

Educational standards in the context of the European Qualifications Framework on the system of teaching production process organisers studies

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Abstract

The article presents the idea and benefits of the European Qualifications Framework EQF, which links the existing European systems for credit transfer and accumulation in higher vocational education and training. In order to improve citizens' mobility, it is necessary to identify learning results.

The idea of the MES Methodology (Module of Employable Skills) was applied in the paper.

Modules of abilities needed in various occupations should be developed based on practical experience gained by the organizations. These modules should help improve the organization of work.

In the context of the MES, professional tasks of production process organizers are described and the skills are defined in terms of responsibility and autonomy. The article elaborates on the analysis of occupational activities and presents the correspondent skills. Basing on the presented analysis, training profiles for occupations can be defined.

Keywords: EQF, MES, production process organizers

1. THE IDEA AND BENEFITS OF THE EUROPEAN QUALIFICATIONS FRAMEWORK EQF

The EQF is a common European framework which links different qualification systems to make qualifications more readable and understandable across different countries and systems in Europe. It stimulates countries to relate their national qualification systems to the EQF, so that all new qualifications issued from 2012 carry a reference to an appropriate EQF level. The main aims of the QFD are focused on promoting citizens' mobility across countries and facilitating their lifelong learning.

The EQF created eight reference levels described in terms of learning outcomes (see Table 1). Focusing on learning outcomes helps relate different countries' national qualifications systems and frameworks together and establish cooperation between countries and institutions. The EQF levels cover the full scale of qualifications, starting from the first, basic level and finishing on the eighth advanced level, so the levels encompass all levels of qualifications acquired in general, in vocational as well as academic education and training. The idea of the EQF is to describe learning outcomes as knowledge, skills and competence. The EQF focuses on the results of learning rather than length of study, so important is what a learner knows, understands and is able to do on completion of a learning process. Learning outcomes include theoretical knowledge, practical and technical skills, as well as social competences, where the ability to work with others will be taken into consideration.

Table 1. Descriptors defining levels in the European Qualifications Framework (EQF) [4]

	Knowledge	Skills	Competence
	In the context of the EQF, knowledge is described as theoretical and/or factual	In the context of the EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments)	In the context of the EQF, competence is described in terms of responsibility and autonomy
Level 1 The learning outcomes relevant to Level 1 are	basic general knowledge	basic skills required to carry out simple tasks	work or study under direct supervision in a structured context
Level 2 The learning outcomes relevant to Level 2 are	basic factual knowledge of a field of work or study	basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	work or study under supervision with some autonomy
Level 3 The learning outcomes relevant to Level 3 are	knowledge of facts, principles, processes and general concepts, in a field of work or study	a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	take responsibility for completion of tasks in work or study adapt own behaviour to circumstances in solving problems
Level 4 The learning outcomes relevant to Level 4 are	factual and theoretical knowledge in broad contexts within a field of work or study	a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities
Level 5 The learning outcomes relevant to Level 5 are	comprehensive, specialized, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	exercise management and supervision in contexts of work or study activities where there is unpredictable change review and develop performance of self and others
Level 6 The learning outcomes relevant to Level 6 are	advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialized field of work or study	manage complex technical or professional activities or projects, taking responsibility for decision making in unpredictable work or study contexts take responsibility for managing professional development of individuals and groups
Level 7 The learning outcomes relevant to Level 7 are	highly specialized knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research, critical awareness of knowledge issues in a field and at the interface between different fields	specialized problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches, take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8 The learning outcomes relevant to Level 8 are	knowledge at the most advanced frontier of a field of work or study and at the interface between fields	the most advanced and specialized skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

Knowledge is the body of facts, principles, theories and practices that are related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual. Skills denote the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments). The term 'competence' means the proven ability to use knowledge, skills and personal, social and/or methodological abilities in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy. The European countries have decided to develop National Qualifications Frameworks responding to the EQF principles. These developments are needed to compare qualifications at all levels. This closer relationship between countries' qualifications systems will have many beneficiaries:

- The EQF support learners and workers mobility and used existing mobility tools such as Europass, Erasmus, and ECTS.
- The EQF promote different learning methods and lifelong learning. EQF reduce barriers between education on all levels, which involve vocational, higher education and training, respect knowledge acquired during work as well as formal study. The aim is to promote progression so that learners do not have to repeat learning.
- The EQF will support individual users as well as providers of education and training by increasing transparency of qualifications awarded outside the national systems, for example by sectors and multinational companies. The adoption of a common reference framework based on learning outcomes will facilitate the comparison and (potential) linking together of traditional qualifications awarded by national authorities and qualifications awarded by other stakeholders. The EQF will thus help sectors and individuals take advantage of this growing internationalization of qualifications. [1]

2. THE IDEA OF THE MES METHODOLOGY

The main goal of the professional staff training according to the MES methodology is obtaining by the students (workers) skills required for proper execution of occupational tasks. MES is the 'minimum skills set' which is sufficient for gainful employment.

The trainings programs based on the MES methodology can be characterised as follows:

1. The training programme is intensively focused on the occupation. The base of the program is analysis of professional tasks.
2. Training aims are clear: acquisition of knowledge and skills for performing a professional task. The aims are formulated as operational.
3. The selection of training contents results from established aims so is referring directly to requirements of work places.
4. The arrangement of the training contents are clearly divided into independent modular units that enable to prepare students to perform a professional task.
5. Modular programmes are opened for changes: it is possible to exchange, remove or add modular units without disturbing the programme's coherence.
6. The programmes encourage the introduction of active teaching methods.
7. The teacher appears in the role of an organiser of the teaching process: a tutor, assistant or consultant.
8. The training course programmes enable for adaptation of the scope of contents and the time of learning to individual needs and abilities of participants (the programme is focused on studying).

9. In case of a training course, the modular arrangement of the programme allows for the so-called flexible input/output, i.e. learning can be continued over time and held in stages.
10. Education based on modular programmes is fully integrated, which means there is no division into theoretical and practical classes.

To prepare education standards of the production process organiser, an education model based on the EQF and the MES methodology is proposed (Fig. 1).

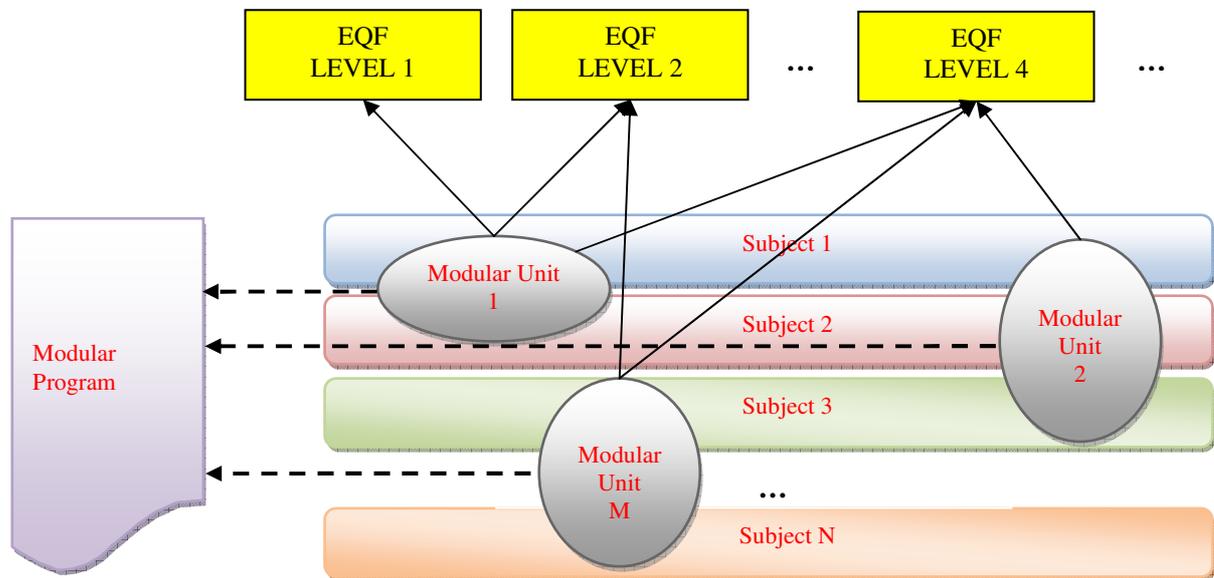


Fig. 1 Education Model based on EQF and MES

3. EDUCATION STANDARDS OF PRODUCTION PROCESS ORGANISERS

3.1. Learning outcome definition

The question is how to define teaching results in the context of the EQF for a particular field of study? An analysis was made on the basis of the teaching system of production process organisers,

To define learning outcome in the teaching system of production process organisers, it is necessary to answer the following questions:

1. What are the work-places of production process organisers in different organizational structures types?
2. What do production process organisers do in the enterprise – a list of typical work - tasks.
3. What skills are needed to perform the defined tasks and to solve typical problems related to the specified tasks.
4. What competences are needed to perform production process organisers' tasks.
5. How to assure the needed skills and competences? What learning outcomes are needed? What modular units of learning materials are needed?
6. What EQF level should particular learning outcomes belong to?

Regarding the questions presented above we can notice that the main person in any organizational structure type involved in a production process organisation is the operation

manager. The operation manager deals with analysing and settling issues related to supplies and processes. Similarly, identification, forecasting and distribution are also very closely linked and called marketing. In some situations distribution may be linked to production / operating rather than marketing. The fundamental tasks of any organization may be said to be “marketing” and “production/operations”. The relations between those two major functions are crucial to the success – that is the survival of the whole organization. At the beginning of any organisation the marketing / operation functions are usually carried out by one and the same person. [2]

The tasks of production process organisers are hard to define since they incorporate so many diverse functions that are interdependent, but without such division it is impossible to discuss the work. Other problems are related to different type of organisation structures in which production process organisers work.

Among organizational structure types, the matrix structure becomes more and more popular. A matrix organization uses teams of employees to accomplish work and has decentralized forms. Creating the teams, the company empowers employees to make their own decisions and train them to develop both hard and soft skills. The global companies use the complex form of the matrix which aids coordination among products, functions and geographic areas.

In general, over the last decade, it has become increasingly clear that through the forces of globalisation, competition and more demanding customers, the structure of many companies has become flatter, less hierarchical, more fluid and even virtual. [3]

So, to analyse skills needed by production process organisers, it is necessary to select and define standard tasks which are accomplished in the production/operation management field. An example of the production process organisers’ skill and competence is: Plan the sequence of operations to ensure that project deadlines are met.

3.2. The EQF levels in production process organisers

On the base of the descriptors presented in Table 1, the general knowledge, skills and competences of the production process organisers can be determined. Because the occupation requires complex knowledge in areas of management, economy, production, logistics, etc., the EQF description for a production process organiser should start from the third level. Table 2 presents the different positions and responsibilities of production process organisers in a manufacturing enterprise.

Table 2. Positions and responsibilities of production process organizers in manufacturing enterprise

The EQF Level	Position / Function	Responsibility
3	machine tool operator - member of KAIZEN team, purchaser,	responsible for the workplace,
4	team leader, foreman, manager of purchase, manager of transport department, store-keeper, time study specialist	responsible for a group of workers, responsible for a small production area
5	ISO agent, master of production, logistics manager, quality control manager, manager of maintenance, consultant, advisor, coach, trainer, auditor, project manager, process manager, production controller	responsible for managing a department
6	main scheduler, production planner, production director, logistics director, manager of KAIZEN department, operation manager	responsible for an enterprise functional area, responsible for the whole enterprise
7	expert of production processes organization, main technologist, , work safety specialist, innovator, research and development manager/director,	Responsible for new products and new technologies.

4.CONCLUSIONS

The idea to create a common framework focused on evaluating learning outcomes leads to better education. It is important to learn effectively, which involves identifying knowledge which is really needed and finding effective ways to train students and workers. Enterprise efficiency mainly depends on workers' skills. To help enterprises become more competitive, it is necessary to educate students in proper way and train them as workers, according to the idea of lifelong learning. Creating common educational core and assuring education diversity helps to create teams according to matrix organization structure, which are able to cooperate and solve enterprise problems successfully.

According to the EQF, it is possible to compare the needed and the offered skills. Thanks to the MES methodology, it is easier to tailor a proper training programme focused on particular skills.

Final remarks

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