



Guidelines for the Description of Learning Outcomes

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What Are Learning Outcomes?

In Europe there are many different educational and training systems. Because of this diversity, it is often difficult to understand and compare the qualifications from other countries. The titles of the various qualifications, despite being the same, can conceal different contents. One way to make the various qualifications transparent, understandable and comparable is to **describe them in terms of learning outcomes**.

Qualification is understood in accordance with the recommendation of the European Qualifications Framework (EQF) to mean the formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards.

Learning outcomes are defined as statements of what a learner knows, understands and is able to do upon completion of a learning process. In the EQF, learning outcomes are therefore defined in terms of knowledge, skills and competence which are understood as follows:

"Knowledge means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual."

"Skills means the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive or practical skills."

"Competence means the proven ability to use knowledge, skills and personal, social and methodological abilities in work or study situations and in professional and/or personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy."

Learning outcomes can be listed in a catalogue of **units**. A unit is defined as a set of knowledge, skills and competence which constitute a part of a qualification. It can be the smallest part of a qualification (or several qualifications) that can be assessed, validated and, possibly, certified.

Units of learning outcomes should be:

- legible and understandable
- built up and organised in a coherent way
- assessable.

The **goal** of ZOOM is to define learning outcomes for the master craftsperson qualifications in the automotive as well as in the electrical engineering/electromechanics sectors. In doing so, both the description mode as well as the approach to the formulation of learning outcomes should be tested. The learning outcome descriptions will bring transparency to the differences and similarities between the master craftsperson qualifications for the countries participating in the project. To achieve this, a basis will first be created with which a well-founded classification of these qualifications in the respective national qualifications framework (NQF) can be carried out. Furthermore, the learning outcome descriptions will also make it possible to provide a common basis for referencing the NQF-level to the EQF.

Characteristics of Learning Outcomes

Learning outcomes have a number of important **characteristics** that must be considered in the formulation:

- Learning outcomes principally refer to qualifications and not to individual learners. Although in practice there will always be people who perform above or below average, when describing the learning outcomes of an educational programme an **average graduate** must always be assumed.
- Learning outcomes refer to the **day of testing**, i.e. to what the learner knows, is able to and capable of doing on this day.
- The **current curriculum** of the educational programme and other **relevant documents** that contain references to the qualifications (e.g. laws and regulations) will form the basis for the learning outcome description.
- Learning outcomes will always be described from the perspective of the **learner** (outcome) and not from the perspective of the **teacher**.
- The optimal number of learning outcomes is dependent on the **complexity of the educational programme**. It is advisable to formulate neither too many, nor too few learning outcomes. Too many could cause a lack of transparency, while on the other hand too few would not be conducive to transparency.
- Learning outcomes should be **externally verifiable**. The formulations are to be chosen such that it can be determined during an evaluation process if the learner has achieved the learning outcomes.
- The **manner** in which the learning outcomes are acquired is not relevant for the learning outcome description. This means that it does not matter if the contents have been acquired through an e-learning programme, classroom instruction, at the workplace, at school or through self-study.

Formulation of Learning Outcomes

There are some important ground rules for the formulation of learning outcomes:

■ Use Active Verbs

It should be ensured that **active verbs** are used in the formulation of learning outcomes.

Example: He/she can correctly **select** the wires to be used and **pull** them professionally, using an installation plan.

Insufficient: The learners were made familiar with the installation plans.

Example: He/she is able to **write** a report that presents the relationship between chemical structures and material properties.

Insufficient: Material properties were properly identified and brought into relationship with chemical structures. The student was able to compile a report.

■ Specify and Contextualise the Active Verb

Learning outcomes must be specified and contextualised. Therefore it is essential to provide an indication as to what the **knowledge and skills** of the graduates refer to, and as to what **kind of performance** is concerned.

Example: He/she is able to explain **the function** of hardware components.

Insufficient: He/she is able to explain the hardware.

Example: He/she is able to depict the spatial characteristics in **free-hand sketches**.

Insufficient: He/she can make free-hand sketches.

Example: He/she is able to provide a **general overview** of the most commonly used materials and properties in electrical engineering.

Insufficient: He/she knows the most commonly used materials in electrical engineering.

Example: He/she is able to develop a research design **using scientific methods**.

Insufficient: He/she is able to develop research designs.

■ **Avoid Vague Formulations**

The formulation of learning outcomes should **neither be too general nor too specific.**

Example: He/she is able to **prepare realistic workflow plans and staff assignments on the basis of the project planning.**

Insufficient (formulation too general): He/she is familiar with personnel management in the construction sector.

Example: He/she knows the **composition of tires and can name their individual components.**

Insufficient (formulation too specific): He/she knows that the tires of a passenger vehicle are made of natural and synthetic rubber, chemicals, oils, resins, carbon black, silica, steel, nylon and cord.

Approach in the ZOOM Project

The following **description mode** was agreed upon for ZOOM:

■ "Holistic" and "Component" Description of Learning Outcomes

There will be both a "holistic" as well as a "component" description of the learning outcomes in ZOOM. The component description will separately examine the knowledge, skills and competence that are acquired as part of the master craftsman training. The holistic description will examine these three components together as a whole. The holistic description is to be seen as a kind of summary of the three descriptors knowledge, skills and competence.

■ Learning Outcomes Will Be grouped in "Units"

The learning outcomes will in addition also be grouped into units. Units include multiple learning outcomes that are required for carrying out core tasks of the qualification to be described.

■ Template for Learning Outcomes Descriptions in ZOOM:

Unit 1		Title		
a)	He/she is able to.....			
	Knowledge	Skills	Competence	
	He/she knows ...	He/she is able to...	He/she is responsible for ...	
b)	He/she is able to.....			
	Knowledge	Skills	Competence	
	He/she knows...	He/she examines ...	He/she monitors ...	
c)	He/she is able to.....			
	Knowledge	Skills	Competence	
Unit 2		Title		
a)	He/she is able to.....			
	Knowledge	Skills	Competence	

b)	He/she is able to.....		
	Knowledge	Skills	Competence
c)	He/she is able to.....		
	Knowledge	Skills	Competence

■ **Example of a Unit Description/ Qualification: master craftsman (Austria)**

Unit 1	Human Resources Management		
	He/she is able to employ appropriate recruiting methods in order to select required staff.		
a)	Knowledge	Skills	Competence
	He/she knows several recruiting methods. He/she knows the standards for compiling an announcement. He/she knows the necessary communication techniques for conducting an interview. He/she knows the employment law rules.	He/she plans the personnel demand. He/she defines the requirements applicants have to meet. He/she selects the searching methods (e.g. online announcement, newspaper ad, etc.). He/she makes a pre-selection of the applications on the basis of the written applications. He/she conducts interviews. He/she chooses the appropriate candidate who meets the requirements of the job. He/she negotiates the financial issues. He/she compiles the employment contract applying employment law.	He/she is responsible for the recruiting and selection processes. He/she supervises the staff of the HR department.

In order to develop definitions of learning outcomes relevant for the qualification, it is recommended that **expert workshops** are conducted.

■ Conducting Workshops

In order to determine learning outcomes, workshops with experts should be conducted. Experts may be lecturers in master schools, examiners, specialists with master craftsperson qualifications from companies, people from social partnership institutions, etc. It should be ensured, however, that there is a balanced relationship between education and business professionals. The number of workshop participants should range between three and seven.

■ Workshop Structure

In order to receive relevant information from the experts, it is recommended to engage in brainstorming and create scenarios. It is important to keep the labour market perspective in mind, i.e. what people being awarded with this qualification do in the labour market and what they are qualified for.

The following questions may help experts change the input-oriented way of thinking (duration, place of learning, access requirements, etc.) to a more outcome-oriented one. In order to elicit information required for learning outcome descriptions, two types of questions can be asked:

1) Scenario-questions for information about the qualification in general:

- What learning outcomes should graduates possess when they have completed the master training programme?
- What learning outcomes help graduates achieve a successful professional career?
- Describe your qualifications to a foreigner: What knowledge, skills and competence do you possess? What do you need to be able to do?
- What knowledge, skills and competence have to be listed in an international tender (for example, a call for projects) for candidates with a master craftsperson qualification in electrical engineering/electromechanics or automotive technology?
- A foreigner is applying for the position of master electrical engineer/electromechanic or automotive mechanic in your country. What knowledge, skills and competence must he/she possess in order to be accepted for the position?

- Explain the technical requirements for the master craftsperson qualification to a foreigner: What knowledge, skills and competence must a person in your country display in order to successfully pass the test?

2) Questions to detail knowledge, skills and competence:

- What sort of knowledge is connected to the master craftsperson qualification? What theories, principles, formulas, etc. is a master craftsperson expected to possess? How can the extent of the knowledge be described?
- What skills are connected to the master craftsperson qualification? What professional abilities is someone with a master craftsperson qualification expected to possess?
- What competence is connected to the master craftsperson qualification? What degree of responsibility and what level of autonomy correspond to the master craftsperson qualification?

Once the learning outcome description is completed, a cross-check with the principles on how to formulate learning outcomes (cf. page 5) is recommended. The following checklist can be used for this cross-check. If the answer to any of these questions is “No”, a revision of the learning outcomes is advised.

Questions	Yes/No
1. All verbs used in the description are active verbs .	
2. All verbs are specified and contextualised to provide adequate information.	
3. Regarding the number , there are neither too many, nor too few learning outcomes.	
4. The formulations are focused on the results/outcomes , not the processes (teacher's perspective).	
5. Each learning outcomes is observable and can be externally verifiable .	
6. The formulated outcomes refer to the entire education and training programme (not to an individual learner).	
7. The formulated outcomes refer to the day of testing (corresponding to the standards the learner has to meet during the evaluation period).	

Verb list

Below are examples of **active verbs** that can be used for the descriptors of knowledge, skills and competence. Occupationally typical activities (e.g. repair, paint, balance tires, etc.), which are important especially for the learning outcome description of skills, are not dealt with individually here.

Verbs that can be used under the descriptor "**knowledge**":

define, describe, identify, label, list, name, outline, express, remember, select, determine, present, have knowledge of, gather, classify, explain, write, recognise, measure, emphasise, repeat, report, know, match

Verbs that can be used under the descriptor "**skills**":

draft, infer, analyse, alter, apply, argue, assemble, itemise, split, demonstrate, express, choose, influence, substantiate, provide examples, name, report, describe, designate, judge, assess, present, diagnose, discuss, illustrate by example, conduct, classify, categorise, assign, discover, design, develop, elucidate, recognise, explain, calculate, compile, expand, tell, manufacture, evaluate, produce, find, conclude, formulate, contrast, devise, generate, question, indicate, identify, illustrate, integrate, interpret, clarify, criticise, teach, praise, solve, modify, rearrange, recreate, rewrite, use, arrange, organise, plan, practice, justify, regulate, represent, collect, create, appreciate, deduce, write, refer to, structure, synthesise, divide, separate, test, translate, shape, rephrase, outline, paraphrase, differentiate, investigate, subdivide, transform, visualise, connect, compare, verify, defend, utilise, predict, prepare, display, project, suggest, select, appraise, show, summarise

Verbs that can be used under the descriptor "**competence**":

lead a team, instruct trainees, act independently, monitor work processes, assume responsibility

Verbs that should be **avoided**:

appreciate, learn about, be aware of

Service Section

■ Book Tips:

- British Columbia Institute of Technology, Burnaby (1996): Writing Learning Outcomes. Burnaby.
- European Commission (2008): The European Qualifications Framework for Lifelong Learning (EQF). Belgium.
- Handwerkskammer Trier (ed.) (2005): Praxismanager auf der Baustelle. Pilotprojekt (Practice Manager at the Construction Site. Pilot Project)
PP 146 294/2005: Formation Credit Points. Trier
- UCE Birmingham (n.d.): Guide to learning outcomes. Birmingham.
- Kennedy, D. (2007): Writing and Using Learning Outcomes. A Practical Guide. Cork.

■ Web Tips:

- American Association of Law Libraries (n.d.): Writing Learning Outcomes.
[<http://www.aallnet.org/prodev/outcomes.asp>](http://www.aallnet.org/prodev/outcomes.asp)
- Hyland, A./ Kennedy, D. Ryan, N. (2008): Writing and Using Learning Outcomes: a Practical Guide. n.p. <<http://www.bologna.msmt.cz/files/learning-outcomes.pdf>>
- Schermutzki, M (2005): Learning outcomes – Lernergebnisse: Begriffe, Zusammenhänge, Umsetzung und Erfolgsermittlung.
(Learning outcomes: Concepts, relationships, implementation and determination of success.)
[<http://opus.bibliothek.fh-aachen.de/opus/frontdoor.php?source_opus=248&la=en>](http://opus.bibliothek.fh-aachen.de/opus/frontdoor.php?source_opus=248&la=en)
- Swedish Agency for Networks and Cooperation in Higher Education (2006): Writing intended learning outcomes. <http://kursutveckling.se/dok/Larandemal_eng_061011.pdf>
- University of California (2008): Guidelines for Writing Student Learning Outcomes.
[<http://www.ap.uci.edu/Workshops/ChairRetreat_2008/Binder/Guidelines%20for%20Writing%20SLOs%20final.pdf>](http://www.ap.uci.edu/Workshops/ChairRetreat_2008/Binder/Guidelines%20for%20Writing%20SLOs%20final.pdf)
- EQF brochure: http://ec.europa.eu/dgs/education_culture/publ/pdf/eqf/broch_en.pdf
- EQF leaflet: http://ec.europa.eu/dgs/education_culture/publ/pdf/eqf/leaflet_en.pdf

■ Projects Tips:

- SME MASTER and SME MASTER plus: <http://www.sme-master.eu/>
- COMINTER: <http://www.cominter-europe.org/>
- VQTS: <http://www.vocationalqualification.net/>
- AMOR: <http://www.amor-project.eu/>
- TransEQFrame: <http://www.transeqframe.net/>
- EQF-Ref: <http://www.eqf-ref.eu>

Descriptors defining levels in the European Qualifications Framework (EQF)

Each of the 8 levels is defined by a set of descriptors indicating the learning outcomes relevant to qualifications at that level in any system of qualifications.

	Knowledge	Skills	Competence
	In the context of EQF, knowledge is described as theoretical and/or factual	In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments)	In the context of EQF, competence is described in terms of responsibility and autonomy
Level 1 The learning outcomes relevant to Level 1 are	basic general knowledge	basic skills required to carry out simple tasks work or	study under direct supervision in a structured context
Level 2 The learning outcomes relevant to Level 2 are	basic factual knowledge of a field of work or study	basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	work or study under supervision with some autonomy
Level 3 The learning outcomes relevant to Level 3 are	knowledge of facts, principles, processes and general concepts, in a field of work or study	a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	take responsibility for completion of tasks in work or study adapt own behaviour to circumstances in solving problems
Level 4 The learning outcomes relevant to Level 4 are	factual and theoretical knowledge in broad contexts within a field of work or study	a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change, supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities

Level 5 (*) The learning outcomes relevant to Level 5 are	comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	exercise management and supervision in contexts of work or study activities where there is unpredictable change, review and develop performance of self and others
Level 6 (**) The learning outcomes relevant to Level 6 are	advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	manage complex technical or professional activities or projects, taking responsibility for decisionmaking in unpredictable work or study contexts take responsibility for managing professional development of individuals and groups
Level 7 (***) The learning outcomes relevant to Level 7 are	highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research critical awareness of knowledge issues in a field and at the interface between different fields	specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8 (****) The learning outcomes relevant to Level 8 are	knowledge at the most advanced frontier of a field of work or study and at the interface between fields	the most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation to extend and redefine existing knowledge or professional practice	demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

Compatibility with the Framework for Qualifications of the European Higher Education Area

The Framework for Qualifications of the European Higher Education Area provides descriptors for cycles.

Each cycle descriptor offers a generic statement of typical expectations of achievements and abilities associated with qualifications that represent the end of that cycle.

(*) The descriptor for the higher education short cycle (within or linked to the first cycle), developed by the Joint Quality Initiative as part of the Bologna process, corresponds to the learning outcomes for EQF level 5.

(**) The descriptor for the first cycle in the Framework for Qualifications of the European Higher Education Area agreed by the ministers responsible for higher education at their meeting in Bergen in May 2005 in the framework of the Bologna process corresponds to the learning outcomes for EQF level 6.

(***) The descriptor for the second cycle in the Framework for Qualifications of the European Higher Education Area agreed by the ministers responsible for higher education at their meeting in Bergen in May 2005 in the framework of the Bologna process corresponds to the learning outcomes for EQF level 7.

(****) The descriptor for the third cycle in the Framework for Qualifications of the European Higher Education Area agreed by the ministers responsible for higher education at their meeting in Bergen in May 2005 in the framework of the Bologna process corresponds to the learning outcomes for EQF level 8.