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Fostering collaborative key-competences for employability through free-licensing & wiki methodologies

Adapting a System of ECVET Collaborative Competences

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This publication have been produced thanks to the contributions of the following authors/institutions:

Rodríguez Illera, J.L, Rubio Hurtado, M.J., Molas Castells, N. (2015) A*dapting a system of ECVET collaborative competences*. Barcelona: Universitat de Barcelona. http://hdl.handle.net/2445/65855

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1. Introduction

In a context of deep economic crisis, the labour market requires new organisational systems and new processes. Among others, we highlight the need to upgrade skills, specifically regarding collaborative procedures and opportunities. Moreover, the Europe 2020 strategy acknowledges that a fundamental transformation of education and training is needed to address the new skills and competences required if Europe is to remain competitive (ET 2020).

Wikinomics is a European project (Lifelong Learning Programme, 2013-2015) that aims to use free-culture and wiki methodologies as the basis for an innovative pedagogical methodology. Furthermore, Wikinomics is focused on vocational education that prepares people for specific careers at various levels. By adapting core competences and other data identified within the Wikiskills project, participants from different countries and vocational education sectors will validate the framework, modules and tools adapted to current and future labour market needs.

Specifically, the Wikinomics project aims to:
1. Create a transversal, multi-sectoral key-competences model compliant with the ECVET (European Credit System for Vocational Education and Training) framework, and provide specific tools and methodologies for its implementation;
2. Develop, implement and evaluate a training module especially designed to meet VET requirements in a range

of sectors, which integrates free-culture and wiki-based methodologies in order to foster the development of key competences for employability.

3. Create a series of collaborative wiki-based learning scenarios in which VET trainees will conduct meaningful activities in order to achieve shared results and learning outcomes;

4. Create a sustainable community of practices among VET and other training actors, both on a European and international level, helping each other to adopt new socio-economic and pedagogical models.

The project work is organised into seven work packages (WPs). Work package 3 (Adapting a system of ECVET collaborative competences) aims to formalise through ECVET framework practices the learning outcomes of key competences developed through the use of free-licencing and its related wiki-based methodologies, which the project aims to develop and evaluate.

This WP consists of the following activities:

Task 3.1 Adaptation of the key-competences model within the ECVET Framework

This task will consist of turning the wiki key-competences model (as developed in the WikiSkills project) into a learning outcomes model that is compliant with the ECVET.

Task 3.2. Definition of a modular evaluation system for the key competences

This task aims to define a series of criteria and procedures to evaluate the acquisition of key competences developed through the use of free-culture and wiki methodologies. The project will integrate a "badges" approach in order to show recognition of the acquired competences.

2. The ECVET Framework: a brief introduction

As part of the Lisbon strategy, European member states have common objectives in order to improve their education and training systems. The European Credit System for Vocational Education and Training (ECVET) is one of the challenges assumed by states. The ECVET promotes mobility and lifelong learning, while creating the potential to recognise, accumulate and transfer the work-related skills and knowledge acquired during a stay in another country or in different situations, in such a way that these experiences contribute to achieving recognised vocational qualifications (Lettmayr, Martin, 2013). This system does not aim to replace national VET (Vocational Education and Training) systems, but rather to increase compatibility between them. In fact, European states began its implementation in 2012 with the support of European institutions.

The need to take into account the full range of individual and collective knowledge, skills and competences is being increasingly emphasised by the educational community in Europe and the ECVET is a good example of the work being done in this respect. Specifically, the underlying principles of the ECVET are the

unitisation of educational systems, the description of qualifications in terms of learning outcomes and the recognition and transferability of learning outcomes acquired through mobility.

Along the same lines of this proposal, European countries must address the need to develop actions in order to plan and direct training, with the aim of adapting educational systems to the needs of the labour market and the population as a whole. Vocational and educational training can be understood as a comprehensive training process in which people are equipped for their professional activity; that is, vocational training provides students with job skills. According to the definition offered by CEDEFOP (1997), vocational and educational training "aims to provide people with knowledge, know-how, skills and competences required in particular occupations or more broadly on the labour market". Moreover, VET facilitates the acquisition of both theoretical and practical qualifications, encompassing all the stages from initial training to lifelong training.

Although both initial and lifelong training can be included under the umbrella of vocational training, lifelong training, as opposed to initial training, is designed for workers in service, in order to adapt their knowledge and abilities to current circumstances, to perfect capacities and to contribute to the development of their career and specific occupation. People who receive this type of training usually have work experience. On the other hand, initial education and training is traditionally associated with young people, before they embark on working life, and is carried out in the initial education system.

3. Key competences

The origin of the discussion on competence can be traced back to 1996 when the Council of Europe defined the term "active citizenship" as the capacity to accept responsibilities, participate in a group of decisions, resolve conflicts in a non-violent manner, and play a part in running and improving democratic institutions." (Gordon, et al. 2013). To understand competences it is necessary to recognise them in the context of real world experiences and to take into account the wide variety of learning opportunities. According to Gordon et al. (2013), competence can be defined as:

> "The ability to successfully meet complex demands in a particular context through the mobilisation of psychosocial prerequisites", and as "the internal mental structures in the sense of abilities, dispositions or resources embedded in the individual in interaction with a specific real world task or demand."

In order to determine how education and training can adequately prepare learners for life and jobs, it is necessary to determine which competences are relevant. Studies such as "The future of learning: new ways to learn new skills for future jobs" or the report "The Future of learning: Preparing for Change" by Redecker et al. (2011) conclude that personalisation, collaboration and informalisation (informal learning) will be at the core of learning in the future. Likewise, Lehtinen et al. (1999) point to a future scenario in which personalisation, collaboration and lifelong learning will be the most important factors.

Due to a fast-moving and constantly changing labour market and economic framework, key competences are becoming more important; indeed, they are already crucial in order to participate in working, social and civic life. Key competences are those which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment (European Commission, 2006). They can all contribute to a successful life in a knowledge society and can be understood as follows (Gordon et al. 2013): "they are multifunctional; they are transversal across social fields; they refer to a higher order of mental complexity which includes an active, reflective and responsible approach to life; and they are multidimensional, incorporating know-how, analytical, critical, creative and communication skills, as well as common sense."

4. Key competences in the ECVET framework

Fostering lifelong learning involves providing a complete education, covering the basic knowledge and competences necessary in today's society. The European Framework of Key competences for Lifelong Learning defines key competences as knowledge, skills and attitudes applied appropriately to a given context. Key competences represent a multifunctional, transferable package that includes knowledge, skills and attitudes that all individuals need for personal fulfilment, inclusion and employment (European Commission, 2010). Key competences, as a combination of the three aforementioned areas, are fundamental for everybody in a knowledge-based society. These

competences add value in the labour market and in the field of social cohesion and active citizenship by providing flexibility, adaptability, satisfaction and motivation. Moreover, in order to encourage the development of key competences, all educational actors (learners, teachers and communities) should be supported in developing new concepts through innovative, non-traditional avenues and venues in which learning can take place.

Within this framework eight key competences are defined by the European Commission, (2006):

1. **Communication in the mother tongue**: the ability to express and interpret concepts, thoughts, feelings, facts and opinions in both oral and written form and to interact linguistically in an appropriate and creative way in a full range of societal and cultural contexts; in education and training, work, home and leisure.

2. **Communication in foreign languages**: shares the main skill dimensions of communication in the mother tongue, mediation and intercultural understanding. It also calls for skills such as mediation and intercultural understanding.

3. **Mathematical competence and basic competences in science and technolog**y: the ability to develop and apply mathematical thinking in order to solve a range of problems in everyday situations. Use and application of knowledge and methodologies that explain the natural world.

4. **Digital competence:** Critical use of information society technology and thus basic skills in information and communication technology (ICT).

5. **Learning to learn:** the ability to pursue and organise one's own learning in accordance with one's needs.

6. **Social and civic competences**: the ability to participate in an effective and constructive way in social and working life.

7. **Sense of initiative and entrepreneurship**: the ability to turn ideas into action. It involves creativity, innovation and risk-taking, among others.

8. **Cultural awareness and expression**: the ability to appreciate the importance of the creative expression of ideas, experiences and emotions in a range of media.

Although these competences include traditional ones, such as communication in the mother tongue, the last five competences are considered transversal: digital competence, learning to learn, social and civic competence, initiative takings and entrepreneurship and cultural awareness and expression.

This framework is designed as a reference tool for EU countries. Most of these countries are in the process of updating their vocational education and training systems in order to achieve the defined educational objectives. The European Credit System for

Vocational Education and Training facilitates the accumulation and transfer of credits for learning outcomes from one qualifications system to another. One of the main goals is transnational mobility, in order to achieve better comparability and compatibility among them. For example, within the ECVET it is possible to recognise, accumulate and transfer the work-related skills and knowledge acquired during a stay in another country so that these experiences contribute to building up recognised vocational qualifications.

There are certain technical components of the VET framework that facilitate the organisation of training methodology. VET content is organised on the basis of:

- **Qualification design**: this includes units of learning outcomes as a qualification component, consisting of a coherent set of knowledge, skills and attitudes that can be assessed and validated. There are several initiatives to assess learning outcomes, among which credit points are used as a tool to distribute numerically the importance of each unit in relation to the qualification.

- **Accumulation process of learning outcomes**: this process is based on the assessment, validation and recognition of learning outcomes. Various tools can facilitate this evaluation. Among others, in this project we highlight accreditation tools based on badges, which can help engage students in learning, and broaden the avenues for learners of all ages to acquire and demonstrate their skills,

as well as the recognition of soft competences that are not recognised by formal education. Moreover, assessment based on badges facilitates the transfer and recognition of competences between scenarios. A digital badge is a representation of an accomplishment, interest or affiliation that is visual, available online, and contains metadata including links that help explain the context, meaning, process and result of an activity (Gibson, 2013). Open Badges are closely related to the ECVET framework, considering that a badge can serve to communicate learning across the peer, interest and learning contexts of one's life. In the Wikinomics project, collaborative skills are closely related to Open Badges because OB can help to display, recognise and validate different skills and professional credentials, which are not normally recognised in a VET context or even in a professional framework.

The approach of this project emphasises the importance of understanding that, within the key competences defined above, collaboration strategies are essential. The development of these competences is fully coherent with the ECVET framework. They are both based on a socio-constructivist approach in which learners are at the core of the teaching and learning processes that take place beyond time and space limitations.

5. Collaborative key competences

As a result of the WikiSkills analysis, a set of ten competences have been identified which can be fostered through the adoption of the wiki culture. The link between this framework and the Key Competences for Lifelong Learning is noteworthy, considering, for example, that the acquisition of key competences is closely related to the principles of equality and access for all. This is relevant in the 21st century where the context, especially the economic one, is constantly being restructured and the need for qualified staff in certain sectors is growing.

The Wikiskills training approach identifies a set of key competences that are promoted through the use of wiki environments in educational settings. Key wiki competences are presented in the list below:

- **Creativity and innovation**
  - Elaborate, refine, analyse and evaluate one's own ideas
  - Develop and communicate new ideas to others effectively
  - Become open and responsive to new and diverse perspectives
  - View failure as an opportunity to learn

- **Critical thinking, problem solving, decision making**
  - Examine, analyse and evaluate ideas, arguments, and beliefs
  - Compare alternative points of view
  - Present arguments

- **Learning to learn**
  - Self-manage and reflect critically on learning processes, objects and purposes

- **Communication**
  - Express with clarity and awareness of audience
  - Write, read and understand in mother tongue
  - Write, read and understand in additional language
  - Monitor the writing process (from drafting to proofreading)
  - Formulate arguments in a convincing manner

- **Collaboration**
  - Interact effectively with others
  - Read others' contributions with patience and honesty
  - Work effectively in diverse teams, respecting social and cultural differences
  - Guide and lead others (teachers' roles)
  - Find where and how to contribute, and place abilities at the service of a common objective

- **Information literacy**
  - Access and evaluate information critically and effectively
  - Manage information from a variety of sources
  - Apply a fundamental understanding of the ethical and legal issues
  - Know how to use the information by creating or using the structure created in the wiki environment

- **ICT literacy**
  - Access and evaluate ICT tools critically and competently

- **Citizenship, local and global**
  - Display solidarity by contributing to the local or wider community
  - Contribute to the construction of common goods

- **Life and career**
  - Adapt to change, operating in varied roles and responsibilities
  - Be flexible, incorporating feedback effectively and negotiating diverse views and beliefs to reach workable solutions

- **Personal and social responsibility**
  - Show interest in and respect for others
  - Be willing to overcome stereotypes and prejudices
  - Be open to compromise
  - Be sensitive to cultural differences
  - Resistance to stereotyping and positive attitude towards inter-cultural communication

In the Wikinomics project, these Wikiskills competences are adapted within an ECVET framework, with the aim of contributing to the development of team-working methodologies, mainly focused on:
- Digital competence
- Learning to learn
- Interpersonal, intercultural and social competences
- Civic competences
- Entrepreneurship

6. Adapting a system of ECVET collaborative competences step by step: a proposal

As has been the case since 2005 with the European Credit Transfer and Accumulation System (ECTS) in higher education, most European countries are currently moving towards a convergence of credit for VET. As mentioned above, one of the main goals of the ECVET and other similar initiatives in Europe is to foster the recognition and valorisation of learning outcomes between countries and/or contexts. This "transparency" of

qualifications needs to be based on an approach that enables qualifications to be defined in terms of learning outcomes, which ensures a better understanding of qualifications and learning achievements across contexts and even across countries. Moreover, specific procedures and criteria should be defined and taken into account when designing VET scenarios.

1) Indicators to develop collaborative competences

The first step when it comes to designing assessment tools based on competences is the development of indicators that display certain operating conditions. Following assessment, indicators have been developed in order to create, in partnership with AEF (Agence Éducation Formation), a complete evaluation process. In the previous stages of the project we identified a set of ten competences and defined levels of proficiency for each competence that can be applied in all VET families. These indicators define each of the competences and can form the basis for the design of assessment tools such as questionnaires or rubrics. Qualitative dimensions can be measured through these indicators; for example, attitudes such as the behavioural changes before and after the training towards the importance of wiki methodologies or key competences.

Indicators, dimensions for each competence:

Creativity and innovation	Show originality
	Develop original products (giving details)
	Show flexibility and fluidity in brainstorming (viable and varied ideas)

Table 1. Indicators creativity and innovation

Critical thinking, problem solving, decision making	Identify problems or ideas
	Interpret the elements that are part of the problems
	Identify main points of an idea or argument
	Analyse the arguments of the problem
	Suggest solutions to problems or conflicts
	Compare alternative points of view regarding the same situation

Table 2. Indicators critical thinking, problem solving, decision making

Learning to learn	Be aware of one's own abilities and knowledge
	Ask questions related to the knowledge, activity or ability under development
	Provide possible answers to questions related to the process of learning
	Learn individually or in groups
	Apply new knowledge to other similar situations
	Know how to transform information into personal knowledge
	Set achievable goals
	Show desire to learn and perseverance in learning
	Plan and organise activities and times
	Know and use a variety of sources of information
	Manage resources and itellectual work techniques efficiently

Table 3. Indicators learning to learn

Communication	Express arguments in the mother tongue
	Show oral and written comprehension in the mother tongue
	Know and apply spelling rules
	Produce texts with consistency and appropriateness to specific context
	Produce text with consistency and appropriateness to audience

Table 4. Indicators communication

Collaboration	Set common group goals
	Promote reinforcement of group members
	Interact with others through proactive support
	Set distributed responsibilities
	Show mutual respect
	Promote individual responsibility toward the task itself (placing skills at the service of a common goal)
	Interact with others using helpful strategies
	Manage personal responsibility towards one's own tasks
	Appreciate others' contributions
	Respect social and cultural differences
	Respect social and cultural differences
	Be culturally sensitive
	Acknowledge the work of others
	Promote self-reflection (to make decisions, adjust and improve)

Table 5. Indicators collaboration

Information literacy	Be aware that information is needed
	Be aware of what type of information is required for a specific goal
	Be able to identify what resources are available, and where and how to access them
	Be able to identify where and how resources are available
	Analyse and work with the information to provide correct research results
	Understand the need to evaluate the results (authenticity, accuracy)
	Be able to present correctly the information found
	Develop new knowledge and understanding
	Have ethics in the use of information
	Use the information responsibly
	Communicate and share results
	Manage what is found (namely store and manage the acquired information)

Table 6. Indicators information literacy

ICT literacy	Promote the use of computers
	Promote the use of programmes for specific tasks
	Manage devices and digital work environments
	Understand and use devices for particular contexts and goals
	Show and create knowledge in various specific languages: textual, numerical, iconic, visual, graphic and audible
	Communicate through current resources e-mail, social networks, rss
	Use collaborative tools: wikis, blogs, networks
	Manage what is found (namely store and manage the acquired information)

Table 7. Indicators ICT literacy

Life and career	Adapt to change by operating in varied roles and responsibilities
	Be flexible in order to incorporate feedback effectively
	Negotiate diverse views and beliefs to reach workable solutions

Table 8. Indicators Life and career

Citizenship, Local and Global	Know social reality, its operation and its history
	Know fundamentals of participation of democratic society
	Know rights and duties of citizenship
	Recognise personal strategies for conflict resolution
	Promote coexistence

Table 9. Indicators citizenship, local and global

Personal and Social Responsibility	Show interest in and respect for others
	Be willing to overcome stereotypes and prejudices
	Be open to compromise
	Be sensitive to cultural differences
	Promote resistance to stereotyping and a positive attitude towards intercultural communiction

Table 10. Indicators personal and social responsibility

2) Designing learning outcomes

Competence frameworks that serve for validation usually propose identify reference competence levels. The table below identifies the key wiki competences and describes them in levels, with the aim of defining three different qualification profiles for each competence. The term "qualification profile" is related to outcomes, obtained when the learner achieves the objectives described, frequently determined by indicators or standards. In this respect, it is important that the outcomes are correctly documented in order to support the validation and usefulness across contexts. Learning outcomes can be achieved in formal, non-formal and informal learning contexts.

The levels of proficiency in which following outcomes are organised are "beginner", "intermediate" and "expert", and describe what a student should know, understand and be able to do in order to develop each competence. The identification of reference levels serves for validation purposes since they are closely related to assessment systems (formal or non-formal and informal learning). The main reason to establish these three levels is to solve the diversity of levels of proficiency that each professional needs or wishes to achieve, considering that the Wikinomics project aims to implement and evaluate training modules in different sectors and specificities. These three levels are characterised as follows:

- **Beginner:** the student is able to demonstrate understanding of facts and ideas by organising, comparing, translating, interpreting, giving descriptions and stating the main ideas of a problem, situation, idea, etc.
- **Intermediate:** the student is able to apply acquired knowledge, facts, techniques and rules in a different way and examine information to identify causes, making inferences and finding evidence.
- **Expert:** the student is able to compile information in a different way by combining elements in a new pattern or proposing alternative solutions, and presents and defends opinions by making judgements about information, validity of ideas or quality of work based on a set of criteria.

Competence standards are focused on the application of skills underpinned by professional values. The type of competences described as learning outcomes desired at the end of a period of learning must be under permanent review in terms of if and how to measure them. They can be applied in all VET professional families; that is why they are somewhat generic in nature, in order to make their implementation more straightforward, first of all in Wikinomics partner countries and then on a European level:

Competence	**Creativity and innovation**
Beginner	- Is able to provide new ideas to solve a problem - Is able to specify an application of the idea, but does not provide details for their implementation
Intermediate	- Is able to provide new ideas to solve a problem but not always from different perspectives - Is able to specify different applications of the idea and provides details for their implementation
Expert	- Is able to provide several new ideas (unconventional and from different perspectives) to solve a problem - Is able to provide different applications of the idea for specific contexts, providing details to implement them and making connections between previously unrelated notions

Table 11. Learning outcomes creativity and innovation

Competence	**Critical thinking, problem solving, decision making**
Beginner	- Is able to identify and summarise the problem, dilemma or situation - Is able to support some recommendations with very few arguments or evidence
Intermediate	- Is able to gather, sort and apply key information to explain in detail why and how problems exist - Is able to support recommendations arguments and offers some realistic and non-superficial evidence
Expert	- Is able to persist in gathering information, looking beyond the obvious and searching for hidden problems, and does not stop at the first answer to identify and explain problems - Is able to use a combination of logic, analysis, experience, wisdom, advanced methods and other resources to create effective and innovative solutions to problems

Table 12. Learning outcomes critical thinking, problem solving, decision making

Competence	**Lean to learn**
Beginner	- Is able to show awareness of his/her skills and knowledge - Is able to identify learning processes but not to manage the knowledge and skills
Intermediate	- Is able to show awareness of his/her skills and knowledge, maintaining curiosity and interest in new developments and skills - Is able to manage and control skills and knowledge - Is able to manage some resources and intellectual techniques, although not always efficiently (search and selection of appropriate information, writing information, etc.)
Expert	- Is able to show awareness of how and why he/she acquires and processes different types of knowledge - Is able to choose the learning methods and environments that are most effective for him/her - Is able to manage efficiently a set of resources and intellectual work techniques (search and selection of appropriate information, abstracts, maps, writing information, etc.)

Table 13. Learning outcomes learn to learn

Competence	**Communication**
Beginner	- Is able to express and interpret (both orally and in writing) concepts, thoughts and feelings, facts and opinions - Is able to construct appropriate messages considering the needs, knowledge, culture and expectations of target audiences while observing ethical standards
Intermediate	- Is able to express and interpret thoughts and feelings, facts and opinions in a full range of contexts - Is able to construct appropriate messages for a variety of contexts considering the needs, knowledge, culture and expectations of target audiences while observing ethical standards
Expert	- Is able to express and interpret thoughts and feelings, facts and opinions in different contexts with specific or technical vocabulary, being aware of the impact of language - Is able to construct appropriate messages for a variety of contexts, taking into account the needs, knowledge, culture and expectations of target audiences while observing ethical standards, and to put forward clear arguments for ideas

Table 14. Learning outcomes communication

Competence	**Collaboration**
Beginner	- Is able to work with positive interdependence: takes collective responsibility - Is able to seek positive interactions with others, working actively with others within the team to solve work-related problems or to achieve team goals - Is able to demonstrate some social skills: is open and honest with colleagues and treats people fairly and with respect
Intermediate	- Is able to work with a medium degree of positive interdependence: promotes collective responsibility and encourages the sharing of information, ideas, etc. - Is able to seek positive interactions with others, encouraging others to contribute to the planning of work - Is able to demonstrate social skills: acts as a role model for excellence in team working and understands the needs of others
Expert	- Is able to work with a high degree of positive interdependence: builds effective relationships and shares information and ideas within and across teams - Is able to establish positive interactions working actively with others, being aware of the full range of talents within the team - Is able to demonstrate social skills and always apply them: is honest with colleagues, is responsive to the needs of others, takes time to support team members and treats people fairly and with respect

Table 15. Learning outcomes collaboration

Competence	Information literacy
Beginner	- Is able to recognise his/her information needs - Is able to define the nature of the information needed - Is able to identify the value and differences of the information found - Is able to determine the nature of the information
Intermediate	- Is generally able to recognise his/her informational needs - Is able to access, evaluate and use the information needed effectively and efficiently. - Is able to analyse, process and communicate the information found - Is able to critically evaluate information and its sources
Expert	- Is able to recognise his/her specific informational needs - Is able to access, evaluate and use information, and to incorporate selected information within his/her knowledge - Is able to analyse, process and communicate the information found, taking into account many of the ethical, legal and socio-economic issues surrounding the information Is able to identify and discuss issues related to privacy, security, freedom or property, among others

Table 16. Learning outcomes information literacy

Competence	**ICT literacy**
Beginner	- Is able to perform basic tasks using computers and software, adding content to and making simple changes to existing information products - Is able to implement the most commonly used file management and software commands when instructed - Is able to recognise and identify the most commonly used ICT terminology and fuctions
Intermediate	- Is able to use different ICT resources: editing content for the web, social networking, advanced searches in databases, downloading and uploading files to the web, etc. - Is able to use conventionally recognised software commands to edit and reformat information products - Is able to recognise common examples in which ICT misuse may occur and suggest ways of avoiding them
Expert	- Is able to make intensive and advanced use of ICTs: uses a computer for different purspuses (playing games, downloading files, searching for information, etc.) and masters collaborative tools (wikis, blogs, uploading videos to YouTube or similar) - Is able to create information and to enhance the appearance of information products - Is able to create and share information products consistent with the conventions of specific communication modes and audiences

Table 17. Learning outcomes ICT literacy

Competence	**Life and career**
Beginner	- Is able to recognise and develop his/her capacities and interests - Is able to evaluate the impact of his/her decisions to reach workable solutions
Intermediate	- Is able to understand how capacities, interests and attitudes can be transferable to various work roles - Is able to explore alternatives in decision-making situations to reach workable solutions
Expert	- Is able to adapt his/her capacities and attitudes to change in a variety of roles and responsibilities - Is able to show flexibility, incorporating feedback effectively and negotiating diverse views and beliefs to reach workable solutions

Table 18. Learning outcomes life and career

Competence	**Citizenship, local and global**
Beginner	- Is able to recognise the most significant elements, procedures and tools of the digital culture and society - Is able to distinguish different aspects of social, work-related, cultural or political life through associations of institutions - Is able to solve conflicts in a peaceful way
Intermediate	- Is able to recognise digital culture and society, its operations and its rules, but does not know to use this knowledge to exercise his/her rights and duties - Is able to participate in one or several aspects of social, work-related, cultural or political life through associations, institutions or the internet - Is able to manage strategies for conflict resolution
Expert	- Is able to recognise digital culture and society, its operations and its rules, and how to use this knowledge to exercise his/her rights and duties - Is able to monitor, become involved in and influence various aspects of social, work-related, cultural or political life through associations, institutions or the Internet - Is able to manage dialogue and negotiation strategies to resolve conflicts

Table 19 Learning outcomes citizenship, local and global

Competence	**Personal and social responsibility**
Beginner	- Is able to show tolerance and open-mindedness to some cultures, beliefs of ideas - Is able to respect the rights of others, provided they do not go in any way against him/her - Is able to defend justice, provided that it does not harm his/her own interests
Intermediate	- Is able to show tolerance and open-mindedness to other cultures, beliefs or ideas - Is able to respect the rights of others - Is able to defend justice and solidarity, taking responsible action to change injustice for himself/herself and others
Expert	- Is able to promote tolerance to other cultures, beliefs or ideas - Is able to participate in a volunteering initiative or to be engaged in service projects - Is able to create ethical spaces to engage in dialogue and communitarian thinking

Table 20. Learning outcomes personal and social responsibility

3) Designing assessment and accreditation

This part of the work package aims to define procedures to evaluate the acquisition of key competences. The assessment methodology is based on the competency criteria defined above and on the use of several evidence collection tools in order to match the implementation with the defined learning outcomes. We will also take into account the connection between this evaluation approach and the integration of badges, in order to show recognition of the acquired competences.

As we have said before, the objective of the ECVET is to facilitate the transfer, recognition and accumulation of assessed learning outcomes of individuals who are aiming to achieve a qualification. This is possible because each training action is documented and the learning outcomes it contains can be assessed and validated. As such, learners can:

- Progressively accumulate learning outcomes with a view to achieving a qualification.
- Obtain recognition for learning outcomes achieved in other contexts without new assessment.

Once a learning process is assessed, proving that a learner has achieved the defined learning outcomes, the learner acquires some kind of accreditation. In the ECVET context, this accreditation is based on units and credits. The credit achieved for each unit can be transferred. As such, through the assessment, validation, accreditation and recognition of units, credits can be accumulated and can lead to a full qualification.

This means that units enable the progressive achievement of qualifications through the recognition, transfer and accumulation of learning outcomes. The recognition of units also enables learners to obtain recognition of the learning outcomes achieved in different contexts without the need for reassessment.

In order to analyse in depth the real application of these statements, and as a result of a meeting with the ECVET Belgium national contact from the AEF(Agence Éducation Formation) - which is the agency responsible for the follow-up of all European education programmes-, the assessment approach of this project will be defined from a realistic perspective, taking into account the complexity involved in assessing soft competences within the scope of the ECVET.

In order to develop and assess key competences, several learning design approaches can be used. However, approaches based on interactive learning environments, supporting active learning, are the most coherent with the competence-based approach. From our point of view, assessment cannot be restricted to grades, focusing solely on memorised information, but rather assessment must offer an opportunity to promote competences rather than to merely discover who has the highest level of proficiency (Hall and Burke, 2003). Competence-based assessment makes use of several tools that can be developed for teachers, students or the other agents involved. In this respect, when students gather some experience it can be useful to offer them the possibility of carrying out self-assessment and peer-assessment in order to gain awareness of their own level of

proficiency and what they are able to do. Some examples of these assessment tools are: portfolios, self-reflection activities, reflexive journals, surveys, peer-reviews or quizzes, among others. All of these examples share the same design, based on active and discovery learning, in which students interact with their environments by exploring and handling objects, tackling questions and controversial issues or performing experiments.

We also take into account the connection between this evaluation approach and badges, in order to show recognition of the acquired competences and to apply collaborative methodologies to the designed training modules.

Badges are rooted in gaming environments and are usually used as a reward for completing a task or stage of a video game. A digital badge is a representation of an achievement, interest or affiliation that is visually represented, is available online and contains metadata, such as the issuer identity and criteria for achieving the badge, thus explaining its meaning. It also includes the process and the results of an activity (Gibson, et al. 2013).

The aim of the Open Badge Infrastructure, which is promoted by the Mozilla Foundation, the Peer-to-Peer University and the MacArthur Foundation (2012), is to provide learners with a digital profile or backpack in which to store and visually display knowledge and skills through badges.

Three agents are involved in badge-based assessment:

- Issuer: the institution that accredits the badges
- User: the person who wishes to participate in the project, creating a digital profile
- Displayer: the organisation that joins the project and gives value to badges

In many respects, the OBI (Open Badges Infrastructure) is closely related to the ECVET framework, in the sense that badges can be used to communicate, through peers, interest in different learning contexts. In the Wikinomics project these can help to highlight, recognise and validate key competences.

Through this approach, students can gradually accumulate learning outcomes in order to achieve a qualification or to obtain recognition in the form of a badge that can be transferred to other contexts. The idea of badges, despite being somewhat controversial, is of particular interest in the context of non-formal education.

The standards or criteria established for each key competence are not necessarily related to a badge; that is, each badge is not necessarily directly related to a certain standard. Badges can be linked to a group of activities, adapted to each training programme or even based on experience. In this respect, the open badge system makes it possible to create individual learning pathways since each student can be awarded a badge depending on the completed activity or the developed competence.

Badge stages may be:
1) Badges related to an activity or specific practice, even if it is used for measuring the participant's activity.
2) Badges related to a set of activities that can be directly linked to learning outcomes. Badges can be used to validate and accredit the acquisition of competences which may be evaluated using mainly group or peer assessment tools.

In the Wikinomics project, the open badge infrastructure is used to support the dissemination and evaluation scheme of each training module. Badges will be associated with the learning outcomes acquired online, enabling trainers and trainees to experiment with a new tool of (peer) evaluation in their everyday activities. The Wikinomics project integrates badges designed specifically for each training module, which can be extended or adapted to different implementation countries. In this respect, in the implementation of the training modules, the designed badges will be evaluated by each partner in the context of their respective training activities.

7. Designing, implementing and evaluating activities to foster collaborative competences

One of the goals of the Wikinomics project is to create and implement a training module to foster collaborative competences in a framework of vocational and educational training. A template to facilitate the creation of training actions is explained in detail below. This proposal has been created in order to be adapted to the needs of each context, whether it forms part of the Wikinomics project or not, being a tool designed for the sustainability of the project.

These guidelines have been designed based on the considerations set forth above with the purpose of becoming a practical tool in order to facilitate the work or trainers and teachers in the introduction of the Wikinomics approach and collaborative competences in formal curricula or other informal training activities.

In our proposal, we identified an initial common section of the training design, which is directly related to the Wikinomics approach, fostering collaborative competences. The second level of definition includes a specific section that must be completed by the teacher or trainer depending on the characteristics of the context, learning outcomes and assessment. This matrix is an exploratory template proposal that can be adapted to different contexts and case studies:

First level of definition (common)	
Competence	Criteria to describe the competence

Table 21a. Training design: first level of definition

Second level of definition			
Learning outcomes	Activity or task	Assessment criteria for teachers	Accreditation or certification

Table 21b. Training design: second level of definition

Competence

According to the objectives defined by the Wikinomics project, and taking into account the competences identified in the previous Wikiskills project, we aim to focus on the competences which, in line with the criteria established by the European framework for vocational training, are directly related to employability and the development of collaborative scenarios. As such, the identified competences are as follows: creativity and innovation, critical thinking; problem solving, decision making; learning to learn; communication; collaboration; information literacy; ICT literacy; citizenship, local and global; life and career; personal and social responsibility.

Criteria to describe the competence

In order to plan a learning scenario it is necessary to specify what we commonly understand by collaboration, communication or any other competence; in other words, the criteria which from our point of view define the meaning of each of the competences. Section

6.1 of this document establishes the dimensions of the developed competences.

Learning outcomes

This is the first part of what we have called the "second level of definition". This section must be designed taking into account the specific context of the application. Learning outcomes should be based on students, their previous training, course duration, etc.. In order to facilitate the design of this matrix column, in section 6.2 of this document we have designed learning outcomes on three different levels, associated with collaborative skills. These core learning outcomes are designed with the aim of being easily identified.

Activity or task

To achieve learning outcomes it is necessary to stimulate students and pose challenges or tasks that allow them to put into practice their prior knowledge and expand it in order to achieve further learning outcomes. Meanwhile, it is essential to establish clear learning objectives through the activities or tasks if the teaching and learning process is to be successful. At this point, the designed activities designed must be coherent and closely related in order to implement and put into practice collaborative competences. The number and complexity of activities may change depending on the defined learning outcomes defined. However, more than one activity is always needed to achieve a learning outcome completely.

Assessment criteria for teachers

The assessment criteria for teachers are the indicators than help teachers to evaluate the achievements of students, related to what is expected and learning outcomes. Indicators are intended to serve as a guide for teachers, in order to determine the achievement of learning outcomes in respect of activities.

Accreditation or certification

When the activities are assessed it is necessary to establish accreditation. The recognition of achieved learning outcomes enables learners to obtain accreditation that can be recognised in different contexts without the need of reassessment. Various accreditation options and strategies exist, one of which is the open badges approach, which, as explained above, may constitute a suitable mechanism for the accreditation and recognition of collaborative competences in the context of initial and lifelong vocational training.

Example:

First level of definition (common)	
Competence	Criteria
Critical thinking, problem solving, decision making	1. Identify problems or ideas 2. Identify main points of an idea or argument 3. Compare alternative points of view regarding the same situation

Table 22a. Training design example: first level of definition

Second level of definition (specific)	
Learning outcomes	Activity or task
1. Is able to identify and summarize the problem, dilemma or situation 2. Is able to gather, sort and apply key information to explain in detail why and how problems are	1. Show some examples of mind maps 2. Show guidelines to create a mind map: - Start in the center and identify the core topic or central idea - Select keywords and subject branches - Determine hierarchy of sub-ideas - Use symbols to establish connections between key words - Use colors or symbols for encoding or show associations - Determine the structure and a design type to create your mind map 3. Show tools that facilitates mind map creation (software) 4. Create a simple mind map with at least 3 relevant points branching off of it and with one relevant connection betwen topics 5. Submit your work sending a link to your instructor

Table 22b. Training design example: second level of definition

Second level of definition (specific)	
Assessment criteria for teachers	Accreditation or certification
Student is able to: - Identify main ideas - Summarize key words - Establish at least 3 key points - Determine correct structure - Establish coherent connections between ideas (at least one relevant connection between topics) - Choose a design type - Create a mindmap using software or tools - Submit the task before the deadline	Possible Open Badges: - Mind Map Digital Badge - Process knowledge: critical thinking Description: - Demonstrates the ability to identify and analyse keywords and main ideas. - Demonstrates the ability to use key information to explain arguments. - Demonstrates the ability to use mindmapping software or tools

Table 22c. Training design example: second level of definition

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Lifelong Learning Programme - 2013-2015 - Project Number: LEO05-00869

Adapting a System of ECVET Collaborative Competences

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