

INCLUSION OF THE QUALIFICATION STRUCTURE OF THE NATIONAL SYSTEM OF QUALIFICATIONS IN INITIAL VOCATIONAL EDUCATION METALLURGICAL BRANCHES

JUŘICOVÁ Anna, VOZŇÁKOVÁ Iveta

*VSB - Technical University of Ostrava, Faculty of Metallurgy and Materials Engineering, Ostrava,
Czech Republic, EU, anna.juricova@vsb.cz, iveta.voznakova@vsb.cz*

Abstract

Metallurgical and foundry enterprises in the long term a shortage of qualified graduates of metallurgical specialties. The lack of trained human resources leads to a reduction in the competitiveness of Czech companies, therefore, pay great attention to vocational education. The authors of the article point to the fact that vocational education and training programmes it is desirable to revise and link with the current operational needs of metallurgical enterprises. In the article are being sought and proposed options for the implementation of the requirements of employers metallurgical companies into the content of educational programs. Among the graduates of metallurgical specialties, should ensure the required professional competencies enabling a smooth transition to performance of the specific job positions in the metallurgy.

Keywords: National system of qualifications, job positions, initial vocational education, metallurgical branch, professional competencies

1. INTRODUCTION

The article focuses on the design of a system which should provide a platform for the creation, transmission and dissemination of information and requirements to change the content of education in metallurgical branch according to current practice needs. It also deals with the definition of user groups and individual process steps.

In the Czech Republic, the alignment of educational offers with the needs of metallurgical enterprises and the labor market as a whole is an area which has only started to gain attention over the last few years when deeper deficiencies in the number of graduates their readiness for the execution of metallurgical professions. No one can replace experienced metallurgists who retire. Metallurgical enterprises see the cause mainly in the abolition of a number of secondary vocational schools, which were often enterprise vocational schools. Company management directly communicated with school management and immediately transferred their requirements to the content of vocational education, and enabled schools to carry out training in specialized student workplaces in their companies under the guidance of practitioners. This ensured links between education and practice as well as the transfer of technical and technology development to the content of education. Education played an important role in the past and this is commonly known. The difference as compared to modern society is in knowledge application. As Veselý [1] points out, nowadays knowledge goes hand in hand with its application.

2. INFORMATION TOOLS FOR EDUCATIONAL SYSTEM IN METALLURGICAL BRANCHES

Metallurgical enterprises have long been interested in preparing the current generation for future occupations. They demand that the adaptation of the educational offer and content is a response of individual education providers to relevant information on the qualification needs of individual metallurgical enterprises. In industrial reality, it is desirable that an employee has or should have required competences - powers or authorizations, figuratively ability, capability, qualification, dexterity and skillfulness. Competence is the notion related to work,

it refers to the work field for which a given individual is qualified. People qualified for given work are those who fulfill expectations related to the performance [2].

When adopting corporate human resource strategy, it is always necessary to keep in mind a plan for HR and their reserve preparation. Seeking of strategic benefits is a continuous activity and in achieving excellent results in the long term, we have to work with corporate human resources on a continuous and systematic base [3]. The basic prerequisite for the development of every metallurgical enterprise includes high-quality personnel resources and their knowledge and skills corresponding to the level of education. The technology of metallurgical production is changing, which in turn requires a rapid response of school and education systems to cover the respective needs.

In order for the educational system in metallurgy branches to respond to the requirements of metallurgy companies, it is necessary to have adequate sources of information about the changes in education content virtually on-line. For this purpose, it is necessary to look for such sources where this information can be obtained. The reason is to recognize and communicate in time the information about what and how many workers, what qualification and what competency will be needed not only by metallurgy companies but also by the entire labor market.

Information tools (see **Table 1**):

- National System of Occupations
- National System of Qualifications
- Framework Educational Programs

Table 1 Scheme of system information tools

Step 1	Step 2	Step 3
National System of Occupations	National System of Qualifications	Framework Educational Programs
NSO	NSQ	FEPs

The National System of Occupations (NSO) [4] is a standardized and current description of the world of labor, created by employers' representatives. The nature of the influence of the NSO lies in the fact that professional qualifications in the NSQ are defined as the ability to perform units of the NSO (occupations, type positions); it describes what is needed for the performance of occupations or their parts, i.e. partial working activities. According to these units of work, therefore, professional qualifications and their qualification standards are directly defined and created.

The National System of Qualifications (NSQ) [5] is a publicly accessible register of all complete professional qualifications certified, distinguished and recognized in the territory of the Czech Republic. It defines the requirements for the professional competence of individual qualifications regardless of how they are obtained. It describes what is needed for the performance of occupations or their parts, i.e. partial working activities.

Framework Educational Programs (FEPs) [6] set generally binding educational requirements for each degree and education area, which are applicable to all schools that have to respect them when developing their School Educational Programs (SEPs). Curriculum documents are now prepared at two levels:

- State - in the form of Framework Educational Programs (FEPs)
- School - in the form of School Educational Programs (SEPs)

FEPs are mainly designed in a way which does not allow vocational trainings to focus directly on the field, i.e. on one profession; conversely, the focus is on a whole group of related professions. This causes a contradiction in the demands of employers and the labor market. Employers mostly prefer the professional knowledge of a particular profession while the labor market emphasizes general and transferable competencies, i.e. demands

for wider applicability due to labor market changes that require a more general framework. Within the creation of FEPs and subsequently SEPs, it is necessary to look for a compromise.

In order to harmonize and reflect the actual requirements for the performance of individual occupations in the labor market at all levels of education, many enterprises, unions, clusters and technical schools have been involved in the implementation of the public contract "National System of Occupations" and the "National System of Qualifications".

The basic processors of this information are the Sector Councils [7] (SCs). They are voluntary professional associations, composed of representatives of major employers, professional unions and noted experts on human resources in the given line of business.

Experts involved in the work of Sector Councils have the best information about the development in individual fields because they monitor the labor market and identify trends, exchange information on the needs of sectors in human resource development, design a qualification structure and create rating standards for individual qualifications. Sectoral Councils conclude sectoral agreements.

It is required that these activities include greater efforts for closer cooperation with educational institutions, continuous exchange of information and requirements for the training and its content, active involvement and cooperation in the occupational offer of regional vocational education, and efforts to support the development of those vocational schools whose graduates are required by the labor market. Through the NSO, the Sector Council of metallurgy, foundry and forging sets occupations/professions demanded by the metallurgical enterprises; through the NSQ, it specifies the required metallurgical qualifications and educational institutions preparing the students of metallurgical disciplines so that they can systematically assume these requirements and integrate them into School Educational Programs or Framework Educational Programs.

3. THE SYSTEM OF EFFECTIVE INTERCONNECTION OF INFORMATION ABOUT FUTURE DEMANDS ON METALLURGICAL PROFESSIONS AND QUALIFICATIONS IN RELATION TO THE EDUCATION OFFER

Development in the area of metallurgy and metallurgical technologies, changing requirements of metallurgical enterprises in connection with personnel resources and the need to improve the quality of vocational education also require changes in the already issued Framework Educational Programs in the field of secondary education with apprenticeship certificates and school-leaving examinations. These changes should be carried out systemically in close cooperation with the Ministry of Education, representatives of metallurgy employers, regions and schools, but also in coordination with the standards of already existing functional systems such as the National System of Occupations and the National System of Qualifications. Framework Educational Programs should be linked to the qualification and evaluation standards of the National System of Qualifications.

The analysis addresses the use of existing systems in the search for a functional element and functional links in the area of the alignment of the educational offer with the needs of metallurgical enterprises. Already now, the education system is no longer able to flexibly respond to requirements; the only cure to bring about quick coverage is a system of professional qualifications that allows the recruitment or retraining to another qualification within the National System of Qualifications.

The National System of Occupations is a current description of the world of labor, created by employers' representatives. The essence of the NSO lies in the fact that NSQ professional qualifications are defined as the ability to perform individual occupations or type positions, i.e. NSO units. Professional qualifications and their qualification standards are directly defined and created according to these units of work.

The NSO/NSQ reflect profession development and employers' demands and provide information that could serve for educational institutions. The established database of metallurgical occupations should serve for labor

market actors as a basic source of information on the requirements of metallurgical enterprises for human resources and their qualifications. It could be an important tool for pupils and their parents in deciding on the future profession and preparation for this profession.

For any chosen profession, it is possible to assign qualifications required by the given profession. Educational institutions could continuously monitor and respond to the needs of qualifications by modifying SEPs or FEPs, i.e. by changing, expanding or removing learning units. An important aspect is the speed of response to the desired changes, which depends on the functionality and stability of the information system. It is about ensuring a direct link between requirements for job performance and educational contents. On this basis, it could be possible to achieve a systematic involvement of individual representative cooperation partners. The cooperation could exist already in the process of the profession origin, in collecting and processing information, in determining qualification requirements, which would lead to the connection of the entire system.

For individual users, whether employers, employees, educational institutions, pupils or parents, the NSO/NSQ are a source where it is possible to find all occupations required in the field of metallurgy and, consequently, the relevant qualifications. The NSO/NSQ reflect profession development and requirements of employers, and provide information that could serve for educational institutions to review Framework Educational Programs/School Educational Programs.

The main purpose of this link is to:

- Use existing databases and tools
- Allow and set co-operation rules
- Provide information for educational institutions/schools on specific labor market requirements
- Ensure a flexible response and adaptation to the educational offer

Educational institutions should have readily available information not only about the current demand for educational services but also about the future trends. Individual implementation steps should have a firm organizational structure, including the definition of responsibility. Then all training providers will have a chance to adapt their offer to the changing needs of the labor market.

Already at this stage, there is room for the wider participation of secondary schools according to the fields of education. Representatives of employers' associations form an agreement on the division of responsibilities for individual areas of initial vocational training. In accordance with Government Decree No. 267/2012 Coll. on a system of education fields in primary, secondary and tertiary vocational education, each group of education fields will be represented only by one employer organization or a chamber relevant to the professional focus of the given group of disciplines.

Likewise, individual schools should be professionally profiled, choose the representatives of their fields and establish a "Platform for Professional Alignment of Vocational Education". Following the platform creation, sector-specific meetings of representatives of the employers and educational institutions should be organized in order to exchange information and define activities for which the various entities and their representatives will be responsible.

Individual secondary schools could form associations of schools corresponding to professional areas, according to the fields of education and their specialization. Based on the involvement in the work of the special platform, elected representatives of these school associations would participate in analyzing the situation on the labor market; they would be present and thus informed about the need and emergence of new professional qualifications, the labor market segments for which these qualifications were created, and could transmit that information without delay within their field of specialization to the educational institutions of the given field of study, which could integrate these requirements into their SEPs or react through the preparation of educational programs extending the basic educational offer and approaching the requirements of practice.

This process would also simplify the authorization process. Individual secondary schools could apply for the “authorized person” status. Each entity wishing to be an authorized person for a particular professional qualification may apply for the authorization at the so-called authorization body, a state administrative organization (some ministry), which is listed for the relevant professional qualification in the NSQ according to the field in the Annex to Act No. 179/2006 Coll.

Interconnection of the NSO/NSQ and FEPs/SEPs - the educational offer and the network of schools should be based and fully dependent on the required qualifications listed in the NSQ. The whole can be functional only when using interconnected and updated information systems.

The system of interconnecting the NSO/NSQ and FEPs/SEPs systems designed based on the analysis is shown in **Table 2**. The table also shows the benefits for individual users. The objective of NSO/NSQ and FEPs/SEPs systems interconnection is to set up the system in such a way that it anticipates labor market needs and reflects appropriate qualifications corresponding to current requirements for jobs in metallurgy companies. It also is to secure human resources that will be ready to enter the actual working process without undue period for induction training and adaptation for metallurgy operations.

Table 2 System of interconnection of the NSO/NSQ and FEPs/SEPs

Interconnection of the NSO/NSQ and FEPs/SEPs								
	NSO		NSQ		FEPs		SEPs	
	Require-ments	Process-ing	Require-ments	Process-ing	Require-ments	Process-ing	Require-ments	Process-ing
	Employers	Sector Councils	Employers	Sector Councils	Sector Councils	MEYS CR	Employers, SCs	Secondary schools, educational institutions
Users: Citizens, parents, pupils	Orientation in the offer of occupations		Finding the qualification requirements		Finding the fields of education		Finding the content of the fields of education and study requirements, including the offer of training facilities	
	Benefit for users	Through the linked system, the users will receive guaranteed information on the job offer, the qualification required for the occupation and opportunities for employment, along with the offer of the fields of education corresponding to the given profession, and including the training institutions preparing for the qualification.						
Users: Employers	Benefit for users	A system that has the potential to provide employers with the human resources of the required qualifications, according to pre-specified content requirements corresponding to the requirements of practice.						
Users: Schools and educational institutions	Benefit for users	A direct link to labor market requirements including updates of qualification content. The offer of professions flexible according to occupational and qualification requirements. School network and capacity matching labour market needs both at the national and regional level.						

From the systemic point of view, the interconnection of the NSO/NSQ and FEPs/SEPs is a challenging process. The most important and at the same time the most problematic item is the creation of a common communication platform enabling the cooperation of interested parties, the unification of the methodology of setting up individual systems, and completion and interconnection of individual systems with educational

programmes. It is necessary to take into account many internal and external connections as well as the international context.

4. CONCLUSION

It is essential that the NSO and the NSQ are completed and linked to the FEPs and the network of schools which offer and teach metallurgical disciplines. Through the Education & Work web portal, only the NSO and the NSQ are connected at the present time.

The NSO through the NSQ, when linked to the FEPs and SEPs, could serve as an effective tool for transferring labor metallurgical market requirements to educational contents. However, a functional information system on educational institutions, which would provide information on schools teaching relevant disciplines and their capacities, is missing.

Currently, the mechanisms for transferring metallurgical employers' requirements to the content and course of education are not set up. Social partners should have a greater impact on education, they should participate in the content and composition of vocational subjects; they would thus enrich the profile of graduates with requirements from the labor market sphere, which would also be reflected in the final examinations.

ACKNOWLEDGEMENTS

The work was supported by the specific university research of Ministry of Education, Youth and Sports of the Czech Republic no. SP 2017/63.

REFERENCES

- [1] VESELÝ, A.. Společnost vědění jako teoretický koncept. *Sociologický časopis*, 2004, Vol. 40, No. 4, pp. 433-446.
- [2] ARMSTRONG, M. Řízení pracovního výkonu v podnikové praxi. Praha: Fragment, s.r.o., 2011.
- [3] CIMBÁLNÍKOVÁ, L. Strategický rozvoj lidských zdrojů: co je důležité v současné společnosti znalostí: rozvoj lidských zdrojů, nebo jejich řízení? Olomouc: Univerzita Palackého v Olomouci, 2013.
- [4] Národní soustava povolání. Available from: <http://www.nsp.cz/>.
- [5] National Register of Qualifications. Available from: <https://www.narodnikvalifikace.cz/en-us/>.
- [6] National Curricula, Available from: www.nuv.cz/t/rvp.
- [7] Sektorové rady. Available from: <http://www.sektoroverady.cz/sektorove-rady>.