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The definition and writing of learning outcomes in VET

The case of CNC Machine Operation - POLAND

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To approaches to writing (describing) learning outcomes

1. Qualifications for formal VET

- 2011 reform - Introduction of LOs to describe qualifications
- The model of school curriculum (training programme) prepared and approved on national level
- External examinations organised by Central Examination Board

2. Qualifications for new „Qualification System” based on Polish Qualification Framework

- Qualifications awarded outside the **formal** general/vocational and HE
- Recognition of non-formal and informal learning
- Approach tested on 45 examples – so far

Qualifications in Polish formal VET (2011 reform)

Vocational certificate (single qualification)

Learning outcomes common to all occupations

Learning outcomes common to occupations in a given field

Units of learning outcomes specific for the qualification

CNC machine tool operator

starting and operating business activities,
 – foreign language ability related to the occupation,
 – **personal and social competencies**,
 – organising the work of small teams (in upper secondary technical schools and post-secondary non-tertiary schools);

- *Preparation of traditional machine tool for operation*
- *Operation of traditional machine tools*
- **Preparation of CNC machine tool for operation**
- **Operation of CNC machine tools**

Coherent sets of learning outcomes, usually grouped according to professional tasks, outcomes of the process or stages of a process.



Preparation of CNC machine tool for operation

examples of learning outcomes

- **Identify** characteristic items of CNC machine tools;
- **knows** sub-programmes and machining cycles ...
- in the technological documentation **identify** specifications and data necessary to;
- **knows** the meaning of key words in.....

examples of learning outcomes - *cont*

- **uses** programming language code to edit machining programmes;
- **selects** measurement instruments to check items after machining;
- **selects** tool holders to set and fix cutting tools;
- **fixes tool holders** and cutting items in tool sockets;
- **determines** corrective values of cutting tools and enters them
- **enters** a technological treatment programme to the controller
- **tests programmes** on to CNC machine tools.

Operation of CNC machine tool examples of learning outcomes

- **sets** and enters zero point shift;
- **launches** CNC machine tools for manual and automatic work;
- **performs** machining by means of CNC machine tools;
- **supervises** the course of machining
- **evaluates** tear and wear of a cutting edge;
- **controls** dimensions of items after machining;
- **performs** maintenance of CNC machine tools

Few comments/questions

- Learning outcomes for this units represent **knowledge and skills**
- **competences** (social and personal) are described outside qualification specific units
- Are these LOs enough precise (unambiguous) to
 - prepare school curriculum (teaching programme)?
 - Schools prefer to use „model” curriculum (*to be more regulated*)
 - to perform validation process?
 - Assessment is performed by bodies supervised by Central Examination Board

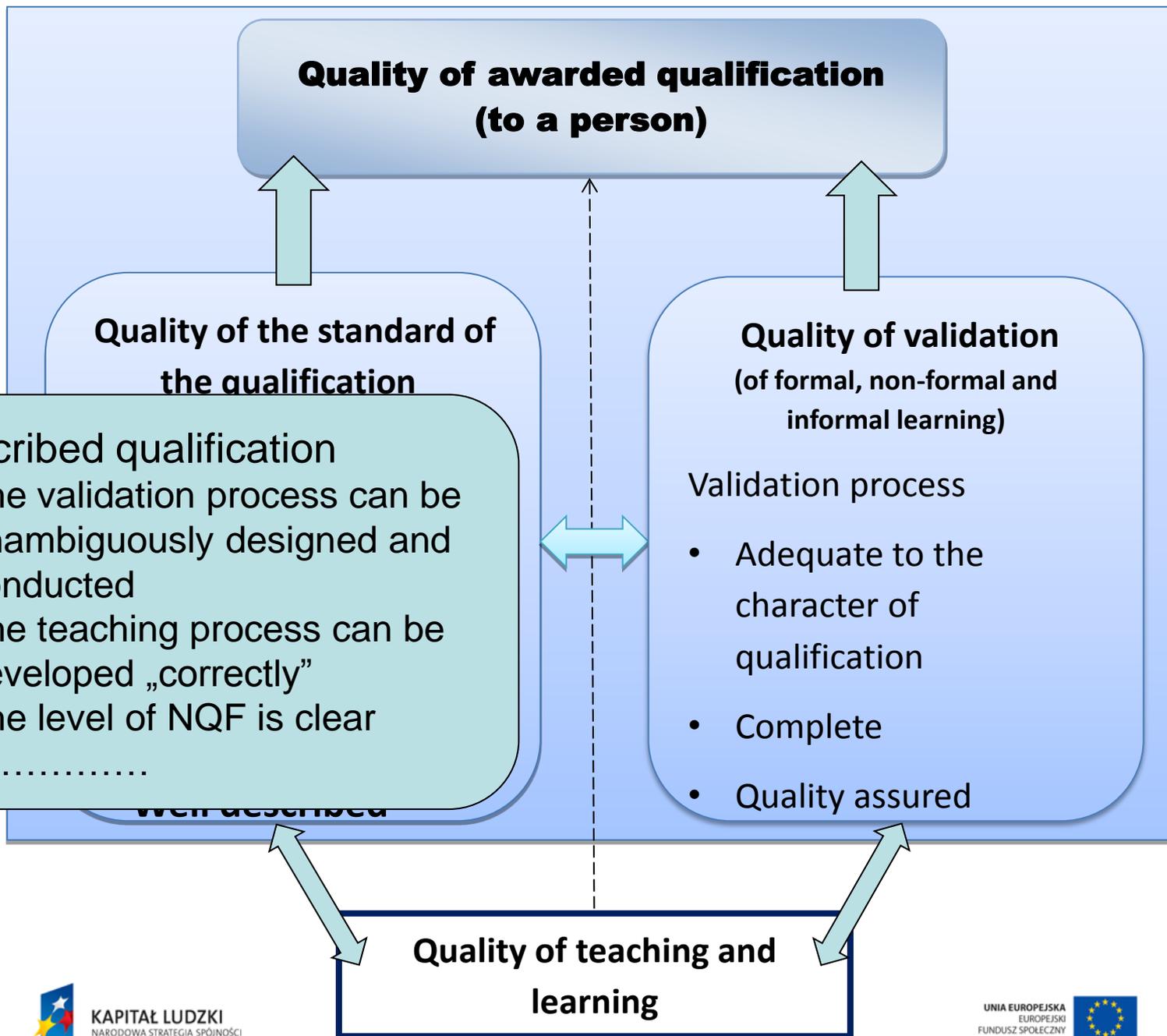
„The use and operation of CNC machine tools”

- Qualification for new „**Qualification System**” based on Polish Qualification Framework
- Many (few) different awarding and validation bodies
- Many training institutions
- Recognition of informal learning
- Sometimes called „free market qualifications”

The starting point for „thinking” and development of
 the „Standard of the description of qualifications
 (and learning outcomes)”
free market qualifications

„Quality of the QUALIFICATION awarded to a person”



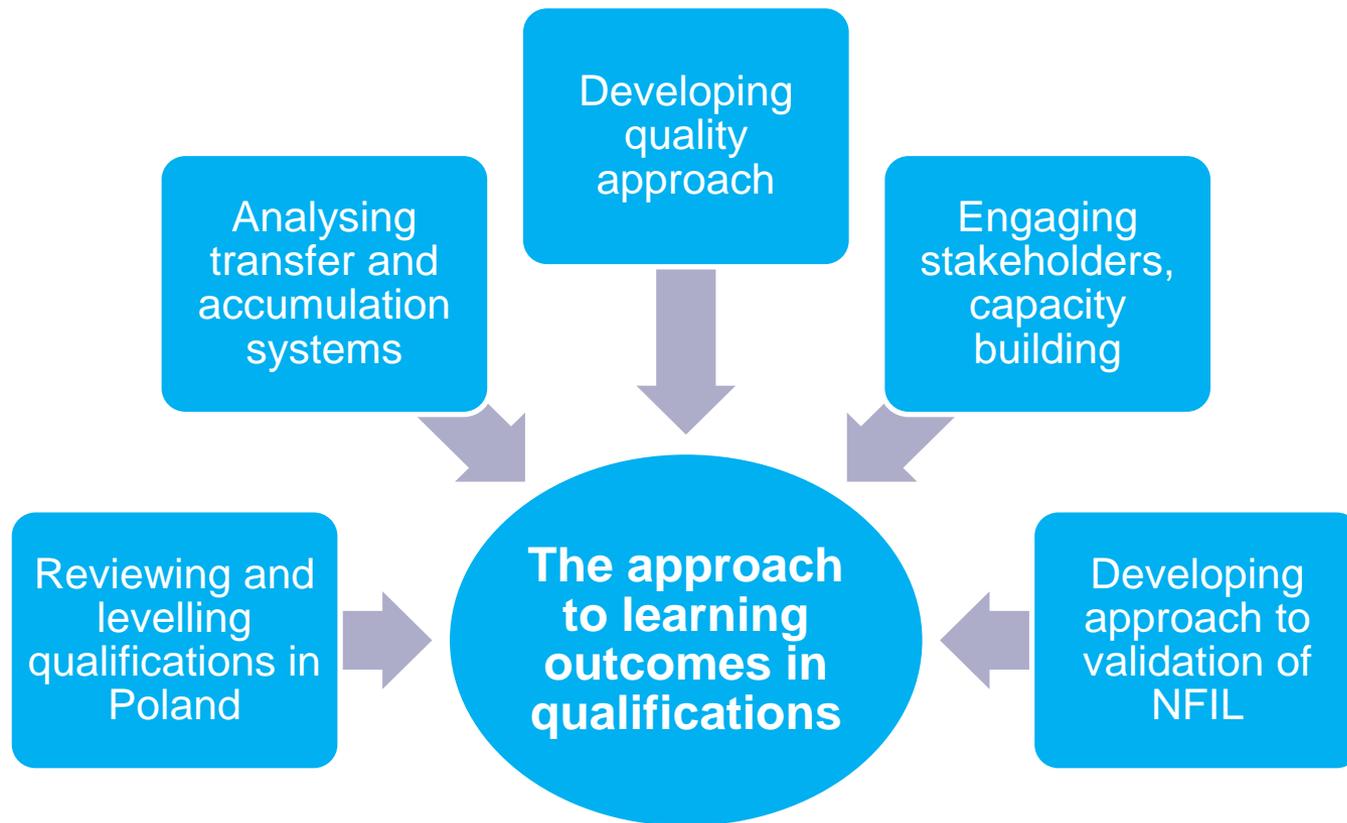


What is the „learning outcome” ?

- EQF and education and training perspective
 - ‘learning outcomes’ means **statements** of what a learner knows, understands and is able to do on **completion of a learning process**, which are defined in terms of knowledge, skills and competence;

- Qualification perspective
 - ‘learning outcomes’ are the „outcomes of learning” important from the point of view of the award of qualification
 - We need to describe them in most possible precise and unambiguous way.
 - We should describe them in terms of knowledge, skills and competence.

Developing approach to describing Learning Outcomes in Poland



How learning outcomes for „free market qualification” are described?

- Learning outcomes are described by:
 - General characteristics of learning outcomes of the qualification
 - List of Units of LOs
 - List of skills for every Unit
 - verification criteria associated to skills

General characteristics of learning outcomes (CNC.....)

- A person with the qualification can: handle and supervise universal, semi-automatic and automatic machine tools.....
- Professional activities include: job preparation, familiarizing with technical drawing or pattern, preparation of tools for the job, setting parameters
- qualification holder is ready to bear responsibility for the quality of work done; work with the team in order to ...
- He/she is also aware of the need for the continuous tracking of technological progress in the field of mechatronics and digital technology used in CNC

Example of Unit LOs

„Preparation of CNC machines to carry out technological process

■ Skill

- Uses codes of programming in order to edit software for machining

■ Verification criteria

- Prepares plan for item's processing.....
- Prepares ... sheet for NC process.
- Makes plan for machinery treatment
- Reads software applied.....
- Uses sub software
- Generates software

Example of Unit LOs „Operation of CNC machines”

■ Skill

- Sets and fixes objects or materials for processing

■ Verification criteria

- Selects instrumentation
- Selects the method
- Fixes material in the holder
- Applies health and safety rules in operation

Conclusions

- The school learned qualification core curriculum is not precise enough for "free market qualifications"
- Stakeholders see proposed „standard of description of qualifications” as useful and clear.
- Some more pilot implementations are required

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Thank you!

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