
SKILLS AND COMPETENCES PYRAMID V. STUDY PROGRAMS

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Abstract

The present paper follows the one presented in December, at the 2019 Vienna Education Conference, entitled: Competences between Labor Market and Higher Education through ESCO. That paper presented a correlation between the labor market and education using ISCO and ISCED taxonomic systems though ESCO and we came to a way of creating study programs with a common European base, leading to recognition of qualifications.

Now we move forward and we look for common skills for study programs. We are introducing a pyramid of skills starting from ISCO, a hierarchy and a new classification depending on how they are acquired: i) naturally, through DNA and social environment and ii) through education and learning. The main idea is that without a seed there are no flowers. Hence, another form of organization of skills and competences, a new scheme presented for the first time here. Finally, we come to a new systematization of skills known in literature and the creation of common disciplines for several study programs, without discussing professional disciplines. This step can lead to the partial recognition of a qualification, about 30-40%, especially since, in our opinion, these common disciplines should be compulsory at bachelor level.

Keywords

Skills, ISCO, ESCO, ISCED, qualification, recognition, study programs

JEL Classification

J24, I 23, C38

Introduction

This paper is a continuation of the article „Competences between Labor Market and Higher Education through ESCO”, presented at Vienna Education Conference, in December 2019, where let’s remember we discussed about ISCO and ISCED being two similar taxonomic

systems, with five levels or occupational groups/ fields of education. Both standards are recognized and used in Europe. We said and agreed that to one or more tasks characterizing an ISCO level has to correspond a competence acquired in the education system through learning outcomes. Thus, we can create a classification/ hierarchy of skills and competences into ESCO (European Commission – ESCO), similar to that of the ISCO groups (ILO 2008). Since ESCO comprises these competences, they must be identified and systematized by level the same way as ISCO (fig. no. 1).

ISCO – Taxonomic system	Classification/ hierarchy ISCO	Tasks ISCO	Hierachic competences	Hierarchy Skills ESCO
	Major group	General	EQF level skills	EQF level related
	Sub-major group	Basic	Basic	Basic
	Minor group	Fundamental	Fundamental	Fundamental
	Unit group	Field related	Field related	Field related
	Occupations	Occupational	Professional – specialized and specific	Specific

Fig. no. 1 ISCO-ESCO a common hierarchy

Source: Costoiu M, Dobrescu T.G., Iocoiu C.V., Ion V., Postavaru N., Silvestru C.I., 2020, *Modernizarea sistemului de învățământ superior tehnic în contextul globalizării*, Bucharest: Matrixrom

The hypothesis is this: a task has corresponding competences and skills, either professional, or personal/transversal/ key for all five levels.

The skills and competences pyramid resulted, in figure no. 2 – competence pyramid made up of five levels, following the ISCO taxonomy, which is at the basis of the reasoning of this paper. Thus, by combining the skills and competences: key, transversal, including (personal) with the professional ones (workplace, general, and professional) we have created a competence pyramid generalized for all ISCED fields (see figure no. 2).

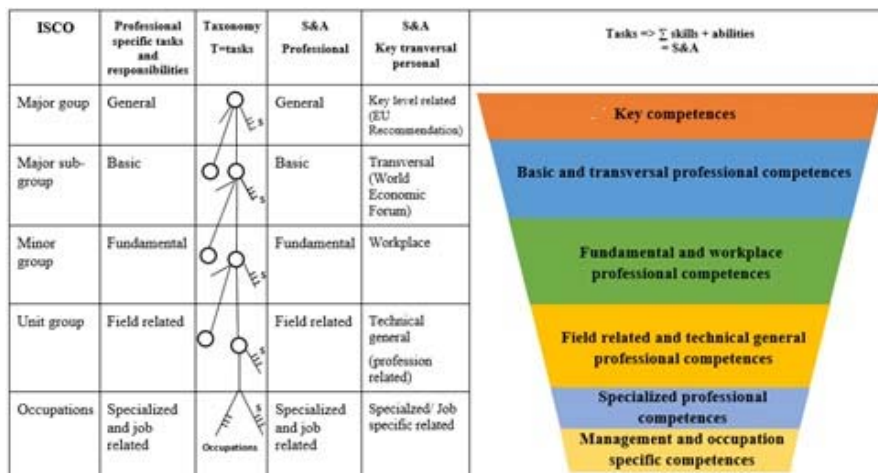


Fig. no. 2 Competence pyramid

Source: Costoiu M, Dobrescu T.G., Iocoiu C.V., Ion V., Postavaru N., Silvestru C.I., 2020, *Modernizarea sistemului de învățământ superior tehnic în contextul globalizării*, Bucharest: Matrixrom

The relations in Figure no. 2 were based on are the following:

- Skills/ competences = Learning outcomes
- Study programs = Learning outcomes -> Disciplines > Credits -> Curriculum -> Teaching -> Evaluation -> Validation -> Certification -> Qualification
- Qualification = completing a study program and acquiring the learning outcomes in accordance to standards

Going further, these competences generate learning outcomes organized in a similar five-level structure, based on which we have disciplines that shall characterize each ISCED field, thus resulting into a final curriculum or study program (see figure no. 3).

Competence	ISCED fields	Learning outcomes	Disciplines	Curriculum
general		general	general	All disciplines + Elements + Credits = Curriculum = Study programs
basic	broad	basic	basic	
fundamental	narrow	fundamental	fundamental	
field related	detailed	field related	field related	
specific	specializations	specific	specific	

Fig. no. 3 Labor market – education relation

Source: Costoiu M, Dobrescu T.G., Icoiciu C.V., Ion V., Postavaru N., Silvestru C.I., 2020, *Modernizarea sistemului de învățământ superior tehnic în contextul globalizării*, Bucharest: Matrixrom

At major group level ISCED has no correspondent, the logic of the hypothesis being: occupation -> tasks -> competences -> ISCED fields -> learning outcomes, which led to Figure no. 3.

Thus we created a pyramid of the way of designing study programs (figure no. 4), which we are proposing in this paper.

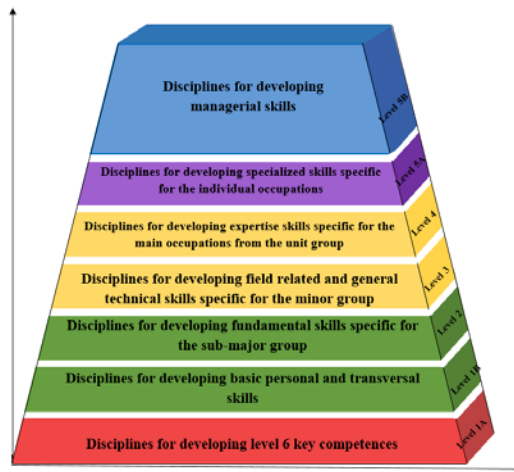


Fig. no. 4 Model for discipline pyramid for designing higher education study programs

Source: Costoiu M, Dobrescu T.G., Icoiciu C.V., Ion V., Postavaru N., Silvestru C.I., 2020, *Modernizarea sistemului de învățământ superior tehnic în contextul globalizării*, Bucharest: Matrixrom

Skills and competences– results of analysis and discussions

The synthesis of this way of thinking and organization is transposed in figure no. 5 in a common body of disciplines, general and professional (CB), which can be created at European

level for any ISCED field, based on ESCO competencies and an individual body (IB) of professional disciplines at national or university level.

The curriculum would consist of the sum of the two bodies: $CB + IB = C$.

The recognition would be greatly enriched and facilitated between qualifications obtained in different countries for the same ISCED field (UNESCO 2013) and the same specialization, because in this relationship CB would be the common part. Mobility would have only to gain at European level 100% eliminating many of the invisible, often bureaucratic barriers legally existing today.

In this paper we want to support the ideas presented above, and so we come to clarify what would be the general (key, transversal, personal) and basic competences that are part of the common body (CB), respectively those non-professional common disciplines that should exist at university level, so that 30-40% of the curriculum is similar from one university to another and from one field to another.

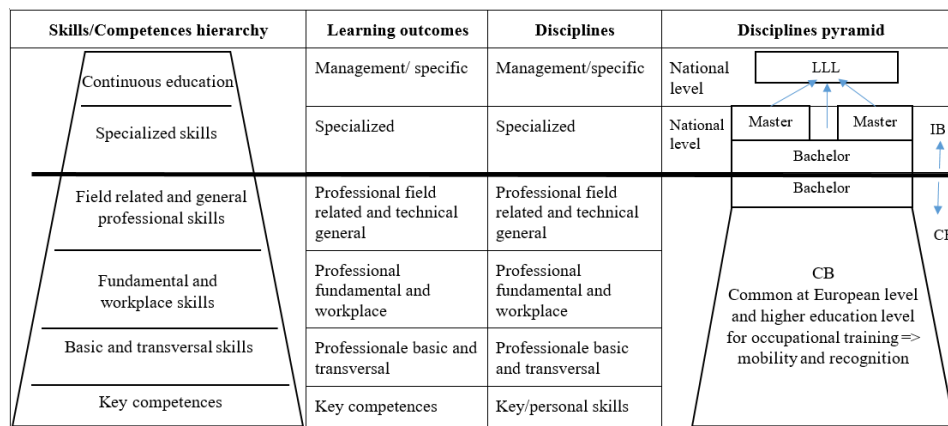


Fig. no. 5 Model for common body (CB) for disciplines

Source: Costoiu M, Dobrescu T.G., Iocciu C.V., Ion V., Postavaru N., Silvestru C.I., 2020. *Modernizarea sistemului de învățământ superior tehnic în contextul globalizării, Bucharest: Matrixrom*

Specialized literature was taken into account, which mentions that in future study programs transversal and key competences need to be better represented. This is a demand of the labor market in order to rapidly adapt the individual to the workplace and increase the efficiency of labor.

To this common body some of the professional competences will be added and will reach about 70% of the curriculum for bachelor level, which is common at European level and will facilitate even more the communication within the field of specialists, recognition between them and research in the field, respectively, which will focus on common themes, without affecting the university autonomy. As the labor market has understood the beneficial role of standardization, so must education understand the progress that such action entails.

For this purpose, we have looked into and considered the competences:

- Key, as per the Council Recommendation of 22 May 2018 on key competences for lifelong learning (European Council 2018)
- CEDEFOP
- World Economic Forum. (2016)
- OECD,
- American Association of Engineering Societies, AAES – Engineering Competency Model, 2015

Analyzing, selecting and assigning these competences by levels, according to figure no. 2, resulted into the detailed competences pyramid, which can be successfully applied in more ISCED fields (figure no.6).

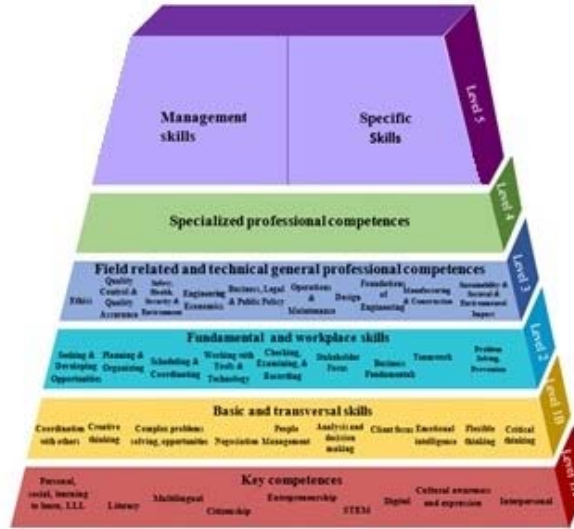


Fig. no. 6 Detailed competences pyramid (technical fields)

Source: Costoiu M, Dobrescu T.G., Iociciu C.V., Ion V., Postavaru N., Silvestru C.I., 2020, *Modernizarea sistemului de învățământ superior tehnic în contextul globalizării*, Bucharest: Matrixrom

This is where the novelty of this paper begins, in the sense of distributing these competences to the different classifications created and then to some disciplines that should exist in university study programs.

First we made a new classification of competences (figure no. 7) by specialization, as in organizing them according to how they exist in the individual: naturally, up to the level of DNA, or acquired, in formal, informal or nonformal contexts.

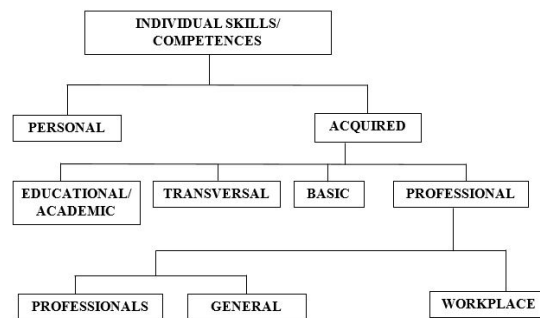


Fig. no. 7 Structure of skills and competences

Source: authors' own development as result of analyses

We started from the idea that if you have no musical ear, you cannot become Mozart, if you have no talent, you cannot become Picasso, or ..., if you do not have the seed of ability, you cannot develop it, and the work, the will, the desire can only replace the seed until a moment/level from which, further on, the talent given by the seed planted by nature speaks. There are countless examples around us.

The vast majority of us learn - we acquire, the school educates us this way. Maybe learning from what we do could be a new type of school, but we do not replace the great historical “constructions”.

What we gain / learn can only be realized and affirmed through experience. Experience shows us whether what we read has been turned into competences or not. Even the evaluation of learning outcomes does not compare with real life experience. Experience becomes a part of our training of special importance, an informal training system that over time, throughout the professional life becomes stronger than formal training, people who succeed in life learn from the experience of others and the personal one, but many do not learn from either personal experience or the experience of others and the results are seen.

It is precisely for this reason that the importance and necessity of transversal, key and personal competences has increased, they help the individual to acquire experience, sometimes more than formal training (except for research, design, special sectors).

The new classification of skills/ competences, by their nature of acquiring and origin, comprises two classes: **A) Personal** and **B) Acquired**.

Thus, class A comprises competences that have their seed in the individual, are acquired though personal experience, by informal and non-formal means, they depend on culture, race, traditions etc. and required when hiring, differentiating people in time. Among these, there are the following examples: learning to learn, lifelong learning (LLL) – capacity to acquire new and advanced skills, languages, STEM, digital competences, sensibility and cultural expression, people management, IQ, flexibility of thinking, Seeking and creating opportunities, autonomy, responsibility, reflection of thinking, prevention and decision-making. We can write a book about them, but it is not the subject of the present paper.

They have a transversal, interdisciplinary character and are developed and perfected through lifelong learning programs. They are or are not inside us, we have to search for them and discover them (the sooner the better), especially through experience, then we specialize in what we have discovered in us, if the case. For example, you do not know if you have the skills to manage people unless you try it, otherwise everyone thinks they have it. If you prove that you have the seed, you specialize in management, that is, theoretically (some owner of SMEs) along with the managerial sense and you can become a successful manager.

Many of these skills we consider key or transversal, yes it is true they can also be acquired, but at only those who have the seed can reach performance for either: the others, to learn, organization, foreign languages, responsibility, etc., but without proficiency performance.

Class B refers to external or acquired though education and learning in formal contexts especially, which means you learn what to do. It is what learning outcomes refer to. These are divided in: **B1**. Educational/Academic, **B2**. Transversal, **B3** Basic and **B4**. Professional.

B1. Education/Academic, are those that help us communicate and think in society, they are described in the Recommendation (European Council 2018):

B1 and **B2** must be taught in the university because depending on the level of qualification, there should be disciplines that develop them within the study programs. They are appreciated by employers when filling in a position for a job.

B3. Basic: these should be added to the ones described above as a package of necessary general scientific skills to understand the surrounding world, the environment and not to be credible in the face of fake news, due to ignorance. These skills are still found in Greek school and they comprise a basic package of knowledge and skills consisting of lectures in: Physics / Chemistry applied in the environment, mathematics applied in daily life, natural sciences, biology, astronomy, philosophy or science. social. They are a level 6 skills package that characterizes university education. Partially they must be followed because they are the base of social thinking and one needs to understand the world around.

B4. Professional, those that will help us at the workplace, in the craft, in the middle of specialists to understand each other and to understand them. These are divided into:

B4.1. Common at the workplace, respectively the ISCED field/ ISCO group the occupation belongs to. They are acquired with the fundamental professional competences.

B4.2. General technical skills, each field, be it engineering, medicine, social sciences or humanities, has a technical part of the profession common to all, which they practice. It is very useful for entrepreneurs and supports the choice of the company domain.

This should be identified and studied for accommodation in the workplace and profession, These skills do not give qualifications, they make us to be better assimilated into the work team, integrated into the society and at the workplace, to be able to collaborate with business partners. These have less to do with ESCO, especially with daily life, it is the past experience transferred to future members of civil or professional society. They are acquired together with the professional skills of the field that they characterize.

All these competences B4.1.-B4.2 can be organized in a common package of disciplines that will form a common base for future graduates from different fields or within the same broad ISCED field or ISCO major/ minor/ unit group.

It is the second step in recognition of qualifications and developing mobility, if these disciplines are taught at European level.

The competences from A and B1-B3 and the related disciplines are characteristic of the qualification level. In our case, we focus mainly on level 6 and 7 EQF/NQF.

B4.3 Professional, the ones that give the qualification, we can classify them according to figure no. 2 in: a. Fundamental, specific for the common ESCO skills and competences of the ISCO minor group; b. Field related, specific for the common ESCO skills and competences of the ISCO unit group; c. Expertise, specific for the common ESCO skills and competences of each ISCO/ ESCO occupation, extended/ unique/ dominant – here there should be a limitation for a bachelor program; d. Specialized, the skills and competences that give the narrow specializations of a extended/ unique/ dominant occupation, are the result of post-graduate or master programs; e. management, up to middle management level.

Competences under B.4.3. a) and b) are the third level of automatic recognition of qualifications. Thus, a bachelor study program should contain disciplines for five levels:

- 1-general and basic: refining the ones under A plus B1, B2 and B3 - around 30%
- 2- professional technical general and common at the workplace: B.4.1., B.4.2. - 10%
- 3-fundamental – B.4.3.a. - 15-20%
- 4-field related – B.4.3.b - 15-20%
- 5-expertise –B.4.3.c. plus practical training related to the field and specialization-20-30%.

The fundamental and field related competences, which lead to similar disciplines as denomination, should be another professional package - PP, common in the study programs which, added to those under group A and B1-B3, B.4.1., B.4.2., B.4.3.a) and B.4.b) would form a common platform in vocational training at European level, that common body - CB up to 70% of the common curriculum / ISCED field.

The differences should appear at the level of expertise and specialized competences and disciplines, that individual body - IB. Their recognition, if packages of common competences recognized at European level, could be made automatically up to level 4, which would be a big step towards the mobility of skilled labor in Europe.

Conclusions

Focusing the student on education, especially on vocational and higher education, requires a new approach from the perspective of what the student wants in the new period of globalization and the opening up of communication and transport sectors. What do young people want? A job, the mobility needed for this purpose and therefore a simple and fast recognition of qualifications. With the new Europass, the formal part will be realized quickly, but it remains the professional, curricular part, which is more complicated today. What employers want: a person trained for society and working with people. What society wants:

responsible people, citizens who participate in the problems of society and with care for the environment and their fellow citizens.

In this article we want help solving these requests, as is the case in some regulated fields, we propose a new method of designing the curriculum based on two packages:

- a common package or body - CB of general and basic disciplines for all the fields to which is added a package of fundamental professional and field related disciplines, specific to each ISCED broad field established at European level by specialists
- a package of specialized expertise and specialized disciplines established at national or individual university level - IB.

The benefit of the students would be that the first package must represent at least 70% of the preparation at bachelor level and could be automatically recognized if the learning outcomes were similar. This means one diploma for all.

If we fail to recognize *qualifications* in the next few years as quickly as possible and automatically until 2025, at least as principle, it is possible that the principles on which the European Union was built may suffer and their credibility will decline. This means that common rules, standards and courageous approaches are needed. Progress through standardization is a wish, but not easily accepted by many.

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