effects of educating, including the set of general skills (useful independently from the career path) and connected with the field of study. A change of approach to the educating process is connected to it. The most important aim of this process is a guarantee that a student achieves assumed effects of education defined in the Recommendation of the European Parliament and the Council from 18 June 2009 year as statements defining what a student should know, understand, what abilities, skills and social competences they should possess after finishing the process of education (Fig.1) (Lisińska-Kuśnierz, 2012).

Figure 1 Descriptions of learning outcomes



Source: own work

The educating effects presented in the above Figure define:

- Knowledge – as the effect of absorbing information by studying. As a set of facts, rules, theories and practice connected to the field of work or science. In the context of European frames of qualifications described as theoretical or factual knowledge.
- Skills – as the ability to use the knowledge and the know-how in order to do the tasks and solve the problems. In the context of European frames of qualifications defined as cognitive (including logical, intuitive and creative thinking) and practical (including the ability and the use of methods, materials, tools and instruments).
- Competences – as the proved ability to use the knowledge, skills and personal, social or methodological abilities, showed at work or science and the professional and personal career. In European frames of qualifications, competences defined in the categories of responsibility and autonomy.

In connection to the new legal context of teaching in higher schools and the demands resulting from the standard of occupations classification, as mentioned above, a logistician should be a graduate of the field of study in the area of social technical and nature studies with the educating effects leading to engineering competences.

A very important tip in defining educating effects for a given field of study, should also be the employers' expectations, who look for the specialists.

In case of the logistics specialists, the employers' expectations, the identification on the basis of the analysis of the recruitment advertisements focus around the following skills of the candidates:

- the ability of analytical and creative thinking,
- the ability of team work and negotiation, communication skills,
- the ability to use the calculation techniques,
- the ability of planning, the use of time and making decisions,
- the ability to speak foreign languages and the knowledge of cultural diversity,
- the knowledge of economic law in Poland and in the European Union,
- the ability to use computer systems used in logistics,
- the ability of constant improvement,
- the ability of diagnosis of threats and early warning.

Taking into consideration the requirements for the occupation of a logistician, resulting from the jobs qualifications and the expectations of the employers who look for logistics specialists at the Management and Production Engineering Studies, at the Faculty of Commodity Science at Cracow University of Economics, the following learning outcomes:

In the scope of knowledge:

- the knowledge in the character of social science, their place in the system of science and relations in relation to other sciences and the knowledge necessary to understand social, economic, legal and other out of tech conditioning of engineering activity,
- the general knowledge from the area of technical science embracing the key issues for the field,
- the general knowledge from the area of mathematics, physic, chemistry and other areas proper to the field,
- the knowledge connected to the chosen issues from the area of managing and engineering production, including: the processes and manufacturing techniques, production and services management, expenses management, designing, processes and production systems supervision, supervision of objects and managing systems, quality and safety management and having a business activity,
- the knowledge about different kinds of social structures and institutions and the relations, which appear between them in the domestic and international scale,
- the knowledge about a human, especially as a subject constituting social structures and their functioning rules, and those who work in these structures,
- the knowledge about the norms and rules (legal, organisational, moral, ethical) which organize the social structures and institutions and regularities which rule them and their sources, nature, changes and the ways of acting,
- the knowledge from the range of industrial property protection, copyrights and typical engineering technologies,
- the knowledge about the basic methods and tools of getting data, used in fields of studies and scientific disciplines, proper for a given faculty,
- the knowledge about general rules of creating and developing the forms of private sector.

In the scope of skills:

- the ability of analysis, interpretation and prediction of the basic social (cultural, political, legal, economic) and technical phenomena in the scope of areas of science and scientific disciplines, proper for a given faculty,

- the ability to use normative systems and the chosen norms and (legal, vocational, moral) rules in order to solve certain problems from the area of science and scientific disciplines proper for the faculty,
- the ability to gain, analyse, integrate and use information from available literature, data bases and other sources in Polish, English or other foreign languages,
- the ability to present and justify one`s own opinions and judgements, to logically formulate conclusions and suggest proper solutions to certain problems,
- the ability to plan and do easy research, measurements, to interpret the achieved results and form conclusions.
- the ability to use the basic analytical, stimulatory and experimental methods to formulate and solve engineering tasks,
- the ability to understand, analyse and interpret processes and phenomena in the area of management and engineering production,
- the ability to prepare oral presentations (speeches) in Polish or English or in other foreign languages,
- the ability to communicate with the use of different techniques in professional environment and in other ones.
- the ability to do an introductory economic analysis of the undertaken engineering tasks,

In the scope of social competences:

- the awareness of completing and improving the knowledge and skills – lifelong learning.
- the awareness of the importance and understanding of out of tech aspects and the results of engineering activities, including their influence on the environment and the responsibility for taken actions connected to it.
- the awareness of validity of cooperation in a team by playing different roles,
- the awareness of responsibility for work and safety of a team.
- the awareness of defining the priorities, which serve to fulfil important social, economic and ideological issues,
- the awareness of obeying the rules of law and following the economic and ethical principles in business activities.

Modules (subjects) with content and educating methods leading to get the knowledge, skills and social competences necessary to work in the profession of a logistician, serve the realisation of the above effects.

During the bachelor degree course (the I degree studies) at university the modules are: science from the group of technical and nature subjects, i.e.: maths, statistics, chemistry, physics, materials science or biotechnology and the subjects providing social knowledge and skills i.e.: economy, law, management and marketing, as well as business ethics and information technologies.

The remaining educating modules concentrate on production management, processes, quality, work safety and techniques and automation of production, as well as finances and costs calculation. The subject called Logistics provides knowledge and abilities from the area of logistics in a company. It is put into practice at the Packaging Department with the learning outcomes directed on the knowledge about the logistics system of a company and social competences in the area of team work.

The master degree course (the II degree studies) at university at the Management and Production Engineering Studies is enriched with the subjects from the area of strategic management, integrated management systems, organisation of production systems or quality manoeuvring tools in production, as well as the technical Logistics subject, which provides knowledge and skills from the area of logistic infrastructure. The remaining education modules, which are components of the II degree studies programme are adapted to the specialisations, which students can choose among the following: management of projects in production, management and engineering production of food and management and production engineering of cosmetics and household chemistry.

3. CONCLUSION

The growing need for the specialists in logistics caused dynamic development of education in this area. The legal conditions concerning the educating system in Poland, determine the creation of programmes of studies by describing the desired learning outcomes in the scope of skills, competences and knowledge. In case of the occupation of a logistician, defined in occupation classification and specialisations as a specialist, in the subgroup of jobs industry and production engineers, knowledge and skills are required, in the area of social and technical science. The Management and Production Engineering Studies at the Faculty of Commodity Science at Cracow University of Economics with the defined learning outcomes and the modules (subjects) directed to get engineering competences, provides such knowledge and skills to get engineering competences. It provides the knowledge from the area: industrial engineering processes, technology, construction of machines foundations,

computer support of production management and the management area of: projects, production, human resources, as well as from the scope of economic problematic aspects including: microeconomics, macroeconomics, economic-financial analysis in a company, foundations of accounting and costs controlling, logistics and many more. This field of study is very popular among candidates to universities, which contributes to the didactic offer extension by launching new specializations, among which the most wanted is the specialization called projects management in production.

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