

CONCEPTS FOR THE USE OF NON-FORMAL AND INFORMAL LEARNING AND ITS CONNECTION TO TERTIARY EDUCATION IN THE FIELD OF AUTOMOTIVE SECTOR

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1. Introduction

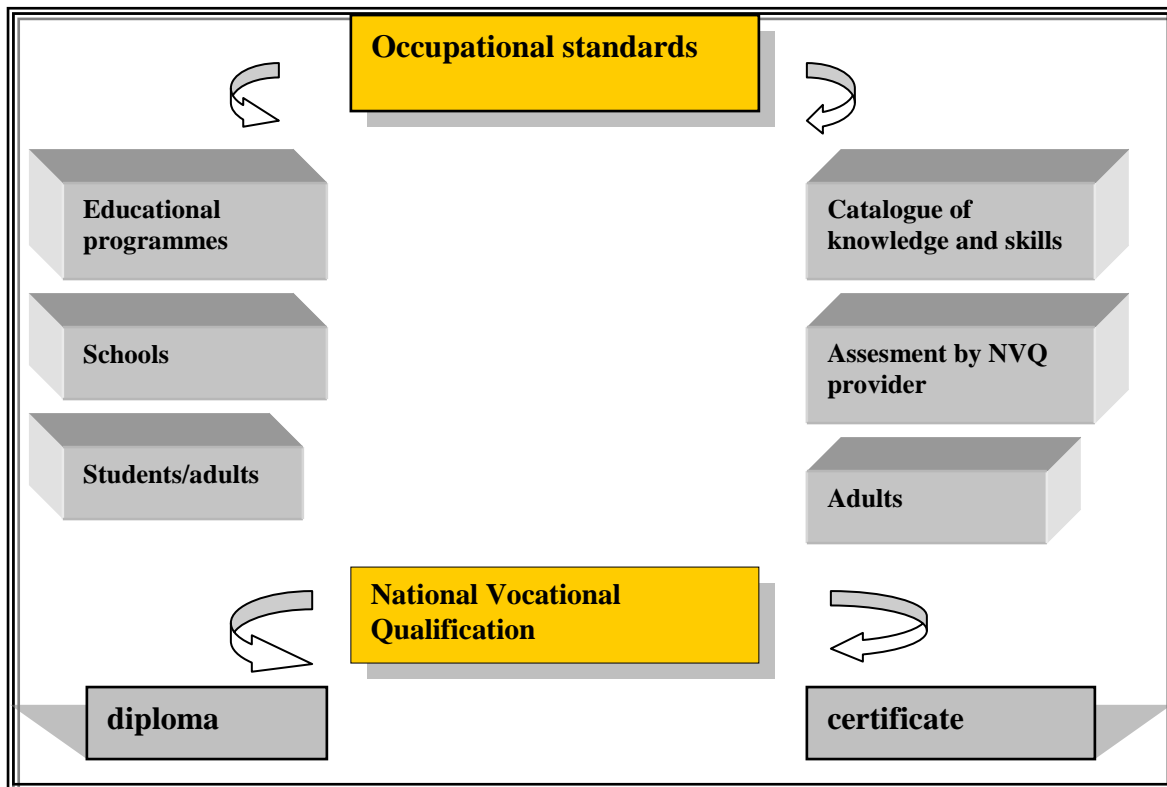
Young people have a possibility of obtaining qualifications primarily through a traditional school education system, which is under responsibility of the Ministry of Education, whereas adults can also acquire qualifications through the certification system (responsibility of the Ministry of Labour). Within the VET programmes, it is possible to conclude the education with a qualification, which has a clear national standard.

When compared to non-formally acquired qualifications, formal school qualifications have been highly valued in Slovenia for a long time, although employers in numerous sectors draw attention to the fact that qualifications acquired in schools are not sufficiently relevant to the workplace and that young people having completed education are not able to transfer their knowledge into practice.

Despite the importance of the formal education, the certification system for obtaining national vocational qualifications currently represents the most prominent method for the assessment of non-formal and informal learning, above all in the field of vocational education and training. The agency, responsible for the system of recognition of non-formal and informal learning in Slovenia, is National Institute for Vocational Education and Training.

The starting point for the development of a certification system is the elaboration of relevant occupational standards. The occupational standards are the basis for the development of educational programmes and the catalogue of knowledge and skills (see scheme below).

Scheme 1: Different pathways to the same objective



The scheme shows how both ways are inter-linked. The occupational standard is the link between education and certification system, where the same qualifications could be acquired in both ways. While the school way leads to the education, the certification way leads directly to a qualification. National Vocational Qualification attests to the applicant's vocational qualification in the occupation at certain level of work complexity, however, one does not obtain a level of education.

In the chapters below, we present characteristics and methods for the recognition of formal and non-formal learning leading to qualifications available in Slovenia.

2. The system for recognition of non-formal and informal learning (certification system)

This system for obtaining qualifications through assessment and recognition of non-formal and informal learning is governed by the National Vocational Qualifications Act and is known as certification system.

National Vocational Qualification can be obtained by adults who:

- acquired different vocational competences throughout their lifetime, but did not have them assessed or validated,
- reached the age of 18 or are exceptionally younger and who no longer enjoy the status of apprentice or secondary school student and have gained relevant work experience
- wish to be promoted in their professional career without obtaining a higher level of professional education or completing a formal education programme.

The procedure for the preparation of occupational standards and catalogues of knowledge and skills begins with an initiative submitted to the National Institute for Vocational Education and Training by chambers, companies or any legal person. Based on the occupational profile, an expert group which consists of experts from the competent sector prepares occupational standard which defines professional competencies, knowledge and skills. On the basis of occupational standard, an expert group prepares a catalogue of knowledge and skills. Once the catalogue is completed, the sector committee proposes it for discussion to the Council of Experts of the Republic of Slovenia. Methods of assessment are the following:

- Direct (live) assessment of knowledge and skills (examination),
- Assessment based on documents acquired through vocational education or training programmes, or otherwise – portfolio and,
- A combination of the verification of documents in the portfolio and live examination.

The assessment and recognition procedures are performed by selected institutions. Examinations and the verification of qualifications are performed in front of a three-member commission.

National qualification system has become the most established way to assess non-formal learning ways. After ten years since the introduction of the national qualification system, 190 catalogues of knowledge and skills have been designed and approximately 60,000 certificates have been issued.

2.1. Recognition of non-formal and informal learning in the automotive sector

The recent data available indicate that the individuals who have obtained certificates come mostly from the construction, transport and security sector and personal services.

In the automotive sector, three occupational standards have been developed and are parts of educational programme for bodywork technician: *varnisher, car body painter and vulcanizer* and an occupational standard for *mechanic for tires*, which is a part of motor car mechanic educational programme. The catalogues were prepared as well, but the assessment and recognition of knowledge, based on the above mentioned catalogues, have never been realized in practice. The reason may lie in the fact that the role of social partners in this sector is not recognizable to a sufficient extent.

3. The master craftsman examination and the manager and foreman examinations

The qualifications can also be obtained by taking the examinations at the Chamber of Craft and The Chamber of Commerce and Industry of Slovenia

The foundation for the master craftsman examination is laid down by the Small Business Act. The master craftsman examination consists of four parts: a practical part, professional and theoretical part, managerial and economic part and pedagogical and adult education part. In order to conclude the secondary education programme, the applicant must have 3- or 1-year work experience (depending on the finished educational programme) and the master craftsman examination. If the applicant fulfils the additional conditions, he can continue education further at vocational and professional colleges. *Table 1* provides numerical data of awarded master craftsman examinations at the Chamber of Craft of Slovenia in the field of automotive sector in the years from 2001 to 2010.

Table 1: The number of awarded master craftsman examinations at the Chamber of Craft of Slovenia, 2001- 2010

Number of awarded master craftsman examinations	Number of people who have successfully passed the examination
Master car body painter	74
Master car mechanic	310
Master car-electrician	44
Master car varnisher	45
...	...
TOTAL	2356

Source: Chamber of Craft of Slovenia, 2010

Concerning the non-formal learning recognition in this field, it should be mentioned that the master examination takes into consideration an applicant's work experience in the appropriate fields.

The Chamber of Commerce and Industry in Slovenia carries out a procedure to acquire manager and foreman examination through competent committees and commissions. The examination consists of four parts: practical part, professional and theoretical part, managerial and economic part as well as teaching and adult education part. Manager and foreman examinations are nationally recognized examinations within the education system leading to a successful completion of a secondary education programme. Manager and foreman examinations at the Chamber of Commerce and Industry also include an element of assessment of work based experience. Only the examinations for foreman in energy, construction foreman, woodworking foreman, foreman in food industry and for shop manager and catering manager have been carried out so far. At present, the manager and foreman examinations are not provided in the field of automotive sector.

4. Non-formal and informal learning in companies and organizations

There are some large companies which offer non-formal programmes in Slovenia. Certificates awarded are valid only in those companies. One exception, for instance, is the second largest pharmaceutical company Krka, which offers the possibility for certification of six publicly recognized national vocational qualifications. Up to now, 620 applicants have successfully completed the national vocational qualification in the pharmaceutical and chemical sector.

Non-formal and informal learning are also taken into consideration when passing professional examinations, extending and maintaining the license awarded by certain professional chambers (e.g. Slovene Chamber of Engineers, Slovene Chamber of Pharmacy and Medical Chamber of Slovenia). However, in addition to non-formal and informal learning, it is necessary to hold a degree from the formal education system.

5. Formal and non-formal knowledge recognition in tertiary education programmes

Various practices of non-formal and informal assessment differ between educational institutions. It is important to stress a number of starting points for non-formal and informal assessment in tertiary education. These starting points stipulate that non-formal and informal learning assessment proceeds similarly as examinations of knowledge in education. Individual educational institutions draw up most appropriate assessment methods taking into consideration the objectives and standards of knowledge to be examined: oral or written exam, discussion / argumentation, interview, argumentation of a seminar paper or a project, evaluation of a product developed by students, evaluation of procedures applied by students in practical tests (work, service...) and evaluation of demonstration, performance, simulation and role play. The degree of recognizing these principles varies among individual educational institutions, not least because identifying, validating and recognizing prior knowledge and skills is a highly demanding organizational activity.

5.1. Recognition of non-formal and informal learning in post-secondary vocational education and training

Although educational programmes of *post-secondary vocational education and training* that last two years are part of the tertiary education, occupational standards form a basis for programme development as well as for the certification system. When designing occupational standards, social partners are involved. On the other hand, there is a weak link between educational and employment segments in university educational programmes because universities are autonomous in designing the so-called academic standards.

In July 2010, National Institute for Vocational Education and Training set up *Guidelines and standards for the procedures defining the recognition of formal and non-formal learning in post-secondary vocational education and training*. The guidelines regulate procedures, the minimum amount of the knowledge recognition as well as methods and ways of acquiring knowledge, which have to be taken into consideration in the process of knowledge recognition. The smallest unit recognized in the programme of post-secondary vocational education is the knowledge that corresponds to 1 credit point or to knowledge which is equal to the amount of at least 25 to 30 hours of student work.

The article 6 of the Guidelines stipulates that students may be recognized the knowledge obtained in the following ways:

- in formal education programmes,
- in non-formal education and
- through work experience.

In addition, the article 8 of the Guidelines stipulates the knowledge recognition acquired in educational programmes, which have not been credit evaluated. In that case, each school is obliged to compare the knowledge obtained in other schools.

The counsellor's role in the recognition procedure is determined by the article 17 of the Guidelines. All schools must ensure appropriate information and counselling on the possibilities and conditions for the knowledge recognition.

The counsellor's task is also to help students with portfolio preparation. Portfolio is a document which demonstrates students' knowledge and skills and provides additional information about their education and work experience. Portfolio documents that prove the acquired knowledge may be:

- public documents and confirmations,
- products, articles, awards and
- reference letters

Since the Guidelines have been issued recently, there are no data currently available for the number of students, who have passed through the procedure of knowledge recognition under the above mentioned Guidelines.

5.2 Higher professional study programme in the automotive sector

In Slovenia, there are two main Faculties for Mechanical Engineering in Ljubljana and Maribor, which do not educate specifically mechanical engineers for automotive industry. Therefore, there was a need to establish the Faculty of Industrial Engineering, which is located in the Dolenjska region, the main industrial area in the field of automotive industry.

The Faculty of Industrial Engineering was established in 2009. It offers adequate education, knowledge and experience to young students, required mainly in the production process of cars, car components and also in the production of some other mechanical engineering factories in Slovenia. The automotive industry in Slovenia employs at the moment about 25 000 workers (including engineers). It is estimated that about 100 000 workers take part in supplying various components materials and services to automotive industry of Slovenia. The main producer is factory REVOZ, owned by Renault with 3000 workers producing about 200.000 Renault cars.

Within the study program Engineering and vehicles, there are **two types of programmes**: The first one is higher professional study program and the second one is the university study programme. The professional title acquired in the higher professional study programme is Diploma Engineer in Mechanical Engineering and the professional title acquired in the university study programme is University Diploma Engineer in Mechanical Engineering.

The aim of the programme Engineering and vehicles is to educate highly professional engineers in the area of production, technologies, development of processes and systems, maintenance and marketing for automotive industry.

The higher professional study programme of engineering and vehicles contains three modules:

1. the development of processes in the automotive industry (the aim is to educate students for independent highly professional technical application oriented work in the production process in automotive and similar industries);
2. technologies and production in the automotive industry (the aim is to educate students for independent highly professional technical and practically oriented work in the field of technology and production. The emphasis is on automotive industry and other metal-processing industries including service – maintenance activity;
3. maintenance of the production devices and systems (the aim is to educate students to an independent highly professional and practically oriented work in the field of maintenance of devices and production systems).

Beside the general competences in the programme Engineering and vehicles, which identify knowledge and skills such as communication, ability for analysis and synthesis when solving the problems in the engineering domain, ability to apply theoretical knowledge in practice, knowledge and usage of information-communication technologies including programs, computer systems and e-business and knowledge about safety at work and environmental protection etc., there are the specific competences of the programme, which are the following:

- ability to understand and use modern theory of production, technology and development,
- ability of mathematical understanding in the field of statistics, probability and techniques used in practice,
- ability of interdisciplinary linkage of knowledge in different fields,
- knowledge of technical features of materials and products,

- knowledge and introduction of the information / communication technologies,
- knowledge and application of the total quality methods of products and services,
- knowledge about industrial law in the field of engineering and business,
- ability to lead the projects,
- ability to communicate with suppliers, buyers, clients, competition...,
- ability to transfer knowledge to partners,
- ability to understand how the enterprises work,
- knowledge about organizational structures and organization of the processes,
- knowledge about marketing as the main business process,
- development and introduction of new technical methods and processes,
- ability to ensure that the products and processes are in accordance with specific requirements,
- knowledge about organizational structures and organization of the processes,
- knowledge about methods for maintenance of products,
- knowledge of methods to control the sold products,
- knowledge of specific development in the automotive industry,
- ability of diagnostics and repair of production devices,
- knowledge and control of energetic machines and devices.

5.3 University professional study program in the automotive sector

The aim of the program Engineering and automotive industry is to educate specialists for the area of development, technology, production, maintenance and marketing. There are three modules in the University study program Engineering and vehicles:

1. development of products in the automotive industry (the aim is to educate the graduate for an independent highly professional development, research and operative work in the area of the automotive industry with emphasis on the process control and control of the systems of quality);
2. technologies in the automotive industry (the aim is to educate the graduate for an independent highly professional work in the field of technology and production in the enterprises with a specialty of automotive industry);
3. virtual engineering and artificial (the aim is to educate the graduate for research and independent work in the field of environment friendly products and devices with the usage of modern virtual technologies)

The areas of the university study program of Engineering and automotive industry are as follows: automotive industry, technology, materials, project planning, human resources, managing the environment, information and communication in the technical and business domain, product development, marketing, production, managing the company/enterprise, development of buyer – supplier relationship and quality and business expertise.

Some of the general competences determined for the University study program are: ability to master contemporary methods, ability to lead projects and team work, understanding and applying information technology, mastership of research methods, procedures and processes, development of critical and self-critical judgment, ability to analyze and synthesize work of the virtual engineering and development of communication ability and skills with emphasis on the international environment.

The specific competences directly apply to this professional field and place particular emphasis on the importance of the acquisition of the following abilities, knowledge and skills in the field of the engineering and automotive industry:

- ability to make mathematical analysis and synthesis of the virtual engineering,
- ability to make mathematical analysis and use mathematical knowledge in the area of engineering,
- ability to understand and applying contemporary theories of development, technologies and management,
- ability to develop virtual engineering of environment friendly products and,
- knowledge of technical characteristics of materials,
- knowledge and application of total quality methods,
- ability to lead projects,
- ability to transfer knowledge,
- ability to develop production and technologies with information science,
- master ship of procedures and methods of reengineering and innovations,
- knowledge and development of intelligent products and devices,
- application of tools for virtual modelling of products and devices,
- knowledge and ability to apply logistics processes,
- knowledge, development and management of energetic systems and devices.

5.4 Recognition of acquired knowledge and skills

In 2010, The Faculty of Industrial Engineering issued the Regulations on the recognition of acquired knowledge and skills. The faculty recognizes the acquired knowledge and skills of the candidates, which are in whole or in part adequate to the general or specific competences that have been identified by the individual study programmes of the faculty.

The acquired knowledge and skills can be proved in the following ways:

- by public documents, confirmations and other documents,
- by products, services, publications and other examples of original work of the candidates,
- through the knowledge acquired in the process of independent and informal learning,
- and by suitable references in the framework of work experience.

The acquired knowledge and skills of candidates are assessed and acknowledged by the Commission for study and student affairs.

The measures for the recognition of knowledge and skills can be the following:

1. previously acquired credit points within other study programmes of the tertiary education.

The candidate, who has previously studied in the higher professional study programmes or in higher vocational study programmes, has to submit an application for the enrolment to the Commission for study and student affairs. The Commission assesses the conditions for the enrolment, identifies the recognized learning units and prepares an individual plan for the candidate to conclude the study.

2. knowledge acquired within other formal and/or non-formal education programmes

The knowledge can be recognized on the basis of documents (e.g. confirmations by education and training providers, certificates and other documents), which describe the extent and the contents of the programme and prove that the programme has been successfully accomplished by the candidate.

3. knowledge and skills acquired through work, self-education and/or in-formal learning

The Commission for study and student affairs has to decide either to check the previously acquired knowledge and skills of the candidate or to assess products and services provided by the candidate, which prove that he has a thorough knowledge and skills in a certain professional field.

6. Conclusions

There are a lot of activities linked to the recognition of non-formal and informal learning in Slovenia, but until now no national strategy has been established in this field. The only institution dealing with the system of non-formal and informal learning in the field of vocational education is National Institute for Vocational Education and Training of the Republic of Slovenia. Its professional activities are provided on the legal basis. The evidence shows that although the legislation enables the recognition of non-formal and informal learning activities through various ways, it does not promote them nor it establishes the system for their further development and implementation.

In conclusion, we have to point out that qualifications obtained in the process of recognition of non-formal and informal learning are not appreciated enough in the labour market. However, in the last years, the National Institute for Vocational Education and Training has been paying a lot of attention to the implementation of awareness raising and promotion activities targeted at competent bodies and different actors in the labour market. We believe that these activities will bring positive changes to the situation existing in the labour market and, more broadly, will have a lasting impact in the context of vocational education and training in Slovenia.