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COMPETENCE –
Matching competences in higher education and economy:
From competence catalogue to strategy and curriculum development

Manual 1: COMPETENCE BASED THINKING
The manuals in this series provide insights into the following topics:

**MANUAL 1: COMPETENCE BASED THINKING**

Manual 2: Matching Competences between Higher Education and the Labour Market

Manual 3: Developing Competence Catalogues

Manual 4: Strategy and Curricula Development
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Even before the beginning of the 21st century academic education had been moving away from the traditional knowledge-based approach towards more competence-based teaching. Recently this process has become even more of a preoccupation. With the introduction of the Bologna process, many EU universities have experienced increased interest from the professional and commercial sectors for their interests to be included into the academic environment. In an increasingly competitive global market for higher education universities have had to listen to their company colleagues more than ever before. As a result, universities have developed initiatives to adapt their academic teaching to the requirements of industry, in order to ensure that their graduates are the most employable, and to increase their competitiveness in the international education market. As a result a new form of curriculum development has arisen, which has focussed on finding the relationship between university education and the competences needed by the graduates in their later careers, by defining exactly which competencies need to be included in the respective courses. This new competence-based approach is nowadays one of the most discussed topics in curriculum development. The Tempus project “COMPETENCE” and the series of booklets developed throughout the project show some of these developments and discussions, and seek to provide support in the introduction of such competence-based approaches to university academics and administrators across Europe.
With labour markets increasingly relying on higher skill levels and transversal competences, higher education should equip students with the advanced knowledge, skills and competences they need through their professional lives. (The Bologna Process 2020)

The main objective of the project „Competence – Matching competences in higher education and economy: From competence catalogue to strategy and curriculum development“ is the development and advancement of procedures and tools for assessing and improving the match between competences developed by institutions of higher education and those required by the labour market in four Western Balkan partner countries. Finally, a tool will be created for a modern linking strategy based on the European Qualifications Framework. These tools will be based on knowledge transfer from EU partner universities, which have significant experience applying similar tools.

In each of the four target countries, Competence and Observation Centers (COC) will be established which will serve as national knowledge transfer and training centers. Furthermore, the COCs will have an observatory and documentation function about national strategy developments and processes.

We hope that our project will make a contribution to steering the higher education of the next decade in the right direction.
Learning outcomes, the current hot topic within the educational institutions across Europe, are analysed, designed, implemented and evaluated all over Europe. Learning outcomes are the backbone of the current, modern educational initiatives; such as the European Qualifications Framework (EQF) on the one and the Qualifications Framework for the European Higher Education Area (QF-EHEA) on the other hand. Traditional models and methods of expressing learning success and qualification levels are replaced by systems based on learning outcomes and qualification descriptors. These systems ultimately provide the necessary transparency to facilitate the comparision of knowledge, skills and abilities between education institutions in different European countries. “Without these common approaches, full recognition, real transparency and thus the creation of an effective European Higher Education Area, will be more difficult to achieve.” (Bologna Working Group on Qualifications Frameworks December 2004).

A good overview of the European strategy and co-operation in education and training can be found on the site of the European Commission. ¹

Phase 1: DEFINING COMPETENCES
In the last decade, the interest in competency-based education has been growing (Gillies & Howard, 2003; Gordon & Issenberg, 2003; James, 2002). Tuning Educational Structures in Europe – a university driven project aiming at offering a concrete approach towards the implementation of the Bologna process at the level of higher education institutions and subject areas – defines competences as a dynamic combination of knowledge, understanding, skills and abilities. Competences are obtained or developed during the process of learning by the student (Tuning 2007). A distinction can be made between generic competences (i.e. transferable competences across study areas) and subject-specific competences (i.e. competences specific to a subject area).

The International Board of Standards for Training and Performance Instruction (IBSTPI) defines a competency as “a knowledge, skill, or attitude that enables one to effectively perform the activities of a given occupation or function to the standards expected in employment” (IBSTPI, 2005).

Combing the definitions by Tuning and IBSTPI, a competency includes both means and an end. The means are a combination of knowledge, skills, or abilities and the end is to perform effectively the activities of a given occupation or function to the standards expected in employment. The core of competency-based curriculum design is to ensure that learners will be able to demonstrate their learned competences after they have acquired a necessary combination of knowledge, skills, and abilities (Chyung 2006).
The educational standards established in the European Higher Education Area suggest that the objective of universities is to enable their students to acquire competences which fit the study program they intend to complete. Students acquire these competences through learning activities. The learning activities must be related to the contents of the studies undertaken. In short, the learning references are the competencies that must be attained through learning activities carried out during the study period. Those activities deal with the contents, which is the raw material of learning. The figure on the right illustrates these relationships. Thus, the key to the entire system is a clear and applied definition of competences and their effective link with learning activities.
The crucial element in competency based models is the use of criterion-referenced, measurable assessment methods (Chyung et al 2006). In other words, if you cannot measure it, it probably is not a competency (Voorhees, 2001). Competences will be formed in various course units, through different learning activities and assessed at different stages.

A distinction can be made between direct and indirect competence assessment approaches (Prince & Randall 2008). Indirect approaches gather opinions of the quality and quantity of competences acquired, e.g. through focus groups or surveys. Obviously, the assessment of competences relies upon a certain amount of reflection and reflexivity by respondents (Andrews & Higson 2007). In contrast, direct approaches require that students demonstrate mastery of competences by evaluating actual work completed by the students. This evaluation should ideally be a combination of a performance, formative and summative function (Tuning 2007). Performance assessments consider the work by students through specific methods, such as tests, oral presentations, laboratory reports, analyses of texts or portfolios. A central part of direct assessments are formative assessments in terms of feed-back provision. Thereby, lecturers comment on how well students have achieved a specific work so far and identify steps for improvement. A follow-up seminar or tutorial after an examination is another example of formative assessment. Besides, each course should contain a summative assessment in which all assessment parts are summarized and reflected in a grade.
University of Girona (Spain)

The University of Girona has conducted a pilot plan for the adaptation of the university to the EHEA. Twelve experimental bachelor programmes were involved between 2004 and 2007. The first step was to reach a consensus about the concept of competence. After that the most important competences the labour market expects from graduates were collected. Then those competences were linked with the teaching units in the bachelor or master programmes. An electronic tool - the competence catalogue - working in the intranet was set up and is now used in all masters and bachelors.

University of Zenica (BiH)

The University collected experience in a number of Tempus projects, one of which “Quality Management Procedure For Promoting University - Enterprise Cooperation” was chosen as one of the best 33 EU projects in 2008. The university was and still is in the process of redesigning curricula to better link to private sector needs and has an alumni evaluation programme available as part of it’s quality assurance process.
University of Applied Sciences FH Joanneum in Graz (Austria)

FH Joanneum has - since founded in the year 1995 - always used an accreditation approach for their degree programmes which is involving the industry in the creation of the curricula and syllabi. Many of the university’s professors are directly involved in companies. FH JOANNEUM has also been involved in a number of EU competency-focused projects in this area of which MISLEM and TAQC are the most important.

Catholic University College Ghent (Belgium)

After their project “University-Enterprise Partnership for Total Quality Management” has shown that education was paying too much attention to knowledge rather than to developing skills, attitudes and competences, the Catholic University College Ghent developed a 180 degree feedback solution for the improvement and development of tools for assessing relevant skills and competences in education. The active involvement of the industry partners during the testing phase and the assessment of the students at the start and at the beginning of the final year, were the cornerstone stones of their approach.
The following chart illustrates essential steps towards a competence-based education designed to fulfil labour market needs.

1. National legislation
2. EHEA requirements
3. University prerequisites
4. Labour market needs
5. Students needs
6. Defining competences
7. Relations to aims, course contents, and learning activities
8. Competence assessment
Phase 2: COMPETENCE BASED THINKING
Higher education increasingly takes into account the needs of its stakeholders, as defined in the Bologna Process. To introduce more competence based learning in higher education procedures were installed. The change towards a competence based thinking organization requires a substantial change in mentality. This concerns both teaching staff and students who were used to the classical way of teaching and to whom changes in the didactic process have to be clearly indicated. New evaluation methods have to be explained, evaluated and adjusted. Within this process the feedback of students is valuable in order to improve the quality of proposed changes. Above that, links to industry, like guest speakers and teaching staff industry training are further means to reach a more competence based curriculum with a closer link to the work field. In a structured approach, stakeholders can be invited to take an active part in the curriculum advisory board deciding on further development and possible changes in all university curricula. These changes have only one goal: to increase the employability of the graduated students and to reduce the gap between the academic world and the professional world.

Competence based learning offers new possibilities to universities: within the framework of lifelong learning a more competence based curriculum consisting of modular courses enhances the possibility for universities to attract part-time students combining study and work. Offering flexible learning paths based on competence oriented education is the great challenge for the further development of the European Higher Education Area.
As an illustration in Catholic University College Ghent all study programmes possess an advisory board involving the following stakeholders: students, professors and representatives from the work field. They decide in common agreement on curricula changes. All curricula have to clearly define their goals and aims in terms of competences and skills graduated students should have reached at the end of their study.

Catholic University College Ghent is devoting a lot of attention to measuring competences and skills. Therefore an on-line evaluation tool has been developed. The developed methodology is 180° or 360° feedback.
The following flow chart illustrates the development of a quality management procedure for determining the involvement of society (industry, economy, graduated students) in the decision making process of the educational programme board.
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