

ECVET FOR ENGINEERING

PART 1 - Learning outcomes

Learning outcomes are a core element of ECVET terminology. They are **statements of what a learner knows, understands and is able to do on completion of a learning process** (Recommendation on the European Qualifications Framework - EQF, 2008). The European definition of learning outcomes, which uses the terms of **knowledge, skills and competence**, is the common denominator that fits with the diversity of approaches to describing learning outcomes.

- **KNOWLEDGE** The outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. Theoretical and/or factual.

*'The student is able to name or describe/ identifies/ recognises/ remembers/ recalls/ defines/ matches/ outlines/ knows/ is familiar with ...'****

- **SKILLS** The ability to apply knowledge and use know-how to complete tasks and solve problems. 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 student can/ is able to/ applies/ constructs/ develops/ demonstrates/ operates/ prepares/ produces/ shows/ uses/ plans /modifies/ reproduces/ maintains/ explains/ examines...'

- **COMPETENCES** 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. Competence is described in terms of responsibility and autonomy.

'The student is responsible for/ is able to apply/ evaluate/ explain/ justify/ resolve/ analyse...'

****NOTE!** Certain verbs are unclear and subject to different interpretations in terms of what action they are specifying. Such verbs call for covert behaviour which cannot be observed or measured. These types of verbs **should be used only after careful consideration** and in a specific context if they cannot be avoided entirely: *know, become aware of, appreciate, learn, understand and become familiar with.*

The ECVET recommendation does not provide a template or a taxonomy concerning the format of learning outcomes descriptions. Such templates or classifications may exist at national, regional or system level and can be used in the EMEU context if they are transparent enough for both the hosting and sending partners. Otherwise the partners are advised to formulate the learning outcomes of the EMEU mobility units by using the European definition of learning outcomes according to the following general guidelines:

- **Active, clearly understandable verbs:** measurable or observable actions. (see e.g. Blooms taxonomy)
- **Specification and contextualization of the active verb:** a verb and the related object as well as an additional (part of a) sentence describing the context.
- **Avoiding vague, open formulation:** clear (simple and unambiguous) terminology.
- **Orientation towards minimum demands for achieving learning outcomes**
- **Competence level is described comprehensibly:** formulations (verbs and adjectives) should reflect the level of qualification/competence (EQF)

Check list for learning outcomes

- Is the specified action by the learners observable?
- Is the specified action by learners measurable?
- Can the action be done by the learners (under supervision/guidance or independently)?
- Can the action be assessed in a reliable, valid and cost effective way?
- Does the learning outcome reflect the expected competence level (minimum requirement)?

The ultimate test when writing learning outcomes is **whether or not the action taken by the learners can be assessed**. If not, the learning outcome probably does not meet all required characteristics.

Examples of learning outcomes:

Knowledge

- The learner **recognises** the key components based on electrical and/or automation designs and diagrams.
- The learner **is able to acquire and use** information related to his/her vocational field and present it understandably both orally and in writing.
- The learner **is aware of** the significance of earthing and equipotential bonding to a user's contact voltage protection with high-voltage devices.
- The learner **knows** the most common drawing symbols on a construction site.

Skills

- The learner **is able to choose and use** tools, other utensils and materials according to documents and instructions.
- The learner **maintains** equipment, appliances and instruments (under instruction).
- The learner **chooses** appropriate materials for the product or product ideation (under instruction) and **uses** them economically (under instruction).
- The learner **uses** the most essential work equipment and materials in interior carpentry work in familiar work situations (but requires occasional guidance).
- The learner **is able to perform** dismantling, support, protection and reinforcement work related to renovation.

Competence

- The learner **follows the instructions** provided on work safety; does not cause danger to him/herself or others.
- The learner **works as an active member** of a group and adapts to the work community.
- The learner **calculates** material consumption and **makes** a cost estimate of the material expenses (under instruction).
- The learner **plans** his/her work (under supervision/independently).