



## D2.2 DEVELOPMENT OF A COMMON PACT FRAMEWORK

Dissemination level: Public



This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



## DOCUMENT INFORMATION

| Project Information        |  |                          |
|----------------------------|--|--------------------------|
| <b>Project name</b>        | Agricultural Alliance for Competence and Skills based Training |                          |
| <b>Project acronym</b>     | ACT  |                          |
| <b>Project number</b>      | 540426-LLP-1-2013-1-DE-LEONARDO-LMP                            |                          |
| <b>Project web site</b>    | <a href="http://www.act-now.eu">www.act-now.eu</a>             |                          |
| Document Identification    |  |                          |
| <b>Document title</b>      | Agricultural Alliance for Competence and Skills based Training |                          |
| <b>Deliverable</b>         | D2.2 Development of a common PACT Framework                    |                          |
| <b>Current status</b>      | Final  |                          |
| <b>Current version</b>     | 2.0  |                          |
| <b>Dissemination level</b> | Public   |                          |
| Version history            |  |                          |
| Version number             | Data released  | Authors and contributors |
| 0.1                        |  |                          |
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## 1. INTRODUCTION

### 1.1 SCOPE

Deliverable D2.2 presents the reference framework "Pathways for Agricultural Competence and skills based Training (PACT)" for the agricultural sector as a simplified common model for expressing information on job profiles, qualifications and training opportunities and for their future definition and design based on competences and skills in alignment with ECVET.

### 1.2 AUDIENCE OF THIS DOCUMENT

The document has the following main target groups:

1. Farmers: comprises family farmers as well as industrial farmers (both employers and employees);
2. VET providers offering training opportunities in agriculture;
3. Policy-makers, more specifically ministries, labour institutes, accreditation agencies professional associations, and research centres.

This includes – of course – the project consortium and the EACEA.

### 1.3 TERMS AND DEFINITIONS

| ACRONYMS | DEFINITION   |
|----------|--|
| ACT      | Agricultural Alliance for Competence and Skills based Training |
| AIAB     | Italian Association for Organic Farming                        |
| AK       | Agro-Know Technologies   |
| BIBB     | Bundesinstitut für Berufsbildung                               |
| CSA      | Competence/skills area   |
| DLG      | DLG-Akademie   |
| EC       | European Commission  |
| ECVET    | European Credit system for Vocational Education and Training   |
| ENAPRA   | Ente Nazionale per la Ricerca e la Formazione in Agricoltura   |
| EQF      | European Qualifications Framework                              |
| IFSAT    | International Foundation for Sustainable Agriculture Training  |
| PACT     | Pathways for Agricultural Competence and skills based Training |

|             |   |
|-------------|---|
| <b>TEIA</b> | Technical Educational Institute of Athens |
| <b>UDE</b>  | University of Duisburg-Essen              |
| <b>VET</b>  | Vocational Education and Training         |

## 2. COMPETENCE MODELS & FRAMEWORKS

This chapter will introduce the terms “competence”, “competence models” and “competence frameworks” and their place in education, certification and performance. The word competence (competency, competent) has its origin in the Latin verb “competere” which means: “to be suitable”, “to comply” or “to meet”.

### 2.1 DEFINITION OF COMPETENCES

The concept of competence has wide application in defining performance, and certainly in vocational education and training it is a critically important concept. According to the EQF Recommendation, competence means

**“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”.**

In other words: competence (or competency, which is often used as a synonym) is the ability of an individual to do a job properly. A competency is a set of defined behaviours that provide a structured guide enabling the identification, evaluation and development of the behaviours in individual employees.<sup>1</sup>

### 2.2 COMPETENCE MODEL ELEMENTS

According to Stracke (2011) Competence development consists of four processes that are building a continuous improvement cycle in the philosophy of the Total Quality Management plus the analysis and definition of the context conditions and competence strategy:

- (1) Competence context and analysis;
- (2) Competence description;
- (3) Competence measurement;
- (4) Competence building;
- (5) Competence evaluation.

Competence modelling combines the two processes competence description and competence measurement but not completely as the first definitions of the competence description are related to the general structure and thus they are not dealing with competence modelling.

The relations between the four processes and the context analysis are shown in the following diagram:

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<sup>1</sup> As defined, the term "competence" first appeared in an article authored by Craig C. Lundberg in 1970 titled "Planning the Executive Development Program". The term gained traction when in 1973, David McClelland, Ph.D. wrote a seminal paper entitled, "Testing for Competence Rather Than for Intelligence". It has since been popularized by one-time fellow McBer & Company (Currently the "Hay Group") colleague Richard Boyatzis and many others. Its use varies widely, which leads to considerable misunderstanding.

## Phases of Competence Development

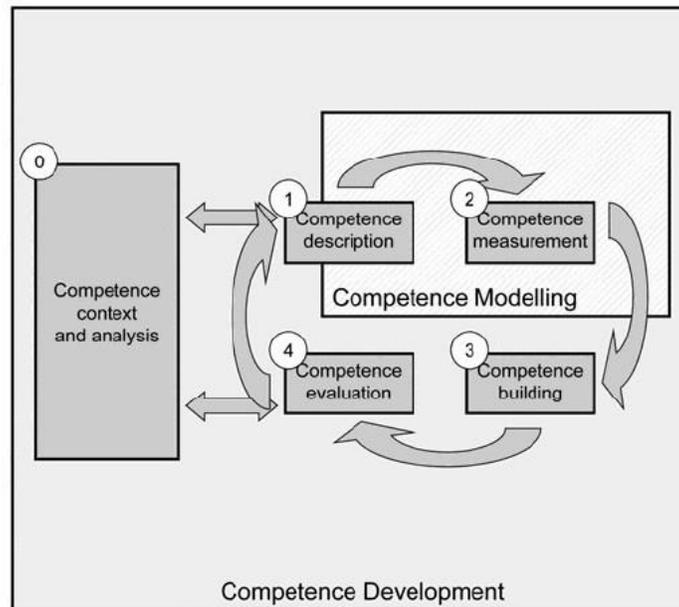


Figure 1: competence modelling within competence development cycle

Competence models underlie the coherent and consistent construction of competence structures or frameworks for a broad range of stakeholder groups, as analyzed in the previous section: Employers can make use of them in order to identify specific competences relevant to their organisations; perform job analysis and profiling; undertake gap analysis of competences within their work-force. Work-based learners, individually or within enterprises, can claim acquired competences and/or identify desired competences, skills, and knowledge that are addressed and supported by a VET offering. On that basis, learners are able to select the VET that best fits their personal needs. VET providers, as well as employers, can benefit from easier access to their opportunities by learners from other countries, through the more integrated competence market, allowing employers as well as individuals to compare more easily existing professional training and certificates, in particular from abroad. Professional or other bodies can use competence models to ensure that the occupational frameworks they create are consistent with other frameworks, and have the structure and coherence needed for use with ICT systems.

A competence model that contributes to the development of competence therefore has to consist of 2 elements:

- Description of competencies
- Description of ways to measure or assess these competencies.

More specifically a competence model consists of:

- a model for the description of competences, including level attribution
- a model for the representation of the competence structure, including the definition of levels within a framework.

A competence model enables framework and system developers to describe and share definitions and structures in a wide range of educational and employment contexts.



## 2.3 COMPETENCE FRAMEWORKS

Within this work a Competence Framework is perceived as a structured collection of sector or organization specific competences. Competence frameworks define the categories and mixture of competences required to demonstrate explicit professional characteristics.

## 2.4 APPROACHES TOWARDS COMPETENCES IN AGRICULTURAL VET

The objective of vocational education and training is to prepare young persons for a working life, with possibilities of taking further education and building a career as well as to give them knowledge, experience and a personal background that allows them to act and operate within society at large.

In order to prepare a person for a working life one has to know two things:

- what kind of working life has this person elected for him/herself?
- what will be required in this particular selected working life from this person?

In other words: in order to design vocational education one has to know the practice within the sector.

For details and examples, please see D2.1, “ANALYSIS ON AGRICULTURAL COMPETENCE MODELS AND JOB PROFILE DESCRIPTIONS”.

## 2.5 COMPETENCES AND LEARNING OUTCOMES

**Competence** is an educational term relating to the skills, behaviours and knowledge that are necessary to be successful. This can be applied to successful completion of a course or success in a chosen career field.

- Competences are obtained or developed during the process of learning by the student/learner.
- They represent a dynamic combination of knowledge, understanding, skills and abilities. Fostering competences is the object of educational programs.

**Learning outcomes** [or learning objectives] are more specifically targeted to the educational outcomes of a lesson or a course.

Learning outcomes:

- are formulated by the academic staff or qualified external organizations on the basis of input of stakeholders.
- are statements of what a learner is expected to know, understand and/or be able to demonstrate upon completion of a course, unit or learning period.
- specify the requirements for award of credits or diploma.

So, a learning outcome is a statement to which a learner has to comply in order to earn a credit or diploma. A [related] competence to this specific learning outcome will describe the successful application of this learning outcome in a job or career.

## 2.6 LEARNING OUTCOMES VS COMPETENCES

An area of confusion is often the relationship between learning outcomes and competence.

This distinction between learning outcomes and competence is made clear in the EQF Recommendation as evident from the above mentioned definitions.

Competence-based qualifications take into account the influence of the learning (or working) context when learning outcomes are defined and assessed. This context has a strong influence on the range of learning outcomes that are considered important, the interaction between them, the way the learner learns, how the outcomes are assessed and most importantly, the value attached to qualifications in the field.

The competence approach is closely associated with a view of individuals as (potential) parts of the labour force and a commitment to optimising the individual's efficiency in a job, i.e. the economists' approach. In contrast, the term learning outcomes may also embrace general knowledge and ethical, cultural, and social skills that go beyond the needs of the labour market. Some types of learning outcomes may not be able to satisfy this requirement for contextual specification for example, those defining curricula in general education.

Competences are therefore closer to characteristics of a person that are shown in action.

## 2.7 CONTEXTS OF LEARNING OUTCOME AND COMPETENCE USE

Learning outcomes and competences (LOC) are leveraged in different contexts and for different purposes. More specifically,

- In the **Educational** context, learning outcomes are expressed in curricula, modules, course descriptions, educational standards, qualifications and assessment standards.
- In the **Labour** context, competences are embedded in occupational standards and profiles, job profiles, job advertisements, performance measurement/appraisal systems, and recruiting systems.
- In the **Guidance** context, information about learning outcomes is present in educational guidance systems and competences in occupational and job information.
- In the **Personal** context, people communicate about learning outcomes through curriculum vitae or personal competence profiles.

In each context, specific instruments and standards are defined on the basis of LOCs.

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## OCCUPATIONAL PROFILES

Occupational profiles are produced by several methods and help to define an occupation, job or task. They describe the competences that are essential in the work setting and so are almost always written as outcomes. They usually specify the professional tasks and activities the holder of a qualification is supposed to be able to carry out and the competences needed for that purpose.

Occupational profiles can be considered to be a description of the basis of learning outcomes for training and learning at work.

In occupational profiles the context in which these standards are to be performed, is specified in some detail, therefore they can be regarded as competences. It is in this setting that learning outcomes and competences are close in meaning.

The occupational profiles are used for many purposes beyond forming the basis of training curricula and qualifications. They are tools for companies to use in defining the company structure, work practices, worker appraisal and training needs, etc.

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## CURRICULA AND TRAINING PROGRAMMES

Curricula are statements of intentions: learning outcomes in curricula can define overall goals, specific outcomes of a learning programme or specific outcomes of a module. They can be written by and for teachers and institution managers and use the language of pedagogic experts and subject disciplines or the language of the learner. Learning outcomes tend to be associated with the latter and they explain to a potential learner what they are expected to know, understand and be able to do at the end of the programme (or module).

Learning outcomes statements need to be unambiguous and specific. Complicated sentences hinder the understanding of learners, teachers and assessors. Learning outcomes must also be realistic and achievable in the time allocated to a module or programme. This means that appropriate teaching and learning methods must be applied. Learning outcomes must be capable of being assessed (through the use of assessment criteria and assessment methods) and open to the possibility of being demonstrated by learners that have not participated in a specific learning programme. When writing learning outcomes a key consideration is how the achievement of the learning outcome will manifest itself, how can this be observed or how the student can demonstrate their learning.

The occupational profiles (in most cases implicit) or the requirements of the labour market play a crucial role in the formulation of training curricula and related qualifications. It is important for employers, together with persons from education and training, to jointly define the requirements for a skilled worker typically holding a specific qualification. These requirements can then be phrased as competence targets (with a strong emphasis on the skills dimension). The learning outcomes for the qualifications and for its modules are formulated.

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## QUALIFICATIONS

In the context of the EQF Recommendation, qualification is understood as:

‘A 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’

Many factors are considered important in defining qualifications. Most important is a simplified picture of a profile of learning outcomes. Also important is a signal of the relative level and value of specific learning experiences (such as learning in a job or in a specialist university faculty). Qualifications descriptors describe the learning outcomes that learners should have achieved at the ‘end point’ of that qualification.

The use of learning outcomes for describing/defining qualifications is crucial for several reasons. The most important is that they bring transparency to what the qualification stands for in the labour market or for future learning. Another important reason is that learning outcomes can bring coherence between standards, curricula and assessment criteria.



### 3 THE PACT FRAMEWORK

The “Pathways for Agricultural Competence and skills based Training – PACT” competence framework aims to describe in a comprehensive way the competences and skills that might be relevant in the agricultural domain when innovation and management are concerned. Thus, it defines a coordinate system with two axes that provides a simplified description of all possible competence profiles with respect to innovation and management.

#### 3.1 PACT STRUCTURE

The “Pathways for Agricultural Competence and skills based Training – PACT” competence framework is structured on two dimensions. These dimensions reflect different areas and proficiency levels and are specified as follows:

**Dimension 1:** Seven competence/skills areas (CSA) from the sectors “management” and “innovation”:

1. Systemic, holistic thinking and sustainability
2. Self-management
3. The capacity for interaction
4. Organic farming
5. Technical and scientific innovation
6. Further agriculturally related sources of income (incl. renewable energies)
7. Business administration/management

These CSAs can be subdivided on two more levels; in general (and for the purposes of ACT) the first and second level are used; the third level – where mapped - can be used to map more in detail some of the second level competences (see chapter 3.2); it can also be defined individually according to the respective needs and situation.

**Dimension 2:** Eight performance levels (similar to “school grades”) that indicate the proficiency within each CSA including – where required – a description to which level of knowledge, skills and competences they correspond to; these levels are loosely associated with/derived from the level descriptions of the EQF (see chapter 3.3).

#### 3.2 DIMENSION 1 – COMPETENCE/SKILLS AREAS OF PACT

| Competence/skill                                  | Second level                        | Third level   |
|---|-------------------------------------|---|
| 1. Systemic, holistic thinking and sustainability | a. Derive and implement conclusions | Ad a)<br>i. Collect relevant input / data<br>ii. Process input / data |

|    |   |   |   |
|----|---|---|---|
|    |   |   | <ul style="list-style-type: none"> <li>iii. Derive conclusions</li> <li>iv. Evaluate different possible results</li> </ul>  |
|    |   | <ul style="list-style-type: none"> <li>b. Take views of others</li> <li>c. Estimate possible impact of different actions</li> </ul>   |   |
| 2. | Self-management   | <ul style="list-style-type: none"> <li>a. Self-organisation</li> <li>b. Self-assessment/-reflection</li> <li>c. Self-initiated development</li> <li>d. Self-directed learning</li> </ul>  |   |
| 3. | The capacity for interaction  | <ul style="list-style-type: none"> <li>a. Internal communication towards peers / employees / employers</li> <li>b. External communication towards customers / providers</li> <li>c. Cooperation / teamwork / networking</li> <li>d. Conflict resolution</li> </ul>                              | Ad a) & b)<br><ul style="list-style-type: none"> <li>i. Understand interaction order</li> <li>ii. Command language</li> <li>iii. Control body</li> <li>iv. Handle socio-cultural knowledge/norms</li> <li>v. Handle technology</li> </ul> |
| 4. | Organic farming   | <ul style="list-style-type: none"> <li>a. Organic cultivation</li> <li>b. Change management from traditional to organic farming</li> <li>c. Use of resources</li> <li>d. Other</li> </ul>   |   |
| 5. | Technical and scientific innovation   | <ul style="list-style-type: none"> <li>a. New production technologies</li> <li>b. New processing technologies</li> </ul>  |   |
| 6. | Further agriculturally related sources of income (incl. renewable energies) | <ul style="list-style-type: none"> <li>a. Renewable energies</li> <li>b. Tourism</li> <li>c. Processing of primary products</li> <li>d. Extended commercial activity (e.g. new groups of clients)</li> <li>e. Other</li> </ul>  |   |
| 7. | Business administration/management  | <ul style="list-style-type: none"> <li>a. Process and risk management</li> <li>b. Marketing and distribution</li> <li>c. Concentration, diversification and individualisation</li> <li>d. (Electronic) Resource planning</li> <li>e. Legal issues (e.g. contracts)</li> <li>f. Other</li> </ul> |   |

### 3.3 DIMENSION 2 - PERFORMANCE LEVEL DESCRIPTIONS IN PACT

#### **Level 1: Minimum level**

It requires basic general knowledge as well as basic skills, so that simple tasks can be carried out. Work or study takes place under direct supervision in a structured context. Employees have usually no qualification and require structured support for their own learning.

**Level 2:** Basic factual knowledge of a field of work or study is shown, basic cognitive and practical skills are present 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 is possible.

**Level 3:** Knowledge of facts, principles, processes and general concepts in a field of work or study are shown, a variety of cognitive and practical skills required to accomplish tasks and to solve problems by selecting and applying basic methods, tools, materials and information is present. The responsibility for completion of tasks in work or study is taken over, the own behaviour can be adapted to circumstances in order to solve problems.

**Level 4:** Stands for factual and theoretical knowledge in broad contexts within a field of work or study, as well as a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study. Shows ability a) to exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change, and b) to supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.

**Level 5:** Stands for comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge; also for a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems. Can exercise management and supervision in contexts of work or study activities where there is unpredictable change; can review and develop performance of self and others.

**Level 6:** Stands for advanced knowledge of a field of work or study, involving a critical understanding of theories and principles; also for advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study. Can manage complex technical or professional activities or projects, taking responsibility for decision making in unpredictable work or study contexts; can take responsibility for managing professional development of individuals and groups.

**Level 7:** Stands for 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; also for critical awareness of knowledge issues in a field and at the interface between different fields and for

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. Can manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; can take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.

#### **Level 8: Maximum level**

Stands for knowledge at the most advanced frontier of a field of work or study and at the interface between fields; also for the most advanced and specialized skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice. Can 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.



## 4 OUTLOOK

The ACT project aims to establish a strong connection between job seekers, job providers and training opportunities within the agricultural sector by satisfying the demand for qualified employees and improving the connection between job providers, job seekers and training programs.

The mission of ACT is to support/improve farming business and to help the farming business to face current and future challenges. To do so, ACT provides tools to define competences on agricultural innovations and management. PACT as the main tool is the framework for the introduction and harmonization of competences and their descriptions in agricultural lifelong learning, labour services and policies. Once all stakeholder groups use the same simplified “language” to describe competences, it will be easier to match e.g the competence profile of a job candidate with the requirements of different work places.

The practical application of PACT will be realized in WP3, PACT Online Services Specification & Deployment.

*ACT aims at establishing and sustaining an Alliance for competences and skills based vocational education and training (VET) in agriculture. This alliance will include all relevant stakeholder groups in the agricultural sector, namely the farmers, industry, VET providers and policy makers as well as the labour services within the European agriculture. In such close cooperation, ACT develops a framework, the "Pathways for Agricultural Competence and skills based Training (PACT)" and related training and tools for its implementation and usage. Thus, ACT clearly contributes to the ET 2020's key objective and priority for the continuous development and management of knowledge, skills and competences at the individual and organizational levels. In summary the mission of ACT is to support and improve farming business by tools defining competences on agricultural innovations and management - to finally making lifelong learning and mobility a reality in Europe!*



This project has been funded with support from the European Commission. This communication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.