



Leonardo da Vinci Transfer of Innovation Project
2011-1-TR1-LEO05-27987

EÇO-MATRIX

Competence Area versus Learning Outcomes

Assoc. Prof. Dr. Anna Kujumdzieva

Dr. Ventsislava Petrova

Mr. Alexander Savov

R & D Center Biotech, Sofia, Bulgaria

www.Eco-Matrix.com

Competence Area *versus* Learning Outcomes

Assoc. Prof. Dr. Anna Kujumdzieva; Dr. Ventsislava Petrova; Mr. Alexander Savov

R & D Center Biointech, Sofia, Bulgaria

Abstract:

This material defines the main approach accepted for the creation of ECO-MATRIX model for description of Competence Areas (CA). Characteristics of EQF and ECVET systems as key tools for VET recognition are provided. The Learning Outcomes as basic elements of Competence Areas are discussed and introduction of ECVET system is made. The interrelation of Learning Outcomes and Units of Learning Outcomes is revealed. The ECVET credit points and the means of Partnership agreements are commented. Finally, a summary of ECVET basic features is presented.

The Competence & Competence Area

The term “competence” includes:

- cognitive competences (knowledge);
- functional competences (skills);
- wider competences (social & behavioural).

The Competence Matrix is build up through description of different Competence Area, presenting a defined professional qualification.

The term “competence area” comprises different types of competencies necessary for performance of core tasks in different occupational field. In the ECO-MATRIX project the “green” competence area are completed in the field of biology, chemistry, engineering, architecture and forms the respective competence matrixes.

The categories accepted for creation of ECO-MATRIX model for description of competence areas are outlined in the basic EU documents concerning VET: European Qualification Framework (EQF) for lifelong learning and European Credit system for Vocation Education and Training (ECVET).

The EQF

It is a “system designed to promote lifelong learning and mobility, facilitating among member states comprehension and comparison of qualifications throughout Europe”. EQF plays role of a “translation device”, which enables interrelation and position of different issues (qualifications, diplomas, certificates, etc.). The EQF encourages countries to relate their national qualifications systems to the EQF so that all new qualifications issued from 2012 on carry a reference to an appropriate EQF level. It makes a European Common Structure of Education and Training, organised in eight common reference levels. In addition, levels reveal in increasing order the learning outcomes with minimum to maximum complexity, attained over a lifetime through variety of formal/informal paths.

The eight EQF reference levels are described, using the basic descriptors i.e. learning outcomes, composed by knowledge, skills and wider competences. Introduction of learning outcomes provides the VET system with a “common language that makes possible to compare qualifications according to their content and profile rather than learning methods and processes”.

The ECVET

The ECVET system goals to facilitate the appraisal and recognition of VET segments completed in other European countries. The final result for trainees is an opportunity for adoption of relevant and recognized learning outcomes throughout Europe. In brief, the objective of ECVET is to develop an EU-wide valid information system, which:

- gives more transparency and transferability of learning outcomes;
- accounts knowledge, skills and wider competences acquired in non-formal and informal learning context;
- fosters cooperation between various training providers within Europe;
- provides voluntary basis education, grounded on mutual trust;
- encourages cross-border mobility between qualification systems;
- contributes towards concept of lifelong learning.

ECVET could be compared to a tool box, common for EU, which provides VET responsible institutions (offering continuous vocational education and training) with the corresponding instruments for mutual recognition of learning achievements.

The ECVET system is based on Learning Outcomes (LO) cantered approach. The learning outcome(s) could be assigned to units, to which ECVET credit points are allocated. In this

way both organizations - sending and hosting, can weight and recognize the learning outcome(s) adopted. This action is based on the rules of mutual trust and partnership agreement named Memorandum of Understanding and individual learning agreements. The general aim is to create a voluntary and decentralized system taking into account as well the national regulations for appraisal, recognition and certification of learning achievements.

Thus, the core elements on which ECVET system is based are:

- Learning Outcomes
- Units of Learning Outcomes
- ECVET credits
- Partnership agreement between two (or several) organizations (Memorandum of Understanding and individual learning agreements).

Learning Outcomes are the building blocks of Competence Area

Learning Outcomes of ECO-MATRIX Competence Areas (Fig. 1) are defined as “statements of what a learner knows, understands and is able to do on completion of a learning process. Results are defined in terms of knowledge, skills and competences” (EQF, 23 of April, 2008).

Learning Outcomes are the out-and-out project of assessment and validation process and are defined in terms of:

- knowledge, referring to theory and/or factual knowledge;
- skills, covering cognitive skills (use of logical, intuitive and creative thought) and practical skills (skilfulness and use of methods. Materials, tools, machines, etc.);
- competences are considered as assuming responsibility and displaying initiative.

Thus the focus is no longer on the learning place (i.e. school, university, company), nor on the length of the learning period but on the result of learning process: what learners are able to do at the completion of it.

The following categories are applied to learning outcomes⁵:

1. **Validation** - “Validation of learning outcomes is a process of confirming that certain assessed learning outcomes achieved by a learner correspond to scientific outcomes, which may be required for a unit or qualification”.
2. **Assessment** - “Assessment of learning outcomes methods and processes used to establish the extent to which a learner has in fact attained particular knowledge, skills and competences”
3. **Recognition** - “Recognition of LO: the process of attesting officially achieved learning outcomes through the awarding of units or qualification”

Learning Outcomes are unified in Units

The Unit is a consistent segment of a learning process. It represents a meaningful set of knowledge, skills and wider competences, which design a coherent part of a full qualification described in specific Competence Area. It could be an object of separate assessment, transfer as well as – pursuant to national legislation – certified.

Units are weighted in ECVET credit points

ECVET credit points provide additional information in numerical form on the relative weight of a Unit in relation to a full qualification. It serves to measure a Unit of learning Outcomes, representing o component of a qualification consisting in a coherent set of knowledge, skills and competences that can be assessed and validated. A **credit** for Learning Outcomes means that an assessed unit of learning Outcomes leads to obtaining of credit of Learning Outcomes. Thus, the credits describe what knowledge, skills and competences a learner who successfully passed the unit, gains. In accordance with the ECVET of the EU Commission 60 credit points correspond to a one-year learning phase in a formal learning context. In this way a link between VET and Higher education is realized at least in relation to the total number of credit points. Non-formally or informally acquired competences are also taken into account in the ECVET context.

Why partnership agreement?

The ECVET concept is grounded on an agreement between two or several organizations. They are the authorities responsible for VET programmes in one particular country. The aim of partnership agreement is to regulate the manner, in which learning outcomes, assessed by hosting organization, are recognized by the sending organization.

ECO-MATRIX

www.eco-matrix.com

ECO-MATRIX Competence matrix							
Professional area: BIOLOGY							
No	Competence area *	Steps of competence development					
		A	B	C	D	E	F
1	Studying ecology structural and integrative levels: population, community and ecosystems	To be able to explore and demonstrate the relationship between organic and inorganic matter, the relationship between living organisms and ecosystems, as well as the relationship of the natural environment with human society.	To be able to recognize and investigate the balance and proper functioning of ecosystems on the planet.	To be able to plan and conduct field research on industrial production, industrial ecology, population ecology, and environmental production or sustainability.	To be able to create and apply complex and dynamic mathematical models of population, community, ecological systems.	To be able to study and propose solutions for the proper management of ecosystems, i.e., a management preventing their destruction by human activities and, where possible, permitting their conservation.	To be able to indicate and deal professionally with issues of management of environmental pollution, ecosystem management and processing of natural resources and waste, renewable energy, environmental policy, regional development and environmental education.
2	Identifying, utilizing and maintaining biological diversity	To be able to develop methods and implement good practices of conserving or managing wildlife habitats and their elements to improve their chemical, biological, or physical characteristics.	To be able to plan and direct construction and maintenance of infrastructure facilities in compliance with biodiversity preservation regulations.	To be able to review and use information networks and databanks in the area of biodiversity.	To be able to elaborate and implement plans for management of biodiversity protection activities and prevent damage of protected resources.	To be able to develop and carry out projects for conservation of wildlife habitats, soil, natural waters, and design of nature and landscape.	To be able to provide consultations and conduct training to private persons and enterprises concerning biological diversity.

ECO-MATRIX

www.eco-matrix.com

Institutional Competence Profile No 1
Professional area "BIOLOGY"

Competence area *	Steps of competence development						Credit points (CP)
	A	B	C	D	E	F	Institutional
1. Studying ecology structural and integrative levels: population, community and ecosystems	1	1	3	3	2	3	13
2. Identifying, utilizing and maintaining biological diversity	1	1	2	2	3		9
3. Exploring environmental problems and relationships	2	2	2	2			8
4. Organizing and performance of waste treatment, reducing and bioremediation	3	2	2	2			9
5. Measuring, analysing and monitoring pollutants and toxics	3	2	2	3	3		13
6. Design and performance of testing of harmful effects of pollutants and toxics	3	3	3	1	1	2	13
7. Organizing environmental management	1	3	2	3	1	2	12
Credit points for the professional area BIOLOGY							77

* Each ECO-MATRIX Competence Area comprises one or more LOs

Fig. 1. ECO-MATRIX Competence matrix: Professional area "BIOLOGY"

References:

1. ECTS Key Features,
http://ec.europa.eu/education/lifelong-learning-policy/doc/ects/key_en.pdf
2. ECTS Users' Guide 2009
3. Get to know ECVET better - Questions and Answers, 2011
4. Recommendation on ECVET, 2009
5. Recommendation of the European Parliament and of the Council (May 2008) on the establishment of the European Qualifications Framework for lifelong learning
6. Recommendation of the European Parliament and of the Council (June 2009) on the Establishment of a European Quality Assurance Reference Framework for Vocational Education and Training
7. Using ECVET to Support Lifelong Learning, 2012