{WIKINOMICS}

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

Evaluation of training activities: a guide to the Wikinomics project training practices

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1. Introduction

Wikinomics project aims to use free-culture and wiki methodologies as the basis for an innovative pedagogical methodology, specifically focused on vocational education that prepares people for specific careers.

The main objectives of WikiNomics are:

1. Developing a framework of key-competences, transversal to all VET sectors, required for employability and for the environment of the rapidly changing labour market and work life. Key-competences include collaboration, ICT literacy, communication in mother tongue and foreign languages, learning to learn, social and civic awareness, sense of initiative and entrepreneurship.

2. Setting free culture and wiki methodologies as the basis for an innovative pedagogical approach. It will implement learning scenarios in which students use free culture and wiki methodologies, in the context of collaborative common projects, to achieve learning outcomes.

The operational objectives expected to be globally evaluated are:

1. To adapt, formalize and spread a framework of ECVET key-competences developed through the use of free-culture and wiki methodologies;
2. To develop, implement and evaluate a training module for the pedagogical use of free-culture and wiki methodologies in VET contexts;

3. To conduct a series of collaborative wiki-based learning scenarios in which VET trainers will conduct meaningful activities in order to achieve shared results and learning outcomes;
4. To create a sustainable community of practices among VET actors among Europe, including institutions, trainers, trainees,

Following these operational objectives, at the WP3 it has been developed an adaptation of the pedagogical approach developed through Wikiskills project. This adaptation is mainly developed to be coherent with ECVET System and it is closely connected with the first operational objective.

Related with the second goal, WP4 has developed a training module consistent of a selection and implementation of learning units that promote personal and group skills. Under the title "Training Wiki Gardener" a generic learning scenario has been developed which can be implemented in different contexts, in order to initiate participants in aspects of wiki culture.

The work done under the WP4 and, particularly, the development of Wikinomics training module is an ongoing effort and it consists of a major challenge for the Wikinomics project addressing the results of the work under WP3 - Adapting a system of ECVET collaborative key-competences and forms the basis for the deployment of WP5 - Training and implementation of the Wikinomics module.

The main goal of WP5 has been to conduct a series of collaborative wiki-based learning scenarios in which VET trainers will conduct

meaningful activities in order to achieve shared results and learning outcomes

After this process, it is essential to evaluate the implementation and results of the Wikinomics approach, doing an analysis that includes the description of the training activities, the learning scenarios conducted and the results obtained.

Wikinomics implementations and relations with ECVET

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). 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.

The approach of this project emphasises the importance of understanding that 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. Most of these countries that are in the process of updating their vocational education and training systems are in a process to achieve the defined educational objectives.

The Wikinomics project and its pedagogical approach is related with ECVET framework as well as it develops key competences within collaborative strategies using some of the key strategies included in ECVET framework. For example, 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. Or, another example, 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. 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.

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.

Regarding the evaluation and assessment process used in this project, also related with ECVET framework, we highlight the evaluations of the acquisition of key competences. These are understood not as a development of common tools but the criteria for its interpretation, taking into account the complexity involved in assessing soft competences within the scope of the ECVET.

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. From our point of view, assessment cannot be restricted to grades, focusing solely on memorised information, but 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. These tools have been used in all the implementations

2. Description and evaluation of the implementations

The European Credit system for Vocational Education and Training (ECVET), that was introduced as the new European instrument to promote mutual trust and mobility in vocational education and training, acts as a platform of common policies and practices regarding labour, educational and training.

Developed by Member States in cooperation with the European Commission, ECVET has been adopted by the European Parliament and the Council in 2009.

Theoretically, there is a diversity of situations that could be improved by the use of ECVET tools and principles. One of the most clear is learning outcomes, with a focus on supporting national implementation: every implementation should be linked to national developments. Specific ECVET use, reference tools for developing

qualifications based on a common learning outcomes are influenced by the national implementation context.

In this sense, before developing the analysis done of the data collected, is relevant to make note that there are two previous considerations. Firstly, it is important to note that the project main goal is to develop transferable skills that can be applied in different VET sectors. Usually, and in this project that also happens, there are substantial differences between the different contexts of implementation. The second consideration concerns the geographical areas. Different learning scenarios have been designed and used in the Wikinomics project, concretely in the following areas:

- Switzerland: “The road to Wikinomics”
- Poland “Learning how to track changes and limit damage on collaborative websites” and “Tagging and reusing images in a wikinomics way”.
- Portugal “Creating a Small Business: from business model generation to client development”
- France and Zaragoza (as MAC-TEAM coordinate members from all other Europe): “Entrepreneurship and companies innovation”.

Given these two considerations to evaluate the experiences, the methodological approach that has been chosen is the case study (Stake, 1998; Yin, 1994). The case study strategy is based on a research method that involves a process of inquiry characterized by a systematic and in-depth study of cases developed by unique social organizations or education institutions. The purpose of the

case study is to know all parts of the case to create hypotheses or making decisions in a particular natural context.

Considering the aim of the research strategy chosen, we can summarize the types of studies proposed by Yin (1994):

- Descriptive: the purpose is to analyse how a phenomenon occurs within its real context. It presents a detailed report based on the case, without the prior assumptions or theoretical foundation. Generally it provides basic information on programs and innovative practices.
- Exploratory: try to get to an event or a situation about which there is a well-defined framework
- Explanatory: seeking to develop or refine theories for what they reveal the causes and processes of a certain socio-educative phenomenon.
- Evaluative: the study describes and explains the case but also aims to formulate value judgements that form the bases for decisions.

The design of the case study can be based on a single case or multiple cases that can be compared (Stake, 1998). The aim it to match the results of different cases, which would add validity to the theory proposed.

In the Wikinomics project we have chosen to design many cases, prompted by the composition of teams from various partners and therefore several socio-educational designs.

The next steps for this analysis will be: first it is described the experience of the trainings, a description that will enable comparisons and identify factors of success; and then based on the results of the descriptive-comparative phase we can make some proposals of further work or subsequent courses to ensure greater effectiveness of the training and learning outcomes achieved.

The descriptors used to describe the training cases include the planning scheme and a SWOT analysis. For the analysis of the results, the following dimensions have been taken into account:

- Context: centre, VET, platform, course topics
- Users
- Methodological approach
- Planning: objectives, competences, schedule, activities, evaluation
- Rating: users and teachers

3. Results

The four teams filled out a questionnaire detailing the process followed in the implementations. The project is organized into different dimensions or categories of analysis, which are discussed below and summarized in Table 1.
Description of the dimensions of analysis:

The institutions where the courses were implemented were schools of higher education. Two of them are directly connected to the vocational education and training (VET) system of the country of implementation (the Polish team and the Portuguese team) and the

others include professional training in university contexts. The subject of the courses was collaboration in virtual environments and wiki culture applied in different disciplines. All the courses were included as part of other studies or courses either as elective or required modules.

In the case of the HEG, this institution is indirectly part of the Swiss tertiary vocational training system and students come from basic professional training.

In the cases of Zaragoza and Toulouse, the courses aimed to develop entrepreneurship in individuals who may be involved in start-ups or spin-offs, and therefore the point of this training is that it can be applied in any professional sector.

In the case of Poland, the training was closely tied to the development of the country's vocational education system, given that the certification obtained in the training is recognised by the Poland VET agency and is comparable to the European system of qualifications.

In the case of implementation in Geneva and Poland, the subject of the course focused on wikinomics culture (social bookmarking, collaboration systems).

In Zaragoza, Toulouse and Porto, the subject also focused on collaborative processes but in the context of entrepreneurship and innovation in the areas of biotechnology and business.

Users

The courses involved a variety of groups, with a total of 150 students: 18 on the Swiss team, 28 on the Belgian team (10 in Toulouse and 18 in Zaragoza), 40 on the Polish team and 62 on the Portuguese team. There was a varied demographic profile: different age groups, from 18-year-olds to individuals over 45; men and women, although predominantly men; and different levels of education, from individuals with a low level of education to individuals with higher education, instructors and skilled workers.

In the case of implementation in Switzerland, profiles were young people from 22 to 28 years old with a profile that included instructors, students studying a second bachelor's degrees and skilled workers.

In Toulouse and Zaragoza, the profile of students, who were from 23 to 37 years old, was doctoral or postdoctoral students interested in entrepreneurship for their professional future.

In Poland, profiles were essentially professional men in the construction industry who wanted to certify their professional skills, also teachers of foreign languages, social economy workers, and IT students

In Porto, participants were young people and adults regardless of their level of education who were interested in carrying out a project of self-employment or entrepreneurship.

Educational and methodological approach

Most of the implementations were conducted following an educational approach that combined collaborative work with individual work along with the support of teachers in theoretical explanations and the completion of activities. The structure of the courses combined classroom sessions involving theoretical explanations or student presentations of their work with virtual sessions involving individual and collaborative work. Only the Polish team used exclusively a virtual structure, and its focus was the most traditional, primarily based on contents being transmitted by the expert.

Different tools were used for the virtual part: Skype, storage systems like Dropbox and Google Drive, social bookmarkers like Diigo and ZOTERO, and only the Portuguese team used the LMS platform Blackboard.

In the case of the implementation carried out in Switzerland, the focus was on collaborative work as well as on the presentation and discussion of theoretical aspects. Instructors acted as content providers with participants acting autonomously. Training was mainly conducted in the classroom with specific online results.

The courses in Toulouse and Zaragoza were also based on traditional presentations combined with collaborative work through the problem based learning

The training conducted in Poland was primarily conducted online, except for the evaluation, which was done in the classroom. In this

context, the theoretical explanations by experts was also combined with practical group and individual work by students.

The courses in Portugal combined an iterative process of theoretical explanations, independent work, group-based improvement and presentations of results.

Course planning

In most cases, the courses were short, lasting from 15 to 40 hours. The skills sought to be developed were related to collaborative culture in general (roles, attitudes), to the learning of tools that aid collaborative processes (publishers, licenses, presentation and communication, etc.) and to critical thinking. Noteworthy activities were practical exercises, studying and solving case studies, and completing projects.

The following strategies were used to assess learning: the e-portfolio through the platforms used, self-assessment using a personal journal, and joint presentation of group work. The evaluation was formative as well as summative in some cases: a final exam conducted by the Polish team and the presentation of a final project requested of students by the Portuguese team.

The certification of courses was conducted as part of a higher accreditation. Certification strategies with badges were only used in one case. Perhaps since it was part of other higher courses, the certification was included in the one used by these.

The course in Switzerland took place on 30 days over 15 weeks. The abilities addressed were those related to specific and technical skills as well as analysis systems and tools. The course also included cross-cutting skills related to collaborative work and the use of social tools. The activities allowing such skills to be put into practice were related to the use of tools such as Diigo, Zotero, CoWaBoo and Wikipedia. Everything was evaluated through the creation of a digital portfolio and by completing an evaluation form. The certification was included in the bachelor's degree.

The courses in Toulouse and Zaragoza lasted 12 days. The abilities were related to skills for entrepreneurship and innovation and tasks were based on solving case studies. The evaluation form included participation in classroom activities and the creation of an individual reflective journal.

The implementation which took place in Poland included seven days in the classroom (two hours per session). Abilities were related to collaboration, ICT literacy and information literacy. Activities were based on theoretical explanations and on putting such content (which was primarily related to the use of the digital tools Skype and Diigo) into practice. The evaluation was conducted through an onsite exam, since passing this exam enables individuals to obtain a certification that is officially recognised by the Polish vocational education system, which, in turn, is being restructured to bring it into line with the common European system of qualifications.

Lastly, the training implemented in Portugal entailed three different training activities, each lasting 25 hours. The skills developed and

the activities are consistent with the major educational modules existing in Portugal. Specifically, participants worked on skills for collaboration, communication and creativity. The activities conducted were: creation of a business project based on business models, structuring of the business idea using the web tool Canvas, and lastly presentation and discussion of the work done. Some of the tools used for this work were Dropbox, Blackboard and Drive. Evaluation of the training was formative (based on participation and development of the business project) and summative (evaluating the project itself). The certification obtained was issued by the sponsoring institution and the badges achieved were assigned.

Evaluation of the experience (by participants and teachers)

Participants

Teams provided participants with an online evaluation survey for the courses when the courses were completed, and results were for the most part satisfactory.

The results for the Portuguese team centre on the need: 1) for additional workshops or courses to expand upon the subject, 2) to create networking opportunities during the course, 3) for a first customer program.

The overall assessment by participants on the Polish team was quite positive with these areas to be improved: previous training of the target group considering the group expectations, competences

and content should be set more carefully in relation to specific target group needs.

The assessment by participants on the Swiss team was between moderate and high in the areas of motivation, activities, explanations by teachers, consistency of the course and the course's ability to promote skills.
The assessment by the Belgian team was high in relation to organisation, educational approach, evaluation and usefulness.

Teaching staff

The opinion of teaching staff was positive in general on all teams, except for the Polish team, where it was low, although this type of course is seen as a potential opportunity for improvement for people with low qualifications.
The main difficulties encountered by teachers vary from team to team. Those of the Swiss team were related to the teaching strategies used: specifically, they note how difficult it was to get students to participate more actively and to commit to co-learning.

Those of the Polish team were related to the number of hours of the courses (considered to be too few) and to the structure of the courses. In this case, they do not think the virtual course on its own works; they think it would be better to combine the virtual course with the classroom course. And a third difficulty they note is some users' low level of knowledge of technologies.

Both the Polish team and the Portuguese team highlight the need for a prior training programme.

The Portuguese team notes the need for participants to have a more specific profile and the need for more possibilities that enable learning to be customised based on participants' interests.

Results by partner

Categories of analysis	Switzerland
Application Canter	Haute Ecole de Gestion De Geneve (HEG)
Subject of course	"The road to Wikinomcs". On-line collaboration systems. The training was an adaptation of the generic Wikinomics scenario.
Field of application	Transversal field
Connection with VET	• HEG is, indirectly part of the Swiss vocational education and training system as a number of its students come from a vocational school. • Swiss Universities of Applied Sciences (HES - HEG) offer vocational education at tertiary
Users	• Variety of societal target groups: trainers and trainees, job and second career seekers, low skilled or looking for specialization workers • 18 participants, age 22 - 28

Goals	• To understand collaboration phenomena in the Wikinomics area, as well as practicing online collaboration in social bookmarking applications: Understanding the fundamental elements constituting the digital environment of the private and public sectors in the wikinomics context • Associate this approach with a general contribution to eCulture movement Propose practical outcome within online collaboration systems
Didactic approach	• Collaborative work • Presentation and discussion on theoretical issues • Practical activities • Working in pairs • Teacher acting as an agenda setter and content provider with participants acting autonomously on their activities • Lessons were mostly face-to-face with concrete online results
Timing	30 days in 15 weeks during one semester
Training in relation with other	• This course is a part of their bachelor degree. • The training was an adaptation of the Training “Wiki” Gardeners: a generic Wikinomics

Activities and resources	• Create a personal Diigo account and post urls on the HEG Digital group • Search, analyze and compare existing systems of "social bookmarking" (ie. Diigo, Zotero). • Study CoWaBoo as a part of the original research proposal, answer 5 questions, 5 minutes • Testing the prototype CoWaBoo, as well as the API version • The course on Wikipedia : add Diigo article in the french Wikipedia.
LMS	• Diigo and Zotero, social bookmarking platform • CoWaBoo
Assessment	• Creation of 2 blogposts on behalf of the students on social boomarking systems (Diigo and CoWaBoo) presented in their ePortofolios • Presenting a profile of activities in the HEG Digital group, as well as, a set of personalised functions in class • Completing the evaluation form of the course and the trainer
Competences	• Documenting background information • Tools and systems analysis • Demonstrating existing functions • Commenting the work of others • Proposing improvements • Presenting personalised versions of tools • Keeping an online profile • Selecting and adding tags
Certification	This course is a part of their bachelor degree.

Participants' satisfaction	An online questionnaire was applied after the course. Punctuation is from 0 to 5: • Information about the course objectives: 3 • Motivation: 3 • Coherence of the course: 3 • Utility for my employability: 3 • Activities: 4 • Autonomy in the analysis of Wikinomics technologies: 3 • Critical thinking capability: • Collaborative work: 4 • Autoevaluation of the skills: 3-4 • Coherence of the activities related with competences: 3 • Trainer's explanations: 4 • Course objectives: 4
Course rate teacher	There is a clear challenge of mixing practical systems and technology analysis with critical thinking that could lead to new applications.
Main dificulties	To move participants out of a passive role in the learning process and share with the engagement of co-learning, co-development.

Table 1. Swiss training activites

Categories of analysis	Belgium
Application Canter	Toulouse University of BioSciences Universidad de Ciencias Médicas de Zaragoza
Subject of course	Entrepreneurship and Companies Innovation
Field of application	Biotech
Connection with VET	• This workshops aims to develop the Entrepreneurship mindset for PhD and/or PostDoc who may be involved in start-ups on spin-off within few years. • This training may be implemented in any professional and sectorial context
Users	PhD and/or PostDoc who may be involved in start-ups on spin-off within few years Toulouse: 10 users (24-37 years old) Zaragoza: 18 users (23-35 years old)
Goals	• To know Biotech Innovation in practices • Identify skills, abilities, and perception on success criteria of the entrepreneurship.
Didactic approach	• Collaborative work • Classic presentations Analyses real cases from biotech field to review existing innovation strategy
Timing	• 10 days social bookmarking started with 1 online session. • 4 half days working session
Training in relation with other	Independent workshop. No connection with existing program.

Activities and resources	• Real case resolution • Problem Based Learning collected from web (communication, marketing, financial figures)
LMS	• Diigo for social bookmarking • Google Drive for collaborative works on cases

Assessment	• Group assessment:
	  • Participation in class and group works
	  • Sharing design of the innovation strategy for the cases and by the 20 min presentation
	• Individual assessment:
	  • Self-assessment by individual reflective journal (synthesize the ideas he has learned)

Competences	Own skills and abilities in the Entrepreneurship and Innovation topics
Certification	
Participants' satisfaction	An online questionnaire was applied after the courses. Punctuation is from 0 to 5. • Before the course actions: objectives, motivation, positive impact: Toulouse 5/ Zaragoza 4 • Organisation of the course: Toulouse 5, Zaragoza 4 • The course (Coherence of the section, relation with the employability): Toulouse 5, Zaragoza 5 • Pedagogical approach (learning outcomes, critical thinking, autoevaluation, collaborative work) : Toulouse: 5, Zaragoza 4 • Evaluation process: Toulouse: 5, Zaragoza 4.

Course rate teacher	• The bookmarking activities were very useful to put on track students before face2face sessions • Collaborative works on material from real life has very good impact
Main dificulties	Use of a Reflective Journal was difficult for so short sessions even if the interest was well accepted by students.

Table 2. Belgian training activities

Categories of analysis	Poland
Application Canter	NOT Ostroleka / Ynternet.org
Subject of course	Collaborative skills in online environments “Learning how to track changes and limit damage on collaborative websites” & “Tagging and reusing images in a wikinomics way”.
Field of application	VET - Construction industry
Connection with VET	Vocational Education and training
Users	• Main target groups involved in the construction industry, preparing for the exam on building licenses and those already having such powers, including candidates and members of the Chamber building • Teachers of foreign languages, social economy workers and IT students
Goals	To Initiate participants in wiki culture aspects and to propose guidelines of working and collaboration

Didactic approach	• Theoretical exhibition by expert • Support teacher • Practical work by users • Group work • Individual work • Online training except the evaluation process, done through a face-to-face test.
Timing	Planning: 7 days by face to face sessions, of 2 hours each session (14 hours) But was tested only online.
Training in relation with other	Subject is part of huge training
Activities and resources	• Formal presentation • Demonstration • Group work • Expert explain, teacher translate and users work
LMS	• Skype • On one account, the expert. On the other account, a local teacher and all students • Diigo
Assessment	Face-to-face test, questionnaire
Competences	• Wikis and collaboration • Wiki editing tools • Roles and collaboration in wiki environment • Copyright issues and licensing tools • License in sharing environments
Certification	• Official certification of training. • Qualification certificate related with ECVET.

Participants' satisfaction	• Construction industry: a scale of 1-6 assessment were within 4-6 • The other groups found the training as "good" with the notice to more carefully match the content and the form of the training to the competences of the target group.
Course rate teacher	• The trainer with knowledge and skills for its transfer. • Ensure good communication student – trainer • Use blended learning, not to give up the face-to –face trainings.
Main dificulties	• Only two sessions were held, thinking that the issues had autonomy, but really lacked the comprehensiveness of the course • Another difficulty was the mode of application: "I applied only online and is recommended face to face" • Insufficient knowledge of communication technologies • Lower level of education • Participants do not see the need of ICT for their work

Table 3. Polish training activities

Categories of analysis	Portugal
Application Canter	CIDEB Incubator - UCP Porto

Subject of course	• Entrepreneurship initiatives from an idea to a business model • “Planning a Business – Creating a Small Business: from business model generation to client development” • Training based in wikinomics concepts, including collaboration across the entrepreneurship path, different business models to inspire participation ant the involvement of the community of potential customers to validate decisions • Course 1: complete program of workshops designed to support initial pre-incubation teams • Course 2 – Optional module proposed to Bioengineering Master Students • Course 3 – Complete program or workshops designed to support initial pre-incubation teams
Field of application	Business development
Connection with VET	• The training offered a learning path to structure entrepreneurship initiatives from an idea to a business model, envisaging validation through customer development. • Training design enriches existing VET reference modules. In Portugal follows the Unidades de Formaçao de Curta Doraçao . Ciencias Empresariais i Empreendedorismo

Users	• Course 1 – 2 project teams (6 participants) ages range from 21 to 26 • Course 2 – 26 participants, ages range from 21 to 26 (Bioengineering Master Students) • Course 3 – 4 project teams (6 participants), ages range from 21 to 30 • Youth and adults regardless of their skill level
Goals	• To know business model generation and client development methodologies to structure a business project • To develop critical and creative thinking on key concepts of generation and validation of business model To know how to develop a iterative process exploiting the potential of collaboration • To know how to generate business models and how to validate them
Didactic approach	• Presentation of methodologies and tools • Group work with multiple outcomes • Autonomous workgroup • Improvement based on workgroup collaboration • Presentation of intermediate and final outcomes
Timing	• Course 1: 25 hours ECVET (12 hours face-to-face and 12 hours of autonomous work) • Course 2: 25 hours ECVET (12 hours face-to-face and 12 hours of autonomous work) • Course 3: 25 hours ECVET (12 hours face-to face and 12 hours of autonomous work)

Training in relation with other	• Course 1: complete program of workshops designed to support initial pre-incubation teams • Course 2: Optional module proposed to Biotechnology Master Students • Course 3 – Complete program or workshops designed to support initial pre-incubation teams
Activities and resources	• Project: development of business models • Process: structuration of the idea using the web tool canvanizer.com (or a business model canvas) • Presentation and discussion
LMS	• Course 1: Dropbox and Google Drive • Course 2: Blackboard • Course 3: dropbox and Google Drive
Assessment	Formative by participation and summative by the project design
Competences	• Collaboration: level of cross-contributions • Communication: level of project presentation • Creativity: level of project innovation
Certification	A certificate is issued at the end of the course and badges are assigned

Participants' satisfaction	• An online questionnaire was applied after the course
	• The feedback was generally positive:
	  • The need of additional workshops or courses to deepen the theme.
	  • The need to create networking opportunities during the course
	  • The need of a first customer program

Course rate teacher	The course was a good tool for project mentoring. Follow-up should be assured

Main dificulties	• The entrepreneurial profile of participants • Need for additional training paths • Unfavourable aspect: financial support for practical oriented programmes on entrepreneurship • Strengths: personalization of the training, Focus on collaboration, Selection and evaluation of free information

Table 4. Portuguese training activities

4. Conclusions and further work

The different contexts of implementation have certain characteristics that make it impossible to make a comparison between cases. That being said, there is a common design that is consistent with the abilities and learning outcomes developed in this project, which are in turn related to the cross-cutting skills established in the ECVET framework, particularly those related to digital literacy and collaboration, both of which are identified as key in developing the common European framework for vocational training. In terms of the educational approach, most of the implementations were carried out by combining collaborative work with individual work.

Apart from this basis agreed by all instructors, some specifics of each implementation should be mentioned:

- In the case of training in the HEG, the content undertaken was directly related to the Wikinomics concept and its practical application.

- In the case of Zaragoza, Toulouse and Porto, emphasis was placed on entrepreneurial ability, a key issue in the demands of today's job market.
- Lastly, in the case of Poland, there was a direct relationship with basic vocational training, as participants were active professionals or professionals in training who were looking for a professional certification that provides them with recognition and mobility in the EU, a basic foundation of the ECVET framework. (more information at: http://www.wikinomics-project.eu/wikinomics-training-methods-in-vet-environments-not-training/)

The total number of participants in the implementations was 150 students in five countries. Although the number of participants was considerable, it was not possible to extend and repeat the implementations due to the short duration of the project and especially of its implementation phase. Given these constraints, the number of participants and the opportunity to implement the training in different contexts was viewed very positively.

Particularly noteworthy were the implementations carried out in Portugal and Poland, cases in which the design of the training as well as its subsequent evaluation and certification were done in line with the national implementation of the ECVET framework, considering its specific requirements in terms of training modules, skills and certification.

Regarding the satisfaction of participants, it was high in many cases, although it should be mentioned that results were better when participants had a higher prior level of training. The instructors, for their part, had a positive opinion, and in the cases in which their opinion was not as positive, they believe that this type of course represents an opportunity for improvement particularly for recipients with low qualifications.

One of the common difficulties was the need for prior training to familiarise participants with the tools to be used during the course, especially in the case of professionals who are not used to using ICT in their professional activity.

5. Annex

TRAINING DESCRIPTION

- **Trainer institution or organisation:**

(Indicate the name of institution or organization who implements training)

- **Connection with VET:**

(Describe how this training advances the provision of Vocational Education and Training (VET) across Europe)

- **Title:**

(Title of the course or training activity and description of the context in which is framed: secondary, higher education, doctoral courses, other)

- **Length:**

(Number of hours and temporal distribution)

- **Institution:**

(Indicate in which institution is implemented)

- **Profile of participants:**

(Ages, branch of knowledge, number of participants)

- **Describe the training in relation with other:**

(Describe if the training is designed as a complete course or subject or part of huge training)

- **Learning objectives or expected learning outcomes:**

(Explain in detail what is expected that participants know, know how or develop at the end of the course. Highlight those learning outcomes related with collaborative competences)

- **Teaching methodology:**

(Indicate:If training is based on theoretical exhibition, practical work or both, If work developed by students is done in group or individually, If teacher acts as an expert or as a content provider and participants are autonomous, If lessons are online, face-to-face or both)

- **Activities and resources:**

(Describe what type of learning activities are proposed and which resources are used)

- **Moodle or other LMS usage:**

(Yes/No, which type of platform/s, which elements of virtual campus are used: wiki, forums, …)

- **Learning assessment:**

(Indicate type of assessment: summative or formative and which type of evaluation tools are involved: reflective journal, eportfolios, test, project design)

- **Competences assessed and indicators used:**

(Describe which competences are assessed and based on which indicators)

- **Certification:**

(Describe which kind of report is given to the students at the end of the course or during its development to acreditate what kind of knowledge or competences are achieved: badges or other certification system. Explain the certification process)

- **Satisfaction of participants:**

(Indicate if you implemented some questionnaire at the end of the course to determine students' satisfaction. Indicate the main results obtained)

- **Course rate:**

(Indicate how well the professor rate the overall quality of course development and its value, students motivation and positive aspects)

- **Identify the main difficulties of the training development**

- **Identify the main positive aspects of the training development**

SWOT evaluation indicators

- Strengths: discuss the positive internal aspects of wikinomics approach
- Weaknesses: discuss the unfavorable internal aspects of wikinomics approach
- Opportunities: discuss the positive aspects brought about the environment
- Threats: discuss the existing unfavorable aspects in the environment

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

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

Evaluation of training activities: a guide to the Wikinomics project training practices

Project coordinator:
ynternet.org

Contact
Théo Bondolfi
Branche 17 - 1091 Grandvaux
Switzerland
Tel. +41 (0) 789434414
info@ynternet.org

Website: wikinomics-project.eu

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