

Evaluation of use – work package 2

The evaluation of the use of the results has taken place in a variety of steps

Use of the empirical investigation for the creation of the competence matrix

1. We have checked for the **core working processes (competence areas)**...

- ✓ Which ones are suitable?
- ✓ Which ones are cancelled?
- ✓ What's new?

- see pages 20 to 27 of the analysis of the empirical investigation -

Green Transition in Vocational Education and Training (GeTinVET)



The VQTS Matrix Example: Installation of the electric power supply inside a building

Steps of competence development

Progression →

Core working process ↓ Progression	1 Assembling and dismantling	He/She is able to assemble and dismantle particular components of the electrical power supply	He/She is able to plan and to document the assembling and dismantling of components of the electrical power supply	He/She is able to customize concepts of assembling, dismantling and disposal of electric power supply systems or their components and to refine them in cooperation with customers and manufacturers of electric power supply systems
	2 Maintenance			

 brk.nrw.de

2. We have checked for the **core working processes**...

- ✓ Which ones are suitable?
- ✓ Which ones are cancelled?
- ✓ What's new?

- see pages 20 to 27 of the analysis of the empirical investigation -

3. Than we have started to formulate the steps of competence development

Competence-areas (core-working-process)	Steps-of-competence-development:
1. Assembling and dismantling of building systems or components	He/She is able to assemble/disassemble particular components of building systems according to the assembly schedules regarding established norms and associated wiring. He/She is able to assemble/disassemble components of building systems in compliance with legal requirements.

One „Unit“

- ✓ One step of competence development = one learning unit (holistically formulated) that is described in an outcome-orientated way.
- ✓ Learning outcome unit means what a trainee can do after he/she has completed a learning process.

4. When formulating a unit of learning outcomes, we orientated ourselves on the European understanding (European Qualifications Framework - knowledge, skills and competences):

The learning outcomes are defined in terms of:

- ✓ Knowledge: in the context of EQF, knowledge is described as theoretical and/or factual.
- ✓ Skills: 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).
- ✓ Responsibility and autonomy: In the context of the EQF responsibility and autonomy is described as the ability of the learner to apply knowledge and skills autonomously and with responsibility.

A unit of learning outcome is a part of a qualification consisting of a bundle of knowledge, skills and competences that can be assessed and recognized.

We have taken EQF levels 3 to 6 into account in the matrix

EQF-level	3	6
<u>Knowledge</u>	Factual and theoretical knowledge in broad contexts within a field of work or study	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles
<u>Skills</u>	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a <u>specialised</u> field of work or study
<u>competences</u>	Take responsibility for completion of tasks in work or study; adapt own <u>behaviour</u> to circumstances in solving problems	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups

And we used the following taxonomy table as a guide when formulating the learning outcome units.

HOW TO PHRASE LEARNING OUTCOMES FITTING INTO THE TAXONOMY TABLE?

Learning outcomes should be short and specific phrased. Unnecessarily convoluted wording and excessive use of technical terms should be avoided. Normally, a learning outcome can be phrased in just one sentence.

Example: The student is able to explain the CPU-cycle. [2F, 2Ca, 2P]¹

The following are suggestions for possible verbs for the phrasing of learning outcomes with a possible classification.²

Remember may be defined as the ability to recall or recognize information without necessarily understanding them.

Arrange, collect, define, describe, duplicate, enumerate, examine, find, identify, label, list, memorize, name, order, outline, present, quote, recall, recognize, recollect, record, recount, relate, repeat, reproduce, show, state, tabulate, and tell.

Understand may be defined as the ability to understand and interpret learned information.

Associate, change, clarify, classify, construct, contrast, convert, decode, defend, describe, differentiate, discriminate, discuss, distinguish, estimate, explain, express, extend, generalize, identify, illustrate, indicate, infer, interpret, locate, paraphrase, predict, recognize, report, restate, rewrite, review, select, solve, summarize, and translate.

Apply may be defined as the ability to use learned material in new situations, e.g. put ideas and concepts to work in solving problems.

Apply, assess, calculate, carry out, change, choose, complete, compute, construct, demonstrate, develop, discover, dramatize, employ, examine, experiment, find, illustrate, implement, interpret, manipulate, modify, operate, organize, practice, predict, prepare, produce, relate, schedule, select, show, sketch, solve, transfer, and use.

Analyze may be defined as the ability to break down information into its components, e.g. look for inter-relationships and ideas.

Analyze, appraise, attribute, arrange, break down, calculate, categorize, classify, compare, connect, contrast, criticize, debate, deduce, determine, differentiate, discriminate, distinguish, divide, examine, experiment, identify, illustrate, infer, inspect, investigate, order, organize, outline, point out, question, relate, separate, subdivide, and test.

Evaluate may be defined as the ability to judge the value of material for a given purpose.

Argue, arrange, assemble, categorize, checking, collect, combine, compile, compose, construct, criticize, design, develop, devise, establish, explain, formulate, generalize, generate, integrate, invent, make, manage, modify, organize, originate, plan, prepare, propose, rearrange, reconstruct, relate, reorganize, revise, rewrite, set up, and summarize.

Create may be defined as the ability to reassemble and supplement existing elements, so that a new, consistent product is created.

Cast, cause, construct, contrive, discover, effect, engineer, erect, evolve, fabricate, grow, inaugurate, initiate, innovate, introduce, invent, machine, manufacture, multiply, originate, prefabricate, process, produce, propagate, raise, and set up.

5. Finally, we evaluated the competency matrix internally during the meeting
- **Please check whether you generally understand the competence matrix.**
 - a. Firstly, please check whether ***the technical terms in the glossary*** are comprehensible and understandable for you. What is unclear here? Are there any suggestions for improvement?
 - b. Check the ***competence areas*** again. Do they cover the entire range of skills? What is unclear here? Are there any suggestions for improvement?
 - c. Please ***check the units*** as far as possible. Do the units really represent a progression in competence development? Are there any suggestions for improvement or things you don't understand?
- **Presentation and discussion of questions/comments/notes...**