Competences Development at ETSID (Valencia, Spain)

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Competences are a key element of higher education policies in general and of the Bologna Process in particular. Much work has been accomplished in this area over the past few years, and a proper understanding of qualifications is essential to making the European Higher Education Area a reality.

DEFINITION OF COMPETENCES

Several terms: capacity, attribute, ability, skill, competence are used with an often interchangeable, and to some degree overlapping meaning. They all relate to the person and to what he/she is able of achieving. But they also have more specific meanings. Ability, from the Latin "habilis" meaning "able to hold, carry or handle easily", led to the word "habilitas" which can be translated as "aptitude, ability, fitness or skill."

The term skill is probably the most frequently used, with the meaning of being able, capable or skilful. It is often used in the plural, "skills", and sometimes with a more restricted meaning than that of competences. However, the two terms "transferable skills" and "generic competences" may be considered as having the same meaning. They relate to those competences which are common and can be identified in different degree programs at a certain level.

In this context, a competence or a set of competences means that a person puts into play a certain capacity or skill and performs a task, where he/she is able to demonstrate that he/she can do so in a way that allows evaluation of the level of achievement. Competences can be assessed and developed. This means that, normally, persons do not either possess or lack a competence in absolute terms, but command it to a varying degree, so that competences can be placed on a continuum and can be developed through exercise and education.

In the design and redesign of educational programmes, it is crucial that the University takes into consideration the changing needs of society as well as present and future employment possibilities. While these generic competencies need to be in balance with the subject related ones, for the development of study programmes and degrees, they are of vital importance.

BACKGROUND

The 'Dublin descriptors' were adopted in 2003 by the ministers as part of their Bergen communiqué on the continuing Bologna Process for European higher education. The descriptors indicate shared expectations about students achievements and abilities at the end of each of the cycles of the Bologna Process. The descriptors are an integral part of the Qualifications Framework for the European Higher Education Area (QF-EHEA) that is designed to support articulations of qualifications within the EHEA.

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The process of elaborating these shared, and initially 'informal', descriptors started when the two cycle system was introduced with the aim of increasing mobility and transparency within the European Higher Education Area. But the initial question was where to 'draw the line' for the end of the first cycle (regarded as being represented by bachelors awards giving access to a Master programme) and what would be understood as being the expectations of the second cycle (and this worth a master qualification). The initial challenge was to find a formulation that would reflect comparable expectations in various countries, necessary for greater transparency for mobility.

CYCLES AND LEVELS

International recognition of qualifications builds on transparency. A framework, which provides a common understanding of the outcomes represented by a qualification rather than a mere assertion of comparability, will greatly enhance the usefulness of qualifications across the EHEA. There are a variety of purposes for the recognition of qualifications - including employment and access to continuing education- involving different stakeholders. The development of a common overarching framework through the collaborative efforts of stakeholders across Europe will enhance the other actions being made to improve recognition for all of those purposes. The framework for qualification of the EHEA should be regarded as an overarching framework. This is to say, it provides a meta-framework within which to develop national frameworks and, in broad terms, it stipulates the outline and boundary of national frameworks, and is a device, which helps to provide clearer understanding of how the various qualifications made within the European higher education area, are related to each other and articulate with each other. [1]

A fundamental question for any framework of qualifications concerns its structure and the number of divisions it contains.

For the EHEA framework this question is already largely answered. The Bologna Declaration asserts that there will be two main cycles and the Berlin Communiqué elaborates upon this to specify a third (doctoral) cycle linked to research

BOLOGNA FRAMEWORK AND THE EUROPEAN QUALIFICATIONS FRAMEWORK

At present there are two overarching qualifications processes going on in Europe: one within the Bologna Process for higher education for the 45 Bologna member-countries and another one proposed by the European Commission for lifelong learning for the 27 EU-member-states. [2]

The European Commission proposal for a recommendation on the establishment of a European Qualifications Framework for Lifelong Learning issued in September 2006 is based on a European Commission consultation paper that was discussed intensively in the EU-member states and a conference in Budapest in February 2006. It aims to cover the entire education and training systems of the EU-member-states.

It is the over all opinion of the Working Group that the two frameworks will co-exist. The group takes note that they have different scope and purposes and use a different methodology.

Purposes are different. The QF-EHEA frameworks aim at embracing higher education qualifications at the national level and facilitate transparency, recognition and mobility among higher education degree holders. The EQF/LLL are not higher educations descriptors but generic descriptors that can be used to describe all types of learning to describe Lifelong Learning.

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In order to avoid confusion by the existence of two overarching frameworks the working group recommends that the promotion of European higher education outside Europe should be built on the EHEA-framework, which includes the Dublin descriptors.

DESIGN ENGINEERING SCHOOL OF VALENCIA. POLYTECHNICAL UNIVERSITY.

In the redesign of educational programmes of the higher education, what is to be transferred to the university and the society in general is the importance of learning a variety of competences and not only to concentrate knowledge. [3]

Dublin descriptors have been developed as a set and are intended to be read with reference to each other. They are primarily intended for use in the alignment of qualifications and hence national frameworks. These descriptors signify completion of the higher education first cycle, which is awarded to students, who:

- Have demonstrated knowledge and understanding in a field of study that builds upon and their general secondary education, and is typically at a level supported by advanced textbooks; includes some aspects that will be informed by knowledge of the forefront of their field of study.

- Can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study.

- Have the ability to gather and interpret relevant data (usually within their field of study) to inform judgements that include reflection on relevant social, scientific or ethical issues.

- Can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

- Have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.

A proposal for the Framework Qualifications has been structured into three types of stratus that includes for the First Cycle, five categories. First stratus will comprise generic descriptors for learning outcomes and competences that signify completion of the first cycle. Second stratus also elaborates descriptors but they are more specific , regarding the area of knowledge, for instance: Engineering and in the end, third stratus will be more specific than the second, for example: Mechanical Engineering.

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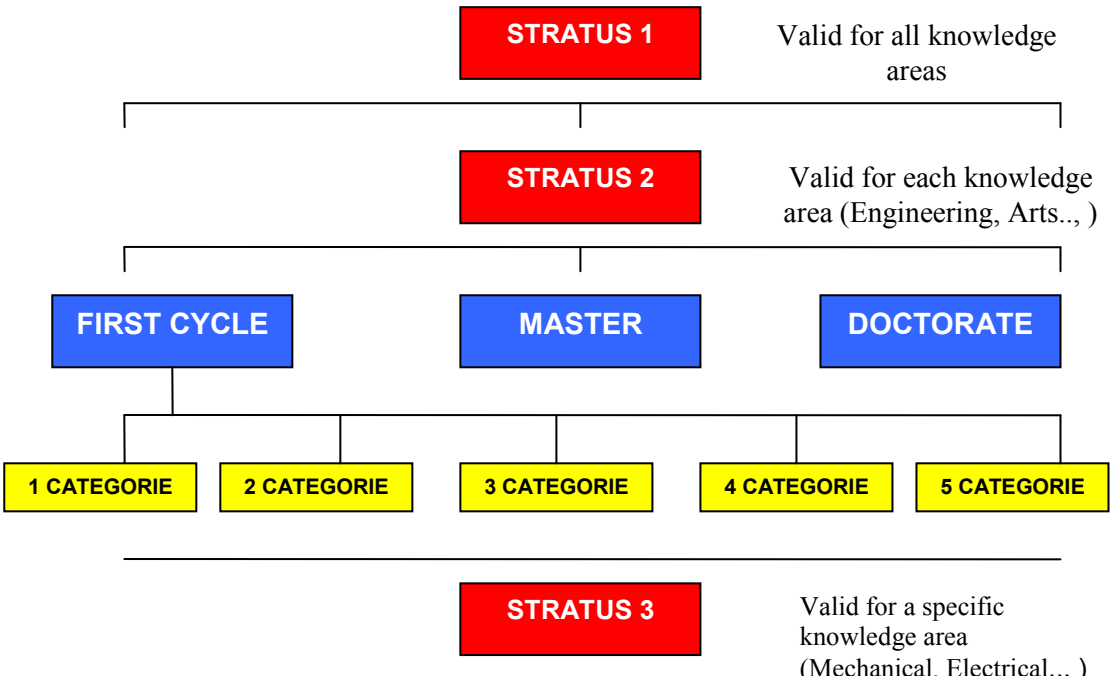

Fig. 1. Workshop qualifications framework held at ETSID (Valencia, Spain).

A summary of the workshop qualifications framework, held at ETSID (Valencia, Spain), is presented below:

1 CATEGORIE - Knowledge and understanding

Stratus 2

Advanced level of knowledge and reflection on humanistic, scientific or technical issues about engineering and architecture and sometimes be in the forefront of these issues.

Stratus 3

1. Advanced knowledge on: Mechanical elements, fluid mechanics, and industrial constructions, that allows being in the forefront of the Mechanical Engineering.

2. Understanding relevant concepts, theory and methods about: mechanical machinery, fluid mechanics, elasticity and resistance of materials, thermal engineering, and processes that helps to develop number 1.

3. Knowledge on basic and instrumental issues needed to master point 1 and 2.

4. Ability to acquire new knowledge that includes reflection on relevant social, scientific or ethical issues in order to improve professional skills.

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2 CATEGORIE - Applying knowledge and understanding

Stratus 2

Demonstrate mastery on design, planning, organisation and control of process, system and components that fulfil requirements of the society inside real contexts. Ability to elaborate projects under continuous quality programmes, research and innovation. Also develop tools for problem solving in this area

Stratus 3

1. Apply knowledge on solving Mechanical Engineering problems in a global manner, using professional judgements, and considering risks, costs, benefits, security, liability, esthetical and environmental impacts.

2. Technical drawing, construction, modification, repair, maintenance, assembly and manufacturing equipment related to Mechanical Engineering taking into consideration the effects on the environment and the society.

3. Application and development of tools and procedures for the improvement of the field of Mechanical Engineering.

4. Have the ability to interpret and prepare their own technical documentation (drawings, reports, technical presentations, etc.)

3 CATEGORIE - Making judgments

Stratus 2

Capability of problems solving with sustaining arguments, creativity, and decision making skills

Stratus 3

1. Collect and interpret all needed information for problems identification, exercising appropriated solutions in the Mechanical engineering area, including reflection on relevant social, scientific or ethical issues.

2. Exercise appropriate individual judgements and skills on problem solving and to find out workgroup solutions

4 CATEGORIE - Communications skills

Stratus 2

Skills to communicate and knowledge transfer between specialist and non-specialist audiences and in other languages. Ability to lead human resources and work groups

Stratus 3

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Skills to communicate information, ideas, problems and solutions in different manners like oral, written or graphics, contributing to decision making in different areas: academic, professional, technological, and general audiences.

5 CATEGORIE - Learning skills

Stratus 2

Ability to update knowledge independently and talent to keep this skill during the lifelong.

Stratus 3

1. Develop skills to learn independently for solving new problems during the professional life.
2. To learn with a high degree of autonomy that allows keeping updated all knowledge needed for their professional life.
3. Develop learning skill that are necessary to continue to undertake further study in his field and across a variety of similar areas

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