OUTPUT 1: Final Report

Good practices in connecting workplace and learning in higher education
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1. The Skill Up project

Youth unemployment has become one of Europe's greatest challenges since the start of the economic crisis in 2008. In January 2017, according to Eurostat (European Commission, 2017), 3.710 million young people (under 25) were unemployed in the 28 Member States of the European Union (a rate of 16.7%). One of the countries with the lowest rate is Germany (6.7%), while Spain has one of the highest (39.2%).

This puts young people at the forefront of the Europe 2020 strategy's priorities for smart, sustainable and inclusive growth (European Commission, 2010). Europe 2020 outlines concrete initiatives to support young people in getting jobs and dealing with challenges during the crisis, in particular making education and training more relevant and better preparing students for the transition from education to workplace.

Given this context, the Skill Up project – Matching graduates' skills and labour world demands through authentic learning scenarios – aims to build scalable and replicable ways for connecting higher education curricula with evolving labour market demands. This will be achieved by way of transnational strategic cooperation between five partners (three universities with diverse backgrounds – applied, technical and labour market-oriented, in online and face-to-face settings; an online vocational education and training institution; and an employer representative) from three European countries (Spain, Sweden and Germany).

Skill Up aligns well with the policy measures being designed and implemented in the partners’ countries in response to the Europe 2020 priorities in education and training.

First, the Spanish Government has drawn up a “Strategy for Entrepreneurship and Youth Employment 2013-2016” that calls for the development of higher education (HE) programmes and curricula guaranteed to meet the needs of business and social sectors and to facilitate the training-to-work transition of graduates.

Second, Sweden is taking further measures to improve the labour market participation of youth and since August 2011 the government has provided special incentive funds to further develop workplace-based learning in upper secondary schools. Indeed, “apprenticeships” have been introduced as an alternative route for students to obtain the vocational diploma and to improve the transition from education to the labour market (European Commission, 2013a).

Third, Germany, one of the countries with the lowest youth unemployment rates in Europe, has launched several initiatives to support long-term strategic partnerships between education institutions, research and business and to strengthen and consolidate the work-based learning culture in the “dual system” model of education and training (European Commission, 2013a).

The complementary blend of these developments underscores the purpose and direction of Skill Up.

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1.1 Background

There is a persistent gap between the fast-paced demands for new skills in the European labour markets and the slow pace of the different European educational systems in meeting these demands. At policy level, the solutions are ambitious: the Education and Training Monitor 2014 (European Commission, 2014a) calls for all learners in all European countries to be equipped with the skills required to participate successfully in society and the labour market. Specifically, the report calls for: a) strengthening the quality and relevance of higher education programmes, focusing on boosting graduates’ employability; b) involving employers in the development and quality assurance of programmes as a means for linking more closely the worlds of education and work; c) combining innovative pedagogies with an effective use of digital tools and content to foster more innovative methods of learning, and far-reaching access to learning resources and learning opportunities.

Indeed, the “High Level Group on the Modernisation of Higher Education in Europe” (European Commission, 2013b) goes further:

Curricula should be developed and monitored through dialogue and partnerships among teaching staff, students, graduates and labour market actors, drawing on new methods of teaching and learning, so that students acquire relevant skills that enhance their employability (p. 41).

It goes on to say:

Higher education institutions and national policy makers in partnership with students should establish counselling, guidance, mentoring and tracking systems to support students into higher education, and on their way to graduation and beyond (p. 45).

This means that employability should be considered by every actor involved in the development and implementation of curricula at the different levels of the European educational systems.

Skill Up tackles these issues head on. Through transnational strategic cooperation among five partners from three European countries, we will engage higher education and VET teaching staff, career counsellors, undergraduates, graduates and employers’ stakeholders to create real, practical, scalable ways to enhance new graduates’ employability skills by improving the connection between higher education curricula with the demands of the labour market.

Skill Up also ties into European vocational education and training (VET) policies and practices to better prepare young people for workplaces (Cedefop, 2015). In Germany, they have a shared responsibility for quality of occupational standards and for skills development. Swedish employers have developed materials for schools, with the aim of strengthening links with business. In an attempt to deal with the challenges of youth unemployment, Spain, starting from a relatively weak position, in recent years has implemented many measures to strengthen VET, which has included a dual system to foster work-based learning.
1.2 Objectives and outputs

The specific objectives of the project are:

- Map good practices in matching graduates' skills and labour market demands through authentic learning scenarios in partners' HE settings.
- Improve soft and hard employability skills of undergraduates by means of designing, developing, applying and evaluating authentic learning scenarios in various HE and VET programmes identified by partners as priorities.
- Enhance access to career counselling and guidance services for undergraduates by training tutors in career counselling, with emphasis on e-counselling.
- Implement and promote a virtual environment that acts as a hub for attracting stakeholders, offering guidance to labour market newcomers and real hands-on experiences in the professional world as part of students’ learning.

The project sets the stage for scaling up HE innovative learning approaches, ICT-based methodologies, greater inter-sector cooperation, and the European-wide transfer of a replicable process that responds to real-world work demands.

Furthermore, the most significant contributions of Skill Up lie in the typology and scope of the intellectual outputs that will deeply impact a wider teaching and learning community in HE and VET in the partner countries and beyond. These outputs include:

1. Examples of good practices in matching graduates' skills and labour market demands in the partner institutions.
2. A set of indicative principles and guidelines on how to enhance new graduates' employability skills in HE and VET settings from the perspective of authentic learning.
3. A Massive Open Online Course (MOOC) in career counselling and guidance with emphasis on e-counselling.
4. A virtual platform (hub) to bring together employer representatives, academic staff, and career counsellors to better prepare students for work.

This report gives an account of the results obtained in the first intellectual output of the project.

2. Methodology

We adopted the collaborative action research (CAR) approach to our study, a participatory, democratic process that “seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern” (Reason & Bradbury, 2001). For us, the approach allows for the sequentially-linked spiralling of four action research cycles related to planning-acting-observing-reflecting, to produce the best results in the most efficient way. Each cycle is linked integrally with an intellectual output (Figure 1). Each cycle’s timing is also planned to allow for maximizing parallel, iterative development and dissemination actions, where targeted stakeholders can not only be informed but also get
the chance to help improve the quality of the intellectual outputs and thus shape the next cycle of the project.

Figure 1: The four cycles of the project

The first cycle, related to the first intellectual output, had four main phases (detailed in Table 1), with the stages in the CAR cycle being mobilized within each of the different phases.

**Phase 1: State of the art**

The first phase of the study provided both a European-wide and a comparative analysis in the partner countries of:

- The skills required/valued by employers for today’s employees (demand perspective).
- The skills graduates are currently acquiring in HE and VET institutions (supply perspective).
- Different points of view (academic, employers, graduates, students) of new graduates’ skill shortages and mismatches.

The main method was a focused literature review on sources (mainly reports and papers) at national and European level about the employability skills of recent graduates.

The common criteria to select the sources were:

- Look for different sources about the supply and demand of recent graduates’ transversal and/or specific skills.
- Seek the viewpoints of employers’ representatives, students, graduates and academic staff.
- Limit search results to sources of no more than five years.
In order to gather the collected data from all partners, a template was provided and filled collaboratively through a cloud service. The information needed to fill in the template was:

- Title of the source.
- Dimension (international, European, national).
- Link to the source.
- Educational level (HE or VET).
- Short summary of the source.
- Viewpoint included (employers’ representatives, academic staff, students, graduates).
- Information relevant to the project.
- Skills that emerge (perspective of supply or demand; transversal or specific).
- Methods used (tools, sample, etc.).

A total of 25 documents were reviewed, including international, European and national reports. The objective of the subsequent qualitative analysis of those documents was to provide the state of the art in each country from different perspectives and viewpoints.

**Table 1: Phases and activities of the first output**

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<td>Phase 1</td>
<td>Literature review by country</td>
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<td>First analysis of relevant documents</td>
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<td>In-depth analysis of documents and state of the art by country</td>
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<td>Phase 2</td>
<td>Conducting and analysing interviews</td>
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<td>Drawing up good practices</td>
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<td>Phase 3</td>
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<td>Phase 4</td>
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*Phase 2: Identifying good practices in authentic learning scenarios in the partner institutions*
The objective of this phase was to identify and describe at an institutional level good practices in matching graduates' skills and labour market demands from the perspective of authentic learning. To achieve this objective, we employed the exploratory interviews and the focus group as complementary qualitative methods that allowed us to:

- explore in the partner institutions good practices to develop students’ employability skills, and
- present and discuss the findings with teaching staff, undergraduates, graduates, career counsellors and employers’ representatives from the three partner countries.

A total of 12 interviews were conducted. The good practices identified are presented later in this report as authentic learning scenarios in the partners’ institutions.

**Phase 3: Conducting an online asynchronous focus group**

In this phase, we carried out an online focus group involving teaching staff, undergraduates, graduates, career counsellors and employers’ representatives from the three partner countries. The specific objectives of the focus group were:

- to discuss the findings from the first phase of the study on the supply and demand of skills for the employability of new graduates and the taxonomy of employability skills defined;
- to present the identified good practices and to contrast the criteria used to identify them with a varied sample of stakeholders from the three partner countries.
- to carry out a pilot test of questionnaire to be applied with students in the second stage of the project.

We chose the online asynchronous focus group as a method that allowed us to collect data much more quickly and at a lower cost than if we had carried out face-to-face focus groups in each of the five partner institutions, producing similar amounts and quality of information. As shown by various research (Moore & McLoughlin, 2015; Turney & Pocknee, 2004), the effectiveness of online asynchronous focus groups offers a number of advantages compared to face-to-face focus groups, for participants as well as researchers. First, there is the flexibility that is afforded in terms of overcoming time and space barriers. Second, participants express their thoughts more freely and provide more detailed and meditated information in an online discussion, as they have more time to consider and post their answers than they would if the same discussion were held face-to-face. Finally, the text-based contributions of participants produce instant and lasting data, which makes oral recording and transcription of participants’ responses unnecessary.

Next, we comment on the main phases involved in carrying out the online asynchronous focus group, namely: designing, planning, conducting and analysing the results.

**Designing**

Decisions on the design of the focus group took place throughout the study, taking into account objectives, the variety of countries, institutions and higher education programmes involved, and the suitability of the potential participants. To tackle these issues an online and asynchronous approach seemed suitable for gathering the information in an accurate and cost-effective way.
as well as a mixed focus group involving teaching staff, undergraduates, graduates, career counsellors and employers' representatives.

As we attempted to make the participation as flexible as possible, we opted to hold the focus group over the course of four days, with participants choosing when it would be most convenient to participate in the activities. We also estimated a time dedication of thirty minutes per day with a total of two hours over the four days at most, similar to the time they had dedicated to a face-to-face focus group.

Planning

This phase involved recruiting the participants, defining the online platform for hosting the focus group and designing the activities.

In this phase, recruitment of participants was one of the aspects that proved to be most difficult. Since we were bringing together an array of participants from three different countries, English was established as the language of communication for the online focus group. Therefore, English proficiency and being acquainted with ICTs were taken into account when recruiting participants.

Each partner was requested to recruit a purposive sample of five participants with the following profiles related with the programmes involved in the study: a lecturer; a student; a recent graduate; a career counsellor and an employer representative. First, participants received a letter of invitation with information about the project and what their participation in the focus group was expected to contribute.

In the end, a total of 29 people accepted our invitation to participate in the focus group. Considering that the group's degree of homogeneity is a key factor in maximizing disclosure among participants (Morgan, 1998), we established the following four groups, hoping to help the discussion flow better:

- **First group**: comprising nine labour market representatives.
- **Second group**: comprising six lecturers from HE and VET institutions.
- **Third group**: comprising nine graduates and students' representatives.
- **Fourth group**: in which five career counsellor representatives participated.

One week before the focus group was held, some guidelines with instructions on how to access and use the online platform were provided. Participants were given a username and password to access the platform. They were also informed clearly about the objectives of the focus group and the rules of participation, including estimated time of dedication in order to avoid dropouts. A reminder was sent the day before.

After analysing potential platforms to host the online focus group and considering variables such as cost, ease of use, possibility of customization, asynchronous functionalities, security, data privacy and data ownership, among others, we opted for Moodle as the most suitable online platform. A password-protected course was created, with personal details stored offline.
As in a conventional focus group, the role of the moderators and their skill in directing the flow of the discussion were key factors to facilitate group interactions and to ensure that the scheduled topics were addressed.

The moderators of the four groups were researchers of the project team that assumed the role of a) *moderator*, whose main mission was to conduct and maintain the discussion facilitating group interactions or b) *rapporteur*, whose task was to sum up and present daily the most significant topics resulting from the proposed discussions and dynamics.

When entering for the first time in the online platform, participants were asked to complete a consent form which included clear privacy and confidentiality statements on how the data they provided would be stored and used within the project. Once informed consent had been given, participants could access the focus group space.

The following communication spaces were enabled to boost interaction:

- The *moderation board* was where the moderators posted a series of messages to guide the participants.
- The *forum* was used to discuss different open questions.
- A *virtual wall* and brainstorming tool were used to share thoughts and ideas about authentic learning.

The activities proposed involved a survey on the employability skills of new graduates, which was given on the first day. The main results were discussed on the second day, as were a brainstorming activity on authentic learning using a virtual wall\(^2\) and the presentation and discussion of the good practices identified in Phase 2.

**Data analysis**

The mainly advantage that we found when analysing the data from the online focus group is that the data had been registered. That is, any comments made or questions posed were recorded, and there was no risk of losing track of them like in a face-to-face discussion. The online text-based approach eliminated the need for the oral recording and transcription of participants’ responses.

The main conclusions drawn from the discussions carried out in the four groups over the four-day asynchronous online focus group are presented in Appendix 1.

**Phase 4**

This included writing the final report, a peer review process in which two members of the partner institutions participated and an analysis of the sustainability of future development with two members of the International Advisory Committee.

\(^2\) [https://padlet.com/aornellas/skillup](https://padlet.com/aornellas/skillup)
3. Defining employability skills

There are many definitions and approaches established for employability. According to Yorke (2006: 8) employability is:

[...] a set of achievements – skills, understandings and personal attributes – that makes graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy.

Hillage and Pollard (1998) point out that employability is about three abilities: gaining initial employment; maintaining employment; and obtaining new employment if required.

In its report “Modernisation of Higher Education in Europe: Access, Retention and Employability” (2014), the European Commission gives two types of definitions for employability which encompass the views of both Yorke (2006) and Hillage and Pollard (1998): employment-centred and competence-centred. From an employment-centred perspective, close to the approach of Hillage and Pollard, employability is “the ability [of graduates] to gain initial meaningful employment, or to become self-employed, to maintain employment, and to be able to move around within the labour market” (European Commission, 2014b: 63). As an alternative, a competence-centred approach focuses on the skills and competency graduates gain during their studies as formulated in Yorke (2006).

In terms of all definitions, however, it has to be emphasized that employability does not equal employment. Employment-centred definitions can sometimes blur the difference, especially when using employment rates as proxies for measuring employability. Competence-centred definitions – especially if formulated as in Yorke (2006) – can help to clarify the relationship between employability and employment: certain skills and competences make graduates “more likely” to gain employment, but do not guarantee it. (European Commission, 2014b: 63)

From a critical position, Brown et al. (2002) argue that even though the individual’s attributes affect the extent to which a person may be employable, the labour market and other factors outside the job-seeker’s control affect the probability of being hired. The authors then offer an alternative definition of employability as “the relative chances of finding and maintaining different kinds of employment” (Brown et al., 2002, cited in Yorke, 2006: 10). In this sense, and following Yorke (2006), higher education can contribute significantly in helping graduates maximize their chances for success in the labour market.

In addition, as Waltz (2011) points out, to truly prepare and empower graduates to enter the labour market, it is important to discuss issues beyond the values of corporate managers such as employee rights, explorations of personal values, and critical analysis. Otherwise, we risk encouraging graduates “to believe that becoming and staying employed requires turning themselves into ‘products’ that conform to ever-changing market desires, which is certainly not a concept that should be left unchallenged” (Waltz, 2011: 4).

Along similar lines, if there are variations in the definition of employability, defining the term “skills” is also a challenge. Often, the terms “skill” and “competence” are used interchangeably, when they are not necessarily synonymous (Cinque, 2016).

According to Rychen and Salganik:

[...] a competence is defined as the ability to successfully meet complex demands in a
particular context. Competent performance or effective action implies the mobilization of knowledge, cognitive and practical skills, as well as social and behaviour components such as attitudes, emotions, and values and motivations. A competence – a holistic notion – is therefore not reducible to its cognitive dimension, and thus the terms competence and skill are not synonymous (Rychen and Salganik, 2003: 2).

The European Qualifications Framework (EQF) provides a grid of eight reference levels based on learning outcomes which are defined in terms of knowledge, skills and competence, where:

- “knowledge” means the body of facts, principles, theories and practices that is related to a field of work or study and is described as theoretical and/or factual;
- “skills” means the ability to apply knowledge and use know-how to complete tasks and solve problems and are described as cognitive (involving the use of logical, intuitive and creative thinking), and practical (involving manual dexterity and the use of methods, materials, tools and instruments); and
- “competence” means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development, and is described in terms of responsibility and autonomy.

In a similar vein, the Tuning project, which offers a concrete approach to implement the Bologna Process in higher education institutions and subject areas, defines competence as “a dynamic combination of knowledge, understanding, skills and abilities”. Tuning classifies competences into subject-specific and generic ones, and distinguishes three types of generic competences:

- Instrumental competences: cognitive abilities, methodological abilities, technological abilities and linguistic abilities.
- Interpersonal competences: individual abilities like social skills (social interaction and co-operation).
- Systemic competences: abilities and skills concerning whole systems (combination of understanding, sensibility and knowledge; prior acquisition of instrumental and interpersonal competences required).

Waltz (2011) points out that when employers talk about employability beyond issues of sector-specific skills, they usually point towards the so-called “soft”, “transferable” or “generic” skills that they expect students will gain as part of their learning process in higher education, such as teamwork, communication, leadership, critical thinking or problem-solving.

In the context of this project, we take a competence-centred approach to the concept of “employability skills”, understood as a combination of personal qualities and beliefs, knowledge, skilful practices and the ability to reflect critically and productively on experience, and that need to be frequently renewed during a person’s working life (Yorke, 2006).
3.1 Towards a taxonomy of employability skills

Several studies have produced taxonomies of the skills required to promote graduates’ employability, classifying them under different labels – such as soft skills, transferable skills, or generic skills, among other – but inherently referring to non-job/occupation/discipline-specific skills.

The research done by the ModEs project5 (Modernizing Higher Education through Soft Skills) (Haselberger et al., 2012) – which aimed to integrate a common programme on soft skills in the curricula of some European higher education institutions – developed a list of those soft skills considered to be most relevant by both labour market representatives and universities. The soft skills identified were classified into three clusters: social, methodological and personal. In Table 2 we present the list of soft skills with their descriptions and associated learning outcomes as proposed by the authors.

Table 2: Taxonomy of soft skills (Haselberger et al., 2012)

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<thead>
<tr>
<th>Soft Skill</th>
<th>Description</th>
<th>Learning Outcomes</th>
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| Communication    | The ability to transmit ideas, information and opinions clearly and convincingly both verbally and in writing, while listening and being receptive to the proposals of others. | 1. Communicate transparently as a result of increased congruence or confidence.  
2. Practice active listening.  
3. Present clearly and confidently to an audience.  
4. Monitor and manage communication patterns in a group.  
5. Communicate expressively and effectively in face-to-face and online settings.  
6. Communicate expressively and effectively in written communication. |
| Teamwork         | The ability to build relationships of participation and cooperation with other people. It involves sharing resources and knowledge, harmonizing interests and contributing actively to reach the objectives of the organization. | 1. Evaluate one’s own performance in communication, conflict resolution, and decision-making.  
2. Use a wide range of team processes (brainstorming, structured organization, meetings, etc.) effectively.  
3. Conduct a self-evaluation of themselves as team members and identify specific areas for improvement.  
4. Interact. |
| Contact network  | The ability to develop, maintain and foster contacts both at an internal and external level with the aim of reaching the best results for the organization while watching over its image. | 1. Understand the purpose of networking and the skill sets involved.  
2. Apply the core skills needed for building relationships.  
3. Foster contact with existing or potential members of the network in question.  
4. Manage and administer the network effectively.  
5. Behave in a motivated and target-oriented manner. |
| Negotiation      | The ability to argue clearly and coherently and conciliate different opinions to reach an agreement that satisfies everyone with the aim of achieving the proposed goals. | 1. Prepare a negotiation plan and strategy.  
2. Establish a positive and constructive atmosphere at the negotiation table.  
3. Be open to modifying one’s own point of view. |

5 http://www.modesproject.eu
### Conflict management

The ability to manage conflict, which means stimulating, regulating or resolving conflict between two or more parties.

1. Demonstrate a clear understanding of the notion of intra- and interpersonal conflict, as well as related areas such as frustration and intra- and interpersonal stress.
2. Demonstrate an awareness of the link between personality and conflict-management style.
3. Utilize cultural resources for enhancing collaboration and dealing with conflict in particular cultural contexts.
4. Apply existing and newly acquired skills such as active listening, advanced empathic reflection, confrontation and summarising to conflict management and resolution.

### Leadership

The ability to motivate and guide others to get them to contribute effectively and adequately to the attainment of the objectives.

1. Explain how leadership operates and is understood in organizations.
2. Identify one’s own strengths and development needs as a leader.
3. Describe important qualities and attitudes of effective leaders.
4. Work effectively in diverse settings by applying situational leadership techniques.

### Culture adaptability

The ability to carry out managerial and entrepreneurial processes in multicultural environments.

1. Portray the value of cultural diversity.
2. Interact flexibly and adaptively in new environments.
3. Describe the relationship between culture and communication.
4. Employ sensitivity in cultural encounters.

### Customer/user orientation

The ability to identify, understand and satisfy efficiently the needs of both existing and potential customers.

1. Assess the areas where the organization has adopted a customer orientation and evaluate how and where this can be developed.
2. Involve customers in developing realistic objectives or time frames.
3. Ask questions to identify customers’ needs, expectations and level of satisfaction or to determine customers’ awareness of the full range of available services.
4. Take a variety of actions to fully understand and meet a customer’s needs.
5. Respond to customers with an appropriate level of urgency.

### Continuous improvement

The ability to perform the activities, duties and responsibilities inherent to the job according to quality standards and to seek to improve continuously by proposing the adaptation and modernization of the process and techniques in use.

1. Set goals and measurable objectives.
2. Find a quality variation’s root cause.
3. Determine the timeframes, tasks, responsibilities and resources required to achieve the improvement goals identified.
4. Measure the result of improvement against the expected performance indicators.
### Results-orientated performance

The ability to make the organizational efforts profitable while always having in mind the goals pursued. It involves optimizing time management, prioritizing the future activities and using tools or techniques that make it easier to develop them.

1. Utilize tools and techniques to ensure projects remain on target.
2. Initiate actions to optimize resources for the achievement of results.
3. Maintain the required process orientation for quality results and to contribute to improving the processes.
4. Maintain teamwork and team building particularly for work involving interdependencies.
5. Develop and utilize measures to assess goal attainment and outcome achievement.
6. Accelerate decision-making while assuring risks are minimized and make specific changes in work methods and skills to improve personal performance and organizational results.

### Analytical skills

The ability to draw conclusions and make forecasts for the future by getting information from different sources and establishing cause-and-effect relationships.

1. Identify and analyse problems in difficult situations and make a justifiable evaluation.
2. Find ideas and look for alternative solutions.
3. Make conclusions based on valid proof.
4. Formulate the ideas behind a concept as a result of reading, researching, discussing and brainstorming as a part of highly specific, subject-focused work.
5. Apply the relevant theory to source material.
6. Put specific events and/or problems into wider contexts.
7. Give proof and/or counterexamples.

### Decision-making

The ability to make the decisions needed to achieve quickly and proactively objectives. Decision-making uses the relevant information to make choosing the best alternative easier (by consulting the most appropriate sources, checking and implementing that alternative) and involves possibly assuming some risks in conditions of uncertainty.

1. Recognize the decision-making opportunity.
2. Consider the consequences.
3. Evaluate the quality of information given.
4. Clarify the nature of the problem before deciding on an action.
5. Look for alternatives/identify alternatives. Evaluate the quality of the results after the decision has been made.

### Management skills

The ability to set goals and priorities by selecting and distributing tasks and resources, following up on progress in attaining said goals and acting on any deviations from the initial plan that may occur.

1. Develop and reflect on the development of management skills within a team and regarding tasks.
2. Document and manage changing requirements.
3. Manage time and resources effectively.
4. Collaborate effectively with diverse individuals, team members, peers, groups and/or organizations.
5. Apply project management tools, techniques, and methodologies, including the associated ICTs (information and communication technologies).
6. Evaluate one’s own performance and that of others as team members.
| Research and information management | The ability to find information in the literature, to distinguish between primary and secondary sources or literature, to use the library – in a traditional way or electronically – to find information on the Internet, to use various research methods and evaluation techniques. | 1. Find effectively and efficiently needed information.  
2. Evaluate the information found on the Internet.  
3. Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.  
4. Recognize the need for information and determine the nature and extent of the information needed.  
5. Organize, manage and present information.  
6. Effectively use information to accomplish a specific purpose. |
| Learning skills | The ability to provide a self-assessment of the necessities of knowledge (theoretical or practical) and take measures to acquire and implement this knowledge, while maintaining a flexible and open attitude towards learning throughout one’s professional life. | 1. Set goals with criteria for success so that they may be developed and worked on.  
2. Make judgements and draw conclusions.  
3. Connect one’s own and others’ ideas and experiences.  
4. Respond positively to change, seeking advice and support when needed.  
5. Plan ahead by creating a schedule that includes all commitments relating to study, work, and personal or social life for the next few days/weeks/months.  
6. Be able to develop individual learning strategies in order to acquire new knowledge (focus on how to learn versus what to learn).  
7. Identify learning needs and plan actions to close the gap between what is learnt and what needs to be known to know in order to ensure good work performance. |
| Tolerance to stress | The ability to show endurance in complicated or stressful situations and when facing roadblocks, workloads or a work pace different from normal while maintaining the same quality level in the tasks accomplished. | 1. Identify the positive and negative effects of stress, recognizing that stress is a reaction to positive experiences as well as negative ones and is a part of life.  
2. Detect the symptoms of chronic stress overload.  
3. Map the actions that increase stress.  
4. Employ techniques to help manage stress.  
5. Create a plan for work and home to help reduce and manage stress. |
| Work-life balance | The ability to manage successfully the frequent conflicts between life and work, personal and corporative goals, and personal and corporate values. | 1. Identify difficulties in reconciling work and family life.  
2. Balance the time shared among different personally meaningful life aspects.  
3. Improve workload management with techniques and approaches for planning one’s time, interacting with co-workers and understanding each another. |
Creativity/innovation

The ability to contribute new ideas that help improve the products or services of an organization as well as the activities performed on the job, with the aim of responding to the needs of the organization in terms of its evolution.

1. Apply new methods for completing required tasks, eventually finding a “better way”.
2. Employ strategies to deal with the constantly changing professional landscape.
3. Improve one’s ability to respond practically and creatively to problems and opportunities.
4. Use frameworks and strategies to generate a supportive environment for creativity and innovation, e.g. exchange ideas in online forums, facilitate team processes in an atmosphere of mutual respect and support, etc.

The report “Future Work Skills 2020” (Davies et al., 2011) proposes ten skills considered to be key drivers of change to reshape the landscape of work up to 2020, namely:

1. **Sensemaking**: ability to determine the deeper meaning or significance of what is being expressed.
2. **Social intelligence**: ability to connect to others in a deep and direct way, to sense and stimulate reactions and desired interactions.
3. **Novel and adaptive thinking**: proficiency at thinking and coming up with solutions and responses beyond that which is rote or rule-based.
4. **Cross-cultural competency**: ability to operate in different cultural settings.
5. **Computational thinking**: ability to translate vast amounts of data into abstract concepts and to understand data-based reasoning.
6. **New media literacy**: ability to critically assess and develop content that uses new media forms, and to leverage these media for persuasive communication.
7. **Transdisciplinarity**: literacy in and ability to understand concepts across multiple disciplines.
8. **Design mindset**: ability to represent and develop tasks and work processes for desired outcomes.
9. **Cognitive load management**: ability to discriminate and filter information by importance, and to understand how to maximize cognitive functioning using a variety of tools and techniques.
10. **Virtual collaboration**: ability to work productively, drive engagement, and demonstrate presence as a member of a virtual team.

Using an empirical study, Humburg et al. (2013) identify six trends and six related skills which employers value as being the most important when recruiting higher education graduates. These trends and skill domains and the multiple aspects they encompass are shown in Table 3.

<table>
<thead>
<tr>
<th>Trends</th>
<th>Skills</th>
<th>Aspects of skills</th>
</tr>
</thead>
</table>
| Knowledge society     | Professional expertise | ● Specific body of knowledge  
                      |                                       | Ability to apply expert thinking  
                      |                                       | General academic skills (e.g. analytical thinking, reflectiveness) |
| Increasing uncertainty| Flexibility            | ● Ability to deal with changes and uncertainty  
                      |                                       | Ability to learn new things  
                      |                                       | Employability skills (e.g. the willingness to invest in further |
As Cinque (2016) points out, although a variety of studies and reports in recent years have aimed to establish a list of generic or non-technical skills crucial for higher education graduates to acquire, there is no one definitive list of generic skills. Instead, the various existent lists seem to share six common elements:

- **Basic/fundamental skills**, such as literacy, numeracy and using technology.
- **People-related skills**, such as communication, interpersonal, teamwork and customer-service skills.
- **Conceptual/thinking skills**, such as collecting and organizing information, problem-solving, planning and organizing, learning-to-learn skills, thinking innovatively and creatively and systems thinking.
- **Personal skills and attributes**, such as being responsible, resourceful, flexible, able to manage one’s own time and having self-esteem.
- **Skills related to the business world**, such as innovation and entrepreneurial skills.
- **Skills related to the community**, such as civic or citizenship knowledge and skills.

Nevertheless, despite the long list of studies and reports dedicated to defining, classifying, and evaluating the employability skills of graduates in terms of soft skills, few studies focus on hard/subject-specific/non-transferable skills in specific fields. Responding to this need, the Skill Up project also addresses the subject-specific skills required by graduates when entering the labour market. In this sense, although in this report we focus on the analysis of supply and demand of soft or transversal skills for employability, in the second report of the project special consideration will be given to the analysis of the subject-specific skills required by graduates in the specific programmes involved in our study.

Taking the list of soft skills developed by the ModEs project as a starting point, and after identifying, analysing and clustering the multiple skills that emerged from the different programmes involved in our study:

6 The programmes involved are: Business Administration and Management; Administration and Finance; Career Counselling; Labour Market and Resource Management; and International European Management.
frameworks, taxonomies and lists of the European and national reports and studies reviewed, we have established the following non-definitive set of employability skills relevant for new graduates from the perspective of both the worlds of education and work.  

To define this taxonomy, we have considered those skills that are vital for success in the workplace and that should be developed mainly throughout higher education training. Therefore, we have not included those skills that from our point of view should be acquired throughout compulsory education (i.e. basic skills) or the skills more likely to be developed throughout professional life (i.e. leadership or negotiation). As shown in Table 4, we have sorted these skills into four clusters: cognitive, methodological, social and subject-specific.

This set of skills was taken as a reference for carrying out an analysis of the supply and demand of new graduates’ employability skills at European and national levels. This analysis is presented in Section 5 of this report. This set of skills was also used to build all the instruments applied within the project’s framework.

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7 This list of skills was verified and validated by all the partner institutions, as well by the project’s International Advisory Committee.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td><strong>Cognitive</strong></td>
<td></td>
</tr>
<tr>
<td>Analytical thinking</td>
<td>The ability to gather, analyse and articulate information from different sources and to use it in a discerning way to solve problems and make decisions.</td>
</tr>
<tr>
<td>Creative thinking</td>
<td>The ability to <em>think outside the box</em> in order to bring new ideas to solve problems or seek solutions to a particular situation.</td>
</tr>
<tr>
<td>Foreign language</td>
<td>The ability to perform (listening, speaking, reading and writing) in a language different from the mother tongue. Also includes intercultural understanding.</td>
</tr>
<tr>
<td>Learning to learn</td>
<td>The ability to effectively manage one’s own learning process and needs, identifying available opportunities, and the ability to overcome obstacles in order to learn successfully <em>(European Commission, 2006).</em></td>
</tr>
<tr>
<td>Problem-solving</td>
<td>The ability to identify needs and problems, to engage in the actions or thoughts necessary to find solutions to a difficult or complex question or situation and resolve conceptual problems.</td>
</tr>
<tr>
<td>Decision-making</td>
<td>The ability to think of several possible choices when an important decision must be made, to find relevant information to make a good choice and to predict the consequences of the decisions taken for others.</td>
</tr>
<tr>
<td><strong>Methodological</strong></td>
<td></td>
</tr>
<tr>
<td>Digital skills</td>
<td>Being digitally competent in 4 areas <em>(Digital Competence Framework 2.0, 2016):</em> 1) Information and data literacy: to locate, retrieve, store, manage, and organize digital data, information and content. 2) Communication and collaboration: to interact, communicate and collaborate through digital technologies. 3) Digital content creation: to create and edit digital content and to integrate it into an existing body of knowledge applying correctly the licences and respecting copyright. 4) Safety: to protect devices, content, personal data and privacy in digital environments.</td>
</tr>
<tr>
<td>Results-oriented</td>
<td>The ability to make organizational efforts profitable while always having in mind the goals pursued. It involves optimizing time management, prioritizing future activities and using tools or techniques that make it easier to develop them. <em>(Haselberger et al., 2012).</em></td>
</tr>
<tr>
<td>performance</td>
<td></td>
</tr>
<tr>
<td>Self-management</td>
<td>The ability to set goals and priorities through the selection and distribution of tasks and resources. It also encompasses time management, organization, responsibility, and self-reliance.</td>
</tr>
<tr>
<td>Social</td>
<td>Communication and interpersonal skills</td>
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<tr>
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<td>----------------------------------------</td>
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<tr>
<td></td>
<td>Teamwork</td>
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<tr>
<td></td>
<td>Cross-cultural and diversity competence</td>
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<td></td>
<td>Ability to cope with changes</td>
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<td></td>
<td>Conflict management</td>
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<td></td>
<td>Stress management</td>
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<tr>
<td>Subject-specific</td>
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4. Defining authentic learning scenarios

Influenced by constructivist pedagogy and technological progress, authentic learning is increasingly being sought through authentic activities as a basis for learning in both face-to-face and web-based courses. While real businesses coupled with traditional course teaching methods have served primarily as tools for developing skills and processes, authentic learning is a more radical approach to building an entire course of study based on authentic activities and tasks. Authenticity is a notion that can include different meanings in different contexts. Some (Savery & Duffy, 1996) have argued that only real-problem contexts should be presented to guarantee authenticity. Others (Alessi, 2000) have shown that maximum fidelity does not necessarily lead to maximum effectiveness in learning (Herrington & Herrington, 2007). Furthermore, cognitive authenticity, rather than physical authenticity, is the key principle (Smith, 1987; Herrington & Reeves, 2003). Authenticity is not a neutral component. Rather, it occurs when various components – such as the learner, the learning environment and the task – interact (Barab, Squire & Dueber, 2000).

Resnick (1987) addresses the gap between the real-life application of knowledge in the workplace and the theoretical learning that takes place in formal classroom teaching, where students are taught in a largely decontextualized manner. According to Brown, Collins and
Duguid (1989) a way to bridge the gap is to use a model of cognitive apprenticeship. Brown, Collins and Duguid (1989) argue for a method, based on a traditional apprenticeship model, designed to “enculturate students into authentic practices through activity and social interaction” (p. 37). Collins, Brown and Newman (1989) identify three cognitively important characteristics in traditional apprenticeship:

1. Learners have continual access to models of expertise-in-use against which to refine their understanding of complex skills.
2. Apprentices often have several masters and have access to a variety of models of expertise leading to an understanding that there may be different ways to carry out a task, and that no one individual embodies all knowledge and expertise.
3. Learners have the opportunity to observe other learners with varying degrees of skill (p. 456).

Largely influenced by the research of Lave and Wenger (1991), a theoretical perspective for learning based on the apprenticeship model was developed. Brown, Collins and Duguid (1989) adapted these ideas and formulated a proposal for a model of situated cognition. They argued that meaningful learning only occurs while it is embedded in a social and physical context. According to Herrington (2006), during the 1990s further studies of situated learning and cognitive apprenticeship coincided with the development of web-based learning environments.

Authentic learning environments, Herrington and Kervin (2007) argue, should provide authentic context. Such a context reflects how knowledge will be applied in real life. An authentic learning environment has to provide authentic activities. To quote Herrington (2006):

The learning environment needs to provide ill-defined activities which have real-world relevance, and which present a single complex task to be completed over a sustained period of time (p. 2).

The authentic learning environment employs access to expert performances and modelling of processes. The online learning environment has to provide access to expert thinking. It needs to provide access to learners with various levels of expertise and to the observation of real-life situations.

Authentic learning environments allow learners to learn through interaction with multiple roles and perspectives rather than the teacher’s single perspective. Different resources and media make possible a rich array of opinions. Furthermore, authentic learning environments should promote reflection to enable abstractions to be formed.

Kervin and Herrington (2007) emphasize the social aspect of reflection rather than defining it as a solitary action.

In the authentic learning environment, students have to reflect upon knowledge of different kinds to hypothesize, predict and solve problems. Unlike many classroom tasks, the authentic learning environment highlights the educational advantages of collaboration among students. When they are working together in pairs or in small groups, they are able to articulate the common understanding that they have co-constructed. The authentic learning environment ensures classroom tasks are completed within a social context. In such a context, students are discussing, interviewing, sharing pictures or stories and presenting talks to make sure that they are able to articulate, negotiate and defend their understanding during the process.

In order to enable tacit knowledge to be explicit, the authentic learning environment has to promote articulation. Herrington and Herrington (2008) wrote that the process of articulation
“... enables formation, awareness, development, and refinement of thought” (p. 72).

In the authentic learning environment, teachers are in charge of coaching and scaffolding. They provide resources, observe student activities and offer reminders and hints, modelling and providing different kinds of feedback. Teachers provide their students with the different skills and strategies that they are unable to provide for themselves to complete tasks in class. When the students are able to do this themselves, the coaching or scaffolding is removed. The scaffolding and coaching are highly specific to the learning scenario and to the specific problems encountered by students as they attempt to integrate their knowledge. Scaffolding can also be provided through collaboration with other students who are more capable than their colleagues.

Authentic learning environments should also provide for an integrated and authentic assessment of learning. It needs to give students the chance to “...to be effective performers with acquired knowledge...” (Herrington & Herrington, 2008, p. 73). Authentic assessment allows students’ learning to be assessed comprehensively within specific tasks. Rather than carrying out a separate, artificial assessment removed from the nature of the task at hand, Herrington, Reeves and Oliver (2007) stress that the authentic assessment of activities “…reflects the real-world assessment...” (p. 87).

According to Herrington and Kervin (2007), using these principles of authentic learning to design in-classroom learning activities provides students as well as teachers with a rewarding and innovative environment. Barab, Squire and Dueber (2000) stress that authenticity does not come from the issue, the environment or the learner. It takes place when these parts interact. Herrington and Herrington (2008) emphasize that it is cognitive authenticity rather than physical authenticity that is of prime importance in designing authentic learning environments.

We use the characteristics of the authentic learning task (Herrington, Oliver & Reeves, 2010) as a theoretical framework for providing an authentic context that reflects the way the knowledge will be used in real life.

In order to enable students to solve realistic problems, an authentic context is needed, built of a rich and complex knowledge base which has real-life relevance and integrates and array of subject areas and multiple perspectives in order to promote reflection. Within this authentic context, activities must provide students with a meaningful way of exploring real-world tasks that matches that of professionals in the field as closely as possible. This gives students the opportunity to compare, reflect and make critical choices. These activities highlight the students’ ability to have an impact on the world beyond the classroom. Furthermore, students need to have access to expert role models, such as experienced professionals or more experienced peer students, in order to solve the problem. The activities should be ill-defined and unstructured, with no set scopes or boundaries, and require sustained reflection over a number of days, weeks or months, rather than taking minutes or hours to complete (Herrington & Oliver, 2003). In addition, no summarizing questions or instructions are to be given. The students need to identify exactly what is required of them and break the global task into sub-tasks and define what steps to take. In order to find the solution to the problem collaboration as well as cooperation is needed (Dillenbourg, 1999). The work must be done synchronously, with each student contributing to the task. The creation of the solution/product cannot be completed independently by any individual. Through the learning process, the teacher refrains from providing conceptual or metacognitive scaffolding; the students must be able to articulate what they have learned when presenting the solution. Authentic activities and assessment seamlessly complement each other in a way that reflects real-world assessment, which gives students the chance to be effective performers with the knowledge acquired and to present finely tuned
performances or products that are of value in their own right rather than as part of training for something else (Herrington & Oliver, 2000, 2003).

As a part of the authentic activities, students will be able to practice transferrable skills that will be of use in any professional context. These include judgment, synthesis, research skills, decision-making, negotiation and application of theory in practice (Jenkins, Clinton, Purushotma, Robinson & Weigel, 2006; Lombardi, 2007).

The novelty of Skill Up lies in combining a learner-centred, genuine and effective learning approach, such as authentic learning (Herrington & Herrington, 2006), with an effective use of digital technologies as a catalyst for bringing work experience to formal learning in HE and VET institutions, thus better developing graduates’ employability skills. Generally, authentic learning has been defined as an authentic context that reflects the way the knowledge will be used in real life (Rule, 2006). This conceptualization focuses on designing real-life tasks and creating environments which reflect the manner in which the knowledge will be used in real-life contexts.

In our approach, we expand this understanding of authenticity in learning, as an attribute of learning tasks and environments, and assume authentic learning as “a quality of educational processes that engage students in becoming more fully human” (Scanlon, 2011). This broadened notion of authentic learning incorporates not only the epistemological dimension – what students are expected to know and be able to do – but also ontological – who students are becoming or learning to be.

5. Do new graduates have the skills required for the world of work?

This section presents the key findings in terms of the supply and demand of new graduates’ employability skills at two levels, European and national, in each of the three partner countries. The main method was based on a literature review of reports incorporating the perspective of employers’ representatives, undergraduates, graduates and higher education teaching staff. A total of 25 documents were reviewed, including international, European and national reports. For the purposes of this report, the analysis focuses on the dimension of soft skills for employability. The analysis was carried out taking the taxonomy of skills for employability established in the Section 3.1 of this report as a reference.
5.1 Europe-wide analysis

At an international and European level we have reviewed a total of ten reports with the aim of identifying the overall satisfaction of employers with new graduates' employability skills and also the skills graduates are acquiring (or not) in universities and VET institutions from the perspective of undergraduates, graduates and teaching staff. In the end not all reports were taken into account in this analysis due to various reasons, such as their not including data on the partner countries, because the data provided do not focus exclusively on higher education, or because they do not incorporate any of the stakeholders’ perspectives.

For the employers’ perspective, we took as a reference the Eurobarometer survey on “Employers’ perception of graduate employability” (2010) and the final report of the study “What makes the difference? A qualitative appraisal of higher education graduate employability in Europe: the employers’ perspective” (Humburg, Velden & Verhagen, 2013).

The main aim of the Eurobarometer survey (2010) was to gather information from company recruiters on how they perceive graduates’ employability and whether higher education institutions are providing students with the skills necessary to cope with the type of work envisaged for them. Over 7,000 recruiters working in public and non-public companies, with more than 50 employees, were interviewed by telephone between 30 August and 7 September 2010 in 31 countries (EU27, Norway, Iceland, Croatia and Turkey).

Among the various issues covered by the report, of particular importance here are: the importance of the various skills required of graduates, and the levels of satisfaction regarding whether or not graduates have these skills. The skills listed in the Eurobarometer survey were:

1. Good with numbers
2. Good reading/writing skills
3. Foreign language skills
4. Computer skills
5. Sector-specific skills
6. Communication skills
7. Analytical and problem-solving skills
8. Ability to adapt to and act in new situations
9. Decision-making skills
10. Teamwork skills
11. Planning and organizational skills

Some of these skills such as basic skills (numeracy, reading and writing skills) are not in our list of employability skills, as we assume that these are to have been acquired in stages prior to higher education.

As for as the importance of graduates’ skills, when asked about the skills and capabilities that higher education graduates should have in next 5-10 years with the year 2010 a starting point, according to the Eurobarometer survey, soft skills are just as valued as sector-specific and computer skills. The most highly valued skills were: sector-specific skills, communication skills and the ability to work as a team. However, all the skills listed in the survey were considered to be very or rather important when recruiting HE graduates. One of the skills least-highly valued was foreign language, even though this is a skill requirement for graduates.
As for satisfaction with graduate skills, a strong majority of employers reported that graduates had the skills required to work in their company. The skills with the highest level of employer satisfaction were: computer skills, teamwork and good reading/writing skills. Satisfaction with employees’ foreign language skills was again the lowest ranked.

In a similar vein, the report “The Employability of Higher Education Graduates: The Employers’ Perspective” (Humburg et al., 2013) aimed to provide further insight into what employers’ needs are and how they evaluate higher education graduates’ employability skills. The study, which included responses from more than 900 employers and other stakeholders in twelve European countries, used an innovative approach that combined different methods, such as: the simulation of the selection process with hypothetical candidates; in-depth interviews with employers; and focus groups with relevant stakeholders.

The study provides insight into:

- The major trends on the labour market that affect the skills that graduates are supposed to have.
- The key characteristics that employers look for when they recruit graduates and if these characteristics are comparable across countries and across occupational fields.
- The skills that graduates should possess in order to be employable and if these skills are comparable across countries and across occupational areas.
- How higher education institutions can best enable students to develop employable profiles and the dilemmas that they face when improving the employability skills of their students.

The employability skills measured in the study were already referenced in Section 3.1 of this report together with the trends, and aspects of the skills that affect graduates’ employability. These skills were: professional expertise; general academic skills; innovative/creative skills; strategic/organizational skills; interpersonal skills; commercial/entrepreneurial skills; and international orientation.

One aspect that differentiates this study from many other surveys related to employability skills is that it focuses on specific occupational fields, whereas other surveys have focused more on general skills. The following six occupational fields were covered:

- Financial professionals (e.g. accountant, financial analyst, investment advisor).
- Engineering professionals (e.g. civil engineer, mechanical engineer, chemical engineer) and electro-technology engineers (e.g. electronics engineer, telecommunications engineer).
- ICT professionals (e.g. system analyst, software developer).
- Media and communication professional (e.g. public relations officer, media consultant, journalist).
- Legal professionals (e.g. lawyer, jurist, legal advisor).
- Policy professionals/organizational advisors (e.g. policy analyst, human resource expert, management consultant).

Although the report does not cover all the higher education areas, excluding fields such as education, we think that it offers good coverage of the full range of fields of study in higher education.

Regarding the highly valued skills graduates should have, there is total alignment with the results of the Eurobarometer survey, which found sector-specific/professional expertise skills and
interpersonal skills – such as the ability to work as a team and to communicate effectively – the most important in today’s workplaces.

The report also reveals that employers consider that basic skills like literacy, numeracy and strategic ICT skills should have already been attained in secondary education, just as we have already suggested in this report.

Regarding the role of higher education institutions in developing the employability skills of graduates, the report points out that skills such as professional expertise; general academic skills (e.g. analytical thinking and reflectiveness); interpersonal skills and international orientation (e.g. foreign languages and intercultural skills) should mainly be developed in higher education.

In the view of many stakeholders the best way to integrate and further develop them is by incorporating “real” work practices in the curriculum, e.g. through real or simulated case studies (Humburg et al., 2013: 101).

Instead, strategic/organizational skills should be developed mainly in working life and innovative/creative and entrepreneurial skills throughout life.

When it comes to the employability skills of VET graduates, studies tend to focus on cognitive skills (e.g. reading, writing, numeracy and problem-solving) and basic ICT skills. According to the “OECD Skills Outlook 2015: Youth, Skills and Employability”, a large proportion of VET students in the OECD countries have very low cognitive skills, particularly in numeracy. The report also suggests that despite the fact that vocational education and training can directly link young people’s skills with the needs of the labour market, on average across OECD countries, less than 50% of VET students are exposed to work-based learning. Based on various datasets – including the Survey of Adult Skills (PIAAC) and the PISA Programme for International Student Assessment – the report highlights the challenges countries face in improving the skills and enhancing the employability of young people.

Employers and other stakeholders could be more engaged in education systems at various stages and through various ways. Developing work-based learning is a crucial way to strengthen the links between the education system and the labour market, enhance youth employability and improve transitions from education to work. Work-based learning can be integrated into vocational education and training (VET) but can also be encouraged in university programmes. VET programmes at both upper secondary and post-secondary levels offer options to develop skills needed in the labour market. They also offer opportunities for employers to engage in the education system (OECD, 2015: 27).

The missing perspectives

At a European level, the literature review carried out suggests that more needs to be done to ascertain how teaching staff, undergraduates and graduates feel about the employability skills that higher education institutions are equipping students with and the types of approaches and activities used to help promote new graduates’ employability.

Beyond small-scale and national research (Lowden et al., 2011; Tymon, 2013; AQU Catalunya, 2017), the most recent study from the graduates’ viewpoint was undertaken in 2005. It analysed
working graduates in 13 countries (including Spain, Germany and Sweden) five years after having completed higher education. The Flexible Professional in the Knowledge Society (REFLEX) survey (Humburg et al., 2013), explored issues such as:

- The demands graduates face and how well they are prepared by higher education to meet them.
- The professional work of graduates.
- Changes in the working environment, especially the labour market and in the workplace.
- International dimensions of higher education and graduate employment, especially regarding mobility between countries.
- What determines graduates’ success and failure in the labour market.

The five areas of skills for employability identified by the report as being key to graduates’ success were professional expertise, functional flexibility, innovation and knowledge management, mobilization of human resources, and international orientation.

5.2 Spain

We reviewed a total of nine reports for the Spanish analysis. We include here the analysis of five of these studies, which provide meaningful insight into the point of view of employers and students from HE or VET settings. As with the analysis at European level, there is still a lack of studies that incorporate the viewpoint of academics.

In Spain, the Eurobarometer survey “Employers’ perception of graduate employability” (2010) interviewed 401 employers from a wide range of sectors, 59% of which have recruited HE graduates in the last five years and plan to continue to do so in the next five years. The three main degrees with the highest number of graduates hired are Engineering, Business and Economics and Law, in that order. A total of 93.5% of the employers who have recruited HE graduates in the last 5 years feel that the graduates recruited in the last 3-5 years have the skills required to work in their companies. However, 36% claim to have had difficulties with recruitment due to the lack of applicants with the right skills.

Regarding the importance of various skills when recruiting HE graduates, the skills considered in the report have been given the following ranking (it includes de sum of the rather important and very important skills):

1. Teamwork (98%)
2. Communication (95%)
3. Ability to adapt to and act in new situations (95%)
4. Analytical and problem-solving abilities (95%)
5. Computer skills (93.5%)
6. Planning and organizational skills (92.5%)
7. Sector-specific skills (91%)
8. Good literacy (reading and writing) (88.5%)
9. Decision-making (88%)
10. Good with numbers (82%)
11. Foreign language (67%)
When asked about their satisfaction with the level of skills of graduates, the sum of Spanish employers that are rather and very satisfied gives the following ranking:

1. Good with numbers (91%)
2. Computer skills (90%)
3. Good literacy (reading and writing) (89%)
4. Teamwork (88%)
5. Sector-specific skills (87%)
6. Communication (87%)
7. Ability to adapt to and act in new situations (83%)
8. Analytical and problem-solving abilities (83%)
9. Planning and organizational skills (83%)
10. Decision-making (76%)
11. Foreign language (62.5%)

Regarding the opinions about the skills that HE graduates should have in next 5-10 years, the five Spanish employers list the following as being the most important: teamwork, foreign language, sector-specific skills, analytical and problem-solving abilities and basic skills (that include good numeracy and literacy, and computer skills).

The Spanish report Competencias profesionales y empleabilidad (Professional skills and employability) carried out a forecasting analysis of the trends in the demand for employability skills in the medium and long term. It showed that, due to their constant presence in job offers, the following skills are essential to finding and maintaining a job:

- Commitment to the objectives of the company
- Initiative and dynamism
- Teamwork
- Creative attitude
- Commitment to lifelong learning
- Predisposition to innovation and new working methods
- Customer orientation
- Good communicator
- Effort, flexibility, organization, etc.

As for the supply of skills, even though the report aims to provide an analysis of the training in skills for employment that the education system is providing graduates, it does not incorporate the viewpoint of universities, graduates or undergraduates. The study, based on a meta-analysis of several national and European reports, namely Eurostat, OECD, Cedefop or Pisa, highlights that the basic skills (in reading and mathematics) of Spanish university graduates is below that of their European counterparts.

From the perspective of Spanish graduates, the “Barometer of employability and employment of university students in Spain” (in Spanish, Observatorio de Empleabilidad y Empleo Universitarios) (2016) gathered the opinions of 13,006 university graduates from the academic year 2009-2010, more than four years after they finished their studies. The report describes how graduates’ career paths have changed as well as their perception between the first and the last job. It also analyses to what extent companies demand the knowledge and skills acquired by graduates through university education from a vertical and horizontal adjustment. The horizontal adjustment deals with the relationship between the area of study and the sector in which graduates work, while the vertical adjustment looks at the degree of adequacy between employers.
Good practices in connecting workplace and learning in higher education

the level of knowledge and skills obtained in the university and those required by the job.

Regarding the vertical adjustment, the barometer includes the evaluation of 34 generic skills from three perspectives: the level of competence of graduates, the level to which universities have trained them, and the level required in the workplace. The 34 skills are grouped in three large groups or dimensions, following the proposal made in the Turing project: instrumental, interpersonal and systemic. The instrumental skills are divided into cognitive and methodological, communicative, language-related and ICTs. Among the interpersonal skills are some of the skills that we have classified as social, such as teamwork and cross-cultural and diversity competence. The systemic dimension includes skills such as the ability to cope with changes, creativity, innovation, self-learning and leadership of others.

As for the level of competence of graduates, languages skills are clearly the weakest (this includes mother tongue and foreign languages). In contrast, the graduates value highly their level in interpersonal skills. The three skills graduates claim to master most are ethical commitment at work, information and data literacy and the ability to take on new responsibilities. The three skills that graduates fell they master least are multimedia content creation and written and oral communication in a foreign language (Figure 2).

As for university’s contribution to their skill set, the graduates highlight that HE institutions mainly contributed to the development of skills such as teamwork, written communication and autonomous work. On the contrary, the university had the least impact on the development of foreign language skills (reading, written and oral communication), knowledge related to social media and online communities, and the ability to work in an international context. In addition, comparing the level of skill that graduates claim to possess and how much of it they attribute to the university shows that the skills mainly provided by the universities are also the skills that the graduates claim to master the best.
To summarize, according to the report, in terms of the level of skill required for employment, universities contribute the least in foreign languages, pressure management, work in international settings, decision-making and oral communication. However, universities do contribute to the development of written communication, teamwork and subject-specific skills (Figure 3).
5.3 Germany

In Germany, 400 interviews were conducted for the Eurobarometer survey “Employers’ perception of graduate employability” (2010: 186). Of the 400 companies interviewed, 59.8% recruit higher education graduates from the field of Business and Economics and 18% from the field of Law (Eurobarometer survey, 2010: 85). It is worth noting that the German partner for the Skill Up project, the Technical University of Applied Sciences Wildau, focuses mainly on the field of Administration, which was not mentioned in the Eurobarometer survey.

According to the Eurobarometer survey (2010: 7), over 60% of German respondents mentioned that the lack of the right skills and capabilities led to a shortage of qualified graduates for the vacant positions. However, the German employers interviewed were highly satisfied with the skills of the higher education graduates they recruited: 95% of the 364 German companies interviewed agreed or strongly agreed that the higher education graduates recruited in the last three to five years had the skills required to work in their company (Eurobarometer, 2010: 87). Thus, in the opinion of these German employers with experience in hiring higher education graduates, these new graduates possess the skills needed for the world of work.

The following provides a more detailed analysis of the skills in the Skill Up project (see Section 3.1).

Table 5 shows the percentage of German employers:

a. Who consider the aforementioned skills rather and very important when recruiting higher education graduates (Eurobarometer, 2010: 89–109). These results provide
information about which skills German employers look for when they recruit higher education graduates.

b. Who are rather and very satisfied with the skills of the higher education graduates their company recruited in the last three to five years (Eurobarometer, 2010: 111–132).

c. Who consider the aforementioned skills to be the most important for new higher education graduates in the next 5–10 years (Eurobarometer, 2010: 133).

Table 5: Opinion of German employers regarding the importance of various skills in recruiting higher education graduates, their satisfaction with the skills of graduates as well as the most important skills in the next 5-10 years

<table>
<thead>
<tr>
<th>Skills</th>
<th>a) Importance (rather and very important) (n=400)</th>
<th>b) Satisfaction (rather and very satisfied) (n=364)</th>
<th>c) Skills most important in the next 5-10 years (n=400)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numeracy skills</td>
<td>97.2%</td>
<td>87.1%</td>
<td>46% Combined as basic skills</td>
</tr>
<tr>
<td>Literacy skills</td>
<td>99%</td>
<td>89.6%</td>
<td></td>
</tr>
<tr>
<td>Computer skills</td>
<td>98.3%</td>
<td>90.7%</td>
<td></td>
</tr>
<tr>
<td>Foreign language skills</td>
<td>69.7%</td>
<td>65.7%</td>
<td>30.5%</td>
</tr>
<tr>
<td>Sector-specific skills</td>
<td>96%</td>
<td>85.4%</td>
<td>49.5%</td>
</tr>
<tr>
<td>Communication skills</td>
<td>97.3%</td>
<td>82.4%</td>
<td>43%</td>
</tr>
<tr>
<td>Analytical and problem-solving skills</td>
<td>97.8%</td>
<td>79.1%</td>
<td>44.8%</td>
</tr>
<tr>
<td>Ability to adapt to and act in new situations</td>
<td>97.7%</td>
<td>80.5%</td>
<td>24.5%</td>
</tr>
<tr>
<td>Decision-making skills</td>
<td>95.3%</td>
<td>73.6%</td>
<td>Not chosen</td>
</tr>
<tr>
<td>Teamwork skills</td>
<td>98%</td>
<td>89.8%</td>
<td>35.2%</td>
</tr>
<tr>
<td>Planning and organizational skills</td>
<td>97.3%</td>
<td>79.1%</td>
<td>22.2%</td>
</tr>
</tbody>
</table>

The results of the Eurobarometer survey show that the Skill Up project focuses on skills that almost all interviewed German employers consider as rather and very important when recruiting higher education graduates. Only in terms of foreign language skills is the agreement less pronounced. About two-thirds of the German company representatives interviewed consider foreign language skills as rather or very important.

A total of 364 of the 400 German organizations interviewed employ recent higher education graduates. Their satisfaction with the skills these graduates possess is very high. Only foreign language skills and decision-making skills are rated a little bit lower. The satisfaction ratings of several skills are in accordance with the abovementioned result, namely that 95% of German employers state that the graduates hired in the last three to five years have the skills required to work in their organization.
In terms of the future importance, the so-called basic skills, like literacy, numeracy and computer skills, sector- and job-specific skills and analytical and problem-solving skills are the most mentioned.

One hundred German employer representatives from the industries of finance (7), engineering (30), ICT (17), media and communication (19), legal (17), and policy (10) took part in the conjoint analysis of Humburg et al. (2013: 18). The conjoint analysis revealed that German employers look at the following attributes when they ask higher education graduates to come in for a job interview. The ranking corresponds to the relative importance the employers attached to the attributes (Humburg et al., 2013: 25).

1. Match between field of study and job tasks
2. Relevant work experience
3. Degree (bachelor’s, master’s, doctorate)
4. Grade Point Average
5. Study abroad
6. University’s prestige/reputation

The top-ranking skills in terms of the match between field of studies and job tasks emphasize the importance of job-specific skills alongside skills that are required irrespective of the profession. The importance of work experience is also highlighted in the Eurobarometer survey: 90% of those interviewed in Germany rather agree or strongly agree that work experience is a crucial asset (Eurobarometer, 2010: 163).

The positions of “study abroad” and “university’s prestige/reputation” are in accordance with the results of the Eurobarometer survey. Thus, the international skills of new graduates are not very important for most German employers: only 13.8%, or rather 24% of the employers interviewed (n=400), rather or strongly agree that it is important that new recruits have studied or done an internship abroad (Eurobarometer, 2010: 165, 167). The employers also do not attach great importance to the international ranking and reputation of the higher education institutions graduates come from (Eurobarometer, 2010: 6, 34). But international experience can have an influence: the part-worth estimates of the attribute level in the context of the conjoint analysis revealed that graduates who have received their entire higher education abroad have slightly higher chances of being invited for a job interview than graduates without study abroad experience (14.9 vs. 10.2 points) (Humburg et al., 2013: 37, 102).

In terms of the degree, both studies’ findings coincide in stating that having a doctorate is of lesser importance (Eurobarometer, 2010: 135; Humburg et al., 2013: 98). But the studies’ results differ regarding the importance of bachelor’s and master’s degree. According to Humburg et al.’s (2013: 98) study, German employers seem to prefer master’s degrees to bachelor’s degrees. An explanation for this finding could be that in Germany people’s higher education usually ends at master’s degree level. In contrast, in the Eurobarometer survey (2010: 135), the majority of German respondents (51.8%) state that graduates with bachelor’s degrees best fit the skill requirements for future positions in their company, while only 38% opt for graduates with master’s degrees.

Humburg et al. (2013: 52) also investigated which skills are most important when hiring higher education graduates. The following ranking reveals the relevance of the skills for German employers:
1. Professional expertise (subject-specific knowledge and expert thinking)
2. Interpersonal skills (communication skills, teamwork skills, etc.)
3. Commercial/entrepreneurial skills
4. Innovative/creative skills
5. Strategic/organizational skills / General academic skills (analytical thinking, reflectiveness)

The fact that professional expertise and interpersonal skills are at the top of the ranking is in line with both the high degree of importance the German employers interviewed in the Eurobarometer survey attached to sector-specific skills (66% very important), communication skills (59.5% very important), and teamwork skills (66.5% very important) when recruiting new graduates and the predicted importance of sector-specific skills (2010: 97, 99, 107, 133).

Strategic/organizational skills share fifth place, followed by general academic skills. That general academic skills are in last place does not mean that employers do not attach importance to them, rather that they expect graduates from higher education institutions to possess them (Humburg et al., 2013: vi). Strategic/organizational skills or innovative/creative skills are less important when recruiting new graduates because, in the opinion of those interviewed, graduates will develop these skills during their work experience, or not every employee needs to be creative as long as some team members are (Humburg et al., 2013: v, vi).

According to 60.2% of the German employers interviewed in the Eurobarometer survey (2010: 183), sector-specific work placements/internships are the best action that higher education institutions can take to improve the employability skills of graduates.

However, it is striking that only a very small number of the German employers interviewed cooperate with higher education institutions in designing curricula and study programmes (7.8%, Eurobarometer 2010: 173) and that less than half of the German respondents consider this cooperation to be important (43%, Eurobarometer, 2010: 175). Likewise, only 18.5% of German employers rather or very frequently cooperate with higher education institutions in order to recruit new graduates (Eurobarometer, 2010: 177).

5.4 Sweden

In Sweden, 200 interviews were conducted for the Eurobarometer survey “Employers’ perception of graduate employability” (2010: 186). Of the companies interviewed, 51.5% had 50-249 employees and 48.5% had more than 250 employees. Of the 200 companies, the ownership structure was 41.5% public and 57.5% private. The companies’ main activity was manufacturing (29.5%). See further activities below.

Out of these 200 companies, 59.8% recruited higher education graduates with degrees in the fields of Engineering (53.5%), Business and Economics (43.5%) and Teacher Training and Education (27.5%) (Eurobarometer survey, 2010: 85).
Regarding the percentage of higher education graduates currently employed in their company, Swedish respondents estimated that 51% ranged from 10% or less (Austria, Germany, Italy and the Czech Republic) to 55-56% (Luxembourg and Norway).

A whopping 98% of the Swedish companies interviewed agreed or strongly agreed that the higher education graduates recruited in the last three to five years have the required skills to work in their company (Eurobarometer, 2010: 87). The following discusses in more detail the skills that the Skill Up project focuses on (see Section 3.1).

Table 7 shows the percentage of Swedish employers:

d. Who consider the aforementioned skills rather and very important when recruiting higher education graduates (Eurobarometer, 2010: 89–109). These results provide information about which skills Swedish employers look for when they recruit higher education graduates.

e. Who are rather and very satisfied with the skills of the higher education graduates their company recruited in the last three to five years (Eurobarometer, 2010: 111–132).

f. Who consider the aforementioned skills to be the most important for new higher education graduates in the next 5–10 years (Eurobarometer, 2010: 133).

Table 7: Opinion of Swedish employers regarding the importance of various skills in recruiting higher education graduates, their satisfaction with the skills of graduates as well as the most important skills in the next 5-10 years

<table>
<thead>
<tr>
<th>Skills</th>
<th>a) Importance (rather and very important) (n=200)</th>
<th>b) Satisfaction (rather and very satisfied) (n=200)</th>
<th>c) Skills most important in the next 5-10 years (n=200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numeracy skills</td>
<td>83%</td>
<td>74.8%</td>
<td>31.5% Combined as basic skills</td>
</tr>
<tr>
<td>Literacy skills</td>
<td>94%</td>
<td>79.4%</td>
<td></td>
</tr>
<tr>
<td>Computer skills</td>
<td>95%</td>
<td>79.4%</td>
<td></td>
</tr>
<tr>
<td>Foreign language skills</td>
<td>80.5%</td>
<td>71.3%</td>
<td>18%</td>
</tr>
<tr>
<td>Sector-specific skills</td>
<td>84.5%</td>
<td>72.2%</td>
<td>31%</td>
</tr>
<tr>
<td>Communication skills</td>
<td>96.5%</td>
<td>75.3%</td>
<td>52.5%</td>
</tr>
<tr>
<td>Analytical and problem-solving skills</td>
<td>93.5%</td>
<td>72.7%</td>
<td>38.5%</td>
</tr>
<tr>
<td>Ability to adapt to and act in new situations</td>
<td>96%</td>
<td>72.2%</td>
<td>45%</td>
</tr>
<tr>
<td>Decision-making skills</td>
<td>93.2%</td>
<td>67.5%</td>
<td>Not chosen</td>
</tr>
<tr>
<td>Teamwork skills</td>
<td>93%</td>
<td>75.8%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Planning and organizational skills</td>
<td>89.5%</td>
<td>67.5%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Good practices in connecting workplace and learning in higher education
The results of the Eurobarometer (2010) survey show that the Skill Up project focuses on skills that almost all the interviewed Swedish employers consider as rather and very important when recruiting higher education graduates. Of the 200 Swedish organizations interviewed, 194 employ higher education graduates and the rest (6) are planning to. The satisfaction with the skills that higher education graduates possess is very high. The satisfaction ratings of several skills are in accordance with the abovementioned result, namely that 98% of Swedish employers state that the graduates hired in the last three to five years have the skills required to work in their organization. In terms of the future importance of the so-called basic skills, communication skills are the most frequently mentioned, which corresponds with the results of Humburg, van der Velden and Verhagen’s report (2013:5), which showed “that interpersonal skills (communication skills, teamwork skills et cetera) are almost as important as professional expertise.”

Swedish employer representatives from the industries of finance (22), engineering (40), ICT (11), media and communication (13), law (12), and policy (1) took part in the conjoint analysis of Humburg et al. (2013: 18). The conjoint analysis revealed that Swedish employers look for the following attributes when asking higher education graduates to come in for a job interview. The ranking corresponds to the relative importance the employers attached to the attributes (Humburg et al., 2013: 25).

1. Match between field of study and job tasks
2. Relevant work experience
3. Degree (bachelor’s, master’s, doctorate)
4. Grade Point Average
5. Study abroad
6. University’s prestige/reputation

The top-ranking skills in terms of the match between field of studies and job tasks emphasize the importance of job-specific skills alongside skills that are required irrespective of the profession. The importance of work experience is also highlighted in the Eurobarometer survey: 74% of the Swedish employers interviewed rather agree or strongly agree that work experience is a crucial asset (Eurobarometer, 2010: 163). The positions of “study abroad” and “university’s prestige/reputation” are in accordance with the results of the Eurobarometer survey. Thus, the international skills of new graduates are not very important to most Swedish employers: only 5.5%, or rather 6.5% of interviewed employers (n=200), rather or strongly agree that it is important that new recruits have studied or done an internship abroad (Eurobarometer, 2010: 165, 167). Swedish employers also do not attach great importance to the international ranking and reputation of the higher education institutions graduates come from (Eurobarometer, 2010: 6, 34).

In terms of the degree, both studies’ findings coincide in stating that having a doctorate is of lesser importance (Eurobarometer, 2010: 135; Humburg, et al. 2013: 98) and that there is an employer preference for bachelor’s degree. Of the 200 Swedish companies, 60% think that graduates with bachelor’s degrees would best fit the skill requirements for future positions at their company. The areas with the highest rate of recruitment from among higher education graduates were Engineering (53.5%), Business and Economics (43.5%) and Teacher Training and
Education (27.5%). A reason for not preferring a master’s degree could be that not all Engineering programmes in Sweden lead to a master’s degree, nor do the majority of Business and Economics programmes or Education programmes (Eurobarometer, 2010: 135). This corresponds to Humburg et al.’s (2013) statement, as in Sweden people’s higher education usually ends at bachelor’s degree level.

Almost 90% of those interviewed were well aware of the difference between a bachelor’s and master’s degree.

Humburg et al. (2013: 52) also investigated which skills are most important when hiring higher education graduates. The following ranking lists the skills according to their relevance for Swedish employers:

1. Professional expertise (subject-specific knowledge and expert thinking)
2. Interpersonal skills (communication skills, teamwork skills, etc.)
3. Innovative/creative skills
4. Commercial/entrepreneurial skills
5. Strategic/organizational skills
6. General academic skills (analytical thinking, reflectiveness)

The fact that professional expertise and interpersonal skills are at the top of the ranking is in line with both the high degree of importance the Swedish employers interviewed in the Eurobarometer survey attached to sector-specific skills (48.5% very important), communication skills (57.5% very important), and teamwork skills (58.5% very important) when recruiting new graduates and the predicted importance of sector-specific skills (2010: 97, 99, 107, 133).

Strategic/organizational skills share fifth place, followed by general academic skills. That general academic skills are in last place does not mean that employers do not attach importance to them, rather that they expect graduates from higher education institutions to possess them (Humburg et al., 2013: vi). Strategic/organizational skills or innovative/creative skills are less important when recruiting new graduates because, in the opinion of those interviewed, graduates will develop these skills during their work experience, or not every employee needs to be creative as long as some team members are (Humburg et al., 2013: v, vi).

Of the Swedish employers interviewed in the Eurobarometer survey (2010: 183), 39% feel that higher education institutions should improve the employability of their graduates by including practical experience in courses.

As with the case of Germany, it is striking that only a very small number of the employers interviewed cooperate with higher education institutions to discuss the curricula and study programmes (11.5%) (Eurobarometer, 2010: 173) but more than half of Swedish respondents consider cooperation to be important (52%) (Eurobarometer, 2010: 175). Likewise, only 16.5% of those interviewed rather or very frequently cooperate with higher education institutions in order to recruit new graduates (Eurobarometer, 2010: 177).

According to Swedish organizations, the best way to cooperate with higher education institutions on recruitment is to participate in internship programmes (33%) (Eurobarometer 2010: 181).
Good practices in authentic scenarios in higher education

In order to be able to discern what a good practice is and to identify good practices in matching graduates' skills and labour market demands through authentic learning scenarios in partners' higher education settings, we applied the elements of authentic learning following the evaluation criteria of Herrington, Reeves and Oliver (2010) as our evaluation tool (Appendix 2). According to these authors, an authentic learning environment consists of different elements:

- Authentic contexts
- Authentic activities
- Access to expert performances and modelling of processes
- Multiple roles and perspectives
- Collaboration and reflection
- Articulation
- Coaching and scaffolding
- Authentic assessment

The guide used to conduct the exploratory interviews is presented in Appendix 3. After presenting and discussing the findings with teaching staff, undergraduates, graduates, career counsellors and employers' representatives from the three partner countries in the online focus group (see Section 2 of Appendix 1), we have selected the four scenarios that we present below as examples of good practices.

6.1 A real authentic e-learning scenario in higher education: the virtual communication agency UOCom

The context

The Universitat Oberta de Catalunya (Open University of Catalonia, UOC) is a Catalan online university whose mission is to provide people with lifelong learning and education. Since its creation in 1994 as a state-of-the-art technological university with a highly innovative learning model, the UOC is one of the world’s premier online higher education universities, now engaging more than 50,000 students through its 6,438 open classrooms led by around 300 faculty members and 3,000 courses instructors.

Currently, the University offers 22 bachelor's degrees, 35 master's degrees, 4 doctoral programmes, 29 UOC-certified master's degrees and 239 postgraduate diplomas, specialization certificates and courses. Its research, innovation and transfer activity led by some 400 researchers is organized into 43 groups. Each group belongs to one of the University’s seven faculties (Faculty of Arts and Humanities, Economics and Business, Health Sciences, Information and Communication Sciences, Computer Science, Multimedia and Telecommunications, Law...
and Political Science and Psychology and Education Sciences) or to one of its three main research centres (the Internet Interdisciplinary Institute, the eLearn Center and the eHealth Center).

The learning activities are the central pillar of the educational model at the UOC. To help students in their learning, the University uses three main tools: teaching support, networked community and learning resources. The UOC’s model is also flexible because it is open to the implementation of a very diverse range of learning activities in accordance with the student competence developed, the area of knowledge or the degree of specialization for which the student is studying. This means that the dynamics and resources of these activities also need to be very diverse and adaptable to a large range of learning needs and situations.

The UOC’s educational model promotes participation and collective knowledge building through an interdisciplinary and open approach to students’ educational, social and working experience. The model incorporates collaborative learning through methodologies that involve problem-solving, participation in the development of projects, joint creation of products, discussion and research.

Area of knowledge:

Information and Communication Sciences

Programme:

Bachelor’s Degree in Communication

Subject:

Practicum (internship)

Summary:

UOCom is a virtual communication agency designed for e-internships in the field of communication in a distance higher education setting.

What is the authentic scenario?

The Practicum is a compulsory subject that is taken during the final phase of UOC degrees, enabling students to apply the theoretical and practical knowledge and skills that they have gained throughout the different courses. Each semester, internship places are offered as a result of the agreements that the University has signed with various institutions, companies and entities (partner centres). Due to the flexibility of the UOC’s educational model, the Practicum has certain unique features because it is the only course which requires compulsory hours of on-site activities at the institutions or centres associated with the degree's field of specialization.

Seeking to offer an effective solution for the educational needs of a significant number of
students, who have chosen an online university as an alternative that gives them, above all, freedom in organizing study times and space, UOC faculty members from several areas have been exploring over the last five years technological and methodological models of e-internship. The e-internships are not linked to the physical presence of the student at the internship centre over a period of time. Although work processes and communication in most workplaces are already developed in digital environments, e-internships are currently considered by a very small number of institutions and companies (Creus & Lalueza, 2012).

UOCom is a virtual communication agency designed by lecturers in the Faculty of Information and Communication Sciences to provide a response to the specific challenges that arise from the need to offer professional internships in a distance higher education setting. The agency is part of the ComCity project, a teaching innovation proposal created to respond to the needs of a significant part of the UOC students who are not available to do their professional internships on-site. ComCity is a set of 2.0 learning environments in which the dynamics of a real-world professional context in the field of communication are reproduced, such as teamwork, problem-solving under limited conditions or deadlines, customer orientation, and so forth.

According to Amalia Creus, Director of the Bachelor’s Degree in Communication and coordinating professor of the Practicum course, the objective of the agency is to “provide students with learning experiences that imply facing the complexity and unpredictability of a real professional context, going beyond a simulated environment and giving students the opportunity to really interact with/act on the real world”.

What makes this a good practice?

UOCom involves a significant change in the kinds of problems students face in academic situations and the kind they face in real-world professional settings. This consequently entails a transformation in the roles that teaching staff and students had to take on.

Specifically, we went from flows of knowledge focused on the lecturer-student binomial to a type of network organization where students and tutors constitute a work team, sharing responsibility for carrying out the tasks entrusted to the agency (Creus & Lalueza, 2012: 30).

An analysis of the UOCom scenario applying the principles of authentic learning identified by Herrington and Oliver (2000) reveals a number of characteristics which allow us to consider it as a good example of a truly authentic learning environment in higher education that equips students with cross-disciplinary and specific skills they will be required to have when entering the professional world.

Authentic context

Students who do a virtual internship at UOCom develop real communication projects for organizations in the tertiary sector. All the dynamics carried out in the agency are organized on
the basis of a networked work structure consisting of (Creus & Lalueza, 2012: 28):

- **Internship students.** The students are responsible for the management and correct execution of the products and services that the agency has to provide. They work as a team, assuming different roles and carrying out various tasks in the UOCom departments. Students who choose to do their internships at UOCom participate in a selection process based on which they are assigned to one of the three departments of the agency: creativity, account management and digital communication. The agency began in 2012 with a total of seven students taking part in the pilot trial, and now each semester has around twenty students doing their internships virtually.

- **Department managers.** Each team of students assigned to a department works under the direction of a department manager, who is a UOC course instructor responsible for guiding the students and coordinating their work.

- **Clients.** They are organizations in the tertiary sector. On the basis of a collaboration agreement, UOCom offers its services completely free of charge to non-profit organizations that lack sufficient resources to develop communication products and services.

**Authentic activities**

Currently, six tertiary sector organizations are clients of the UOCom agency. The students assigned to the agency’s departments work on a diversity of products and services and have to define the tasks and sub-tasks required to reach the outcome and gather information from different sources.

> At UOCom, students work on real cases and for real organizations. They gain experience with the dynamics and circumstances of the professional setting, working in teams, solving problems and organizing their time to meet the objectives set. And they do so charitably, as the agency’s “clients” are non-profit organizations who benefit from this collaboration (Amalia Creus).

Some examples of projects managed by students in the agency are: web development; open days; videos; brochures; bookmarks; campaign slogans; and logos.

**Access to experts**

The departments of the agency are headed by a course instructor, who is a part-time lecturer and expert in the communication field, and who is in charge of guiding and coordinating the students’ work.

Students present and discuss their work-in-progress and final results with the course instructors and the clients.

**Multiple roles and perspectives**
The activities in UOCom enable students to take on different roles and to examine the assignments from different points of view. Students can compare, present and share their thoughts, ideas and solutions as they work with their teammates, colleagues assigned to the other teams, course instructors and, finally, with the client.

**Collaboration and reflection**

One of the challenges associated with the implementation of this e-internship model is the transformation of the relations between the students and the teaching staff.

*We should stress that the collaborative work dynamics implemented in UOCom require that both groups shake off deep-seated habits, as rarely during the degree course does the opportunity arise to get involved in the performance of tasks as a team (Creus & Laluela, 2012: 30).*

Designing the task requires and encourages knowledge and experience sharing between students and course instructors. The different students assigned to the different departments share their knowledge and experiences during the task. Students are also required to make decisions about how to complete the task.

**Articulation**

Students have to present their polished products to real-world clients not linked to the University.

*This leads to greater motivation both for the teaching staff and, in particular, for the students. But it also requires a dizzying leap from the prefabricated security of the academic setting to the responsibility of taking part in an activity where success or failure will have an effect beyond the classroom (Creus & Laluela, 2012: 31).*

**Coaching and scaffolding**

Each of the three agency departments works under the coordination of a course instructor who assumes the role of a department manager and who is responsible for structuring the work dynamics and guiding the students in the development of their internship.

**Assessment**

The mark is given for both group and individual performance. Although the tasks are seamlessly integrated with assessment, as students work with real projects for real clients, coordinating professor of the Practicum course Amalia Creus highlights the difficulties involved in assessing academically real professional performance. In this sense, the final Practicum report includes a reflective and critical self-assessment of their performance and the learning acquired.
Technological support

The UOCom virtual agency has been designed as a 2.0 environment where collaborative work is the foundation of the learning methodologies.

Tools integrated into the environment (Creus & Lalueva, 2012):

- Forum: message exchange tool that permits the creation of lines of debate.
- Chat: instant messaging tool that enables quick and streamlined synchronous communication between all the team members.
- Online calendar: it allows the administration of different calendars and their shared viewing.
- Video-blog: blog allowing short videos to be recorded and posted very quickly and easily.
- Archive: virtual repository that allows the online creation and editing of documents in different formats.
- Meeting room: video chat room for undertaking synchronous meetings (room for six participants).
- Wiki and blog: collaborative websites that can be edited by all the team members.

What skills for employability do students acquire with this scenario?

The UOCom agency is a virtual learning environment where the dynamics and circumstances of a real professional setting in the field of communication are reproduced. These approaches aim to enhance not only the development of specific professional knowledge, but also the development of cross-disciplinary social skills such as creative thinking, communication and interpersonal skills, teamwork, problem-solving, results-oriented performance, decision-making, conflict management and digital skills.

Discussion (possibilities, limits, impediments...)

Among the strengths of working in the virtual agency, the lectures involved in the course highlight the social dimension of the projects, which increases the motivation of students and lecturers, the opportunity to develop a wide array of employability skills that are relevant for new graduates, such as problem-solving, teamwork or decision-making or results-oriented performance, and the positive response from non-profit organizations.

On the other hand, working in a real, authentic scenario in higher education also comes with certain challenges, such as the differences between the kinds of problems students face in academic situations versus the demands of real professional settings, the difficulties that accompany working for real clients, and having to adapt study time and schedules to the deadlines of the professional world or the difficulties in assessing academically real professional performance.

To know more

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6.2 Openlab

The context

With more than 70,000 students, 1,800 doctoral students and 5,000 members of staff, Stockholm University (a public institution) is the biggest university in Sweden. The University conducts education and curiosity-driven research at the international forefront in the areas of science, humanities and social sciences, as well as boundary-breaking interdisciplinary research. The strong link between research and teaching ensures high-quality education. The University has four faculties (Science, Social Sciences, Law and Humanities) and approximately 70 departments and centres.

Stockholm University is characterized by openness and innovation, a focus on achieving results, and active participation in public debate. The University’s researchers are invited to participate in government investigations and to provide consultation responses to proposed legislation. They also participate in the media and are part of several Nobel committees and international expert bodies.

The Teacher Education programme, Stockholm University’s largest, trains thousands of teachers, thereby securing the future of knowledge in the Stockholm region. The strong link between research and teaching is an important condition for the quality of education at Stockholm University.

Thirty of the University’s research areas have been identified as leading their respective fields. They cover a wide range of areas, including Materials Chemistry, Genome Function and Stability, Political Economics, Bilingualism, and Intellectual Property Law.

Area of knowledge:

Design Thinking

Method development is very important for the Openlab master course. The teachers are constantly working on refining and developing new innovative methods. They emphasize the need to create creative groups of students from different professions and with different experiences. Through the communication among students with varying degrees of knowledge, expertise and talent, the co-creation process come up with new ways of thinking and innovative solutions to different challenges. Openlab’s teachers stress that when we try to meet a challenge...
we “often make the mistake of throwing ourselves into a solution mindset, rather than pausing and pondering over the challenge itself” (http://openlabsthlm.se/about/method/). It is also very important to highlight the user’s specific need for a solution. That is why Openlab’s work has to occur close the users’ premises.

Openlab characterises the creative process according to different phases. The phases are: “empathize”, “define”, “ideate”, “prototype”, “test”. The first phase, “empathize”, focuses on the gathering of information to understand the user’s situation and needs. This phase uses different methods which can take the form of interviews, observations and fieldwork. The second phase, “define”, involves the process of reflecting on and synthesizing the findings collected during the first phase. The purpose of the second phase is to dig deeper into the needs of the user/users. The empathy work is thus transformed into insights which allow for a reformulation of the problem. “Ideate” is the third phase. It is a brainstorming phase. In this phase, the users are involved. Keeping their needs in mind, different ways of generating ideas are sought. In the fourth phase, “prototype”, ideas go from thought to reality. The students reconstruct the user’s environment and create a scenario to mirror the user’s situation. At times this phase can involve building product prototypes and testing them through role play. The prototypes may range from very simple to advanced models intended to resemble the finished result. In the fifth phase, “test”, the user tests a simple version of the model. The users’ feedback indicates what further developments must be made to improve the model.

Programme:

Master Course

The Openlab master course in Challenges for Emerging Cities (15 credits) offers students the chance to work with people from different disciplines. Together they identify and analyse societal challenges put forth by Stockholm City itself, Stockholm County Council and the County Administrative Board. The students approach challenges from a variety of perspectives and they learn to explore various outlooks. Knowledge is generated among students, researchers and stakeholders.

Subject:

Art

Summary:

The purpose of the Openlab master course in Challenges for Emerging Cities (15 credits), which is an interdisciplinary project course, is to discuss solutions to large societal challenges in the region of Stockholm based on new-found cooperation that crosses the borders of traditional knowledge. It allows course participants to work with students from different disciplines. Together they identify and analyse societal challenges put forth by Stockholm City itself, Stockholm County Council and the County Administrative Board. The students approach challenges from a variety of perspectives and they learn to explore various outlooks. Knowledge is generated among students, researchers and stakeholders. The Openlab course involves the collaboration of Stockholm University, the Royal Institute of Technology, Karolinska Institutet (a medical university), Södertörn University, Stockholm City, Stockholm County Council and the County Administrative Board. All partners are located in the area of Stockholm. They work together towards developing knowledge and solutions for the challenges the growing capital of Sweden must meet.
What is the authentic scenario?

At Openlab, students are working on different challenges, such as the ageing population, healthcare and medical services and sustainable urban development. The most important social and economic challenge is the ageing population, which has implications for all the EU nations. The number of people aged 80 or over is growing very rapidly. This will result in an increase in special medical needs to which healthcare will have to adapt. Another challenge is making this adaptation financially sustainable. Within healthcare, there are new patient expectations, the disease landscape is being altered, new treatment methods are being develop and preventative care norms are changing. Openlab emphasizes the importance of developing more accessible infrastructure and minimizing the climate impact of transport. A growing population requires more housing, which is also crucial for long-term development in the region.

What makes this a good practice?

The students relate to and have knowledge of perspectives and practitioners from different areas of knowledge and target groups. They identify and analyse complex phenomena, evaluate and convert them into solutions and new ideas that can be developed and produced, providing lasting usefulness and value to a specific target audience. The students apply an interactive and creative working methodology to handle unresolved problems. Not only do they communicate with the chosen target group and the client about the project, but they also do so publicly.

Authentic context

Openlab representatives point to the different societal challenges within the Stockholm area. The fact that Stockholm is growing rapidly presents numerous challenges. The Stockholm region wants to encourage this population growth as well as growth in other important areas. To meet the ongoing challenges, existing enterprises need support and new organizations and enterprises are sure to be created.

At Openlab, the students are working on different complex challenges. The list includes the ageing population, healthcare and medical services, the lack of pre-school teachers and sustainable urban development. The Openlab teachers’ motto is “Do it first – Think – Do it again”. They give the students the opportunity to co-create, providing plenty of time and space in which to develop new and sustainable ways of solving problems and meeting the future challenges of society. However, in a way the process is linear because they use a design thinking model (Brown, 2009).

Authentic activities

As mentioned above, the idea behind the Openlab project is based on real challenges in our society. Openlab wants to contribute to giving Stockholm’s inhabitants a better city in which to live. As part of the student project “Process Wheel. Needs and Deeds – Orthopaedic Unit”, a communication tool was created to be used by patients and staff before surgery or on being admitted to hospital. A simplified overview of the surgery aimed to facilitate patients’ awareness of the surgical process. The main idea was to give patients a sense of control over their own recovery. As the patient’s individual needs and values were given priority in the Process Wheel, patient individuality was therefore a key concern when constructing it. Feedback from patients after prototype testing was positive in general (Van Aarsen, Baryalai, Hinks, Larson Lindal & Urrutia Valdés, 2007).
The student project “Childish Solutions” dealt with the general problem of recruiting pre-school teachers, a particular concern in the area of Stockholm. Using a design thinking model, the students tried to address the issue. They found that a prerequisite for being an attractive employer was that there be an emphasis on the pedagogical work. Therefore, they proposed creating a space in which pre-school teachers could share pedagogical ideas and to develop their teaching skills as a network (Börjesson, Furstenbach, Khalli, Oldelberg, Tsapi & Jansson, 2007).

A third example of authentic activities within Openlab is “MindTrip. Making Nursing Homes More Like Homes”. This challenge came from Stockholm City, in an attempt to highlight the importance of reviewing elderly care facilities. In recent years, Swedish elderly care has changed, and increasing satisfaction among the elderly with living arrangements has been a challenge. The focus has been on ensuring their dignity and independence. Nowadays there are many different forms of elderly care, helping people to live normal lives as long as possible with different levels of daily care. The “MindTrip” concept aims to reduce the feeling of alienation among residents, working to ensure they are seen as individuals with a personality of their own and not just patients with different kinds of medical needs. The concept is based on developing better communication between staff and the person being cared for. Emphasis in also placed on the collaboration between staff and the elderly person’s relatives (Ivanov, Andersson, Tice, Skupinski & Bengtén, 2017).

**Multiple roles and perspectives**

The Openlab master course in Challenges for Emerging Cities offers participants the chance to work with students from different disciplines. Together they identify and analyse societal challenges put forth by Stockholm City itself, Stockholm County Council and the County Administrative Board. The students approach challenges from a variety of perspectives and they learn to explore various outlooks. Knowledge is generated among students, researchers and stakeholders.

**Collaboration and reflection**

The students co-create together with users and staff in different kinds of organizations as well as with researchers from different universities. Openlab involves the collaboration of Stockholm University, the Royal Institute of Technology, Karolinska Institutet (a medical university), Södertörn University, Stockholm City, Stockholm County Council and the County Administrative Board. All partners are located in the area of Stockholm. They work together towards developing knowledge and solutions for the challenges the growing capital of Sweden must meet.

The name “Openlab” indicates that it really is an open lab. Unscheduled meetings and unexpected solutions to challenges are encouraged. At Openlab, one solves problems in everyday life or to cope with society’s challenges, in their own words, “in a radical way”. The emphasis is on how important it is to identify and define the challenges being handled. The students feel they generate proposals which are concrete, useable, radical, smart and innovative. A key starting point at Openlab is cooperation. Students co-create together with users, staff from different kinds of organizations, other students and researchers from different universities. “Everyone is a student” is their motto.

**Articulation**

Within the master course, design thinking workshops, seminars, exhibitions, bookable rooms, flexible work spaces and prototype studios provide different opportunities for discussion and the articulation of arguments to a very high degree. While co-creating together with
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stakeholders, users, and students and researchers from different universities, the students are expected to produce well-constructed arguments. They must consider and reconsider their arguments at all times.

Coaching and scaffolding

The teachers regularly coach the groups and offer different workshops and expertise. Method development is highly important to Openlab. The teachers are working constantly on refining and developing new innovative methods. They stress the need to form creative groups of people from different professions and with different experiences. Thanks to communication among students with a wide array of knowledge, expertise and talent, the co-creation process brings forth new ways of thinking and innovative solutions for different challenges.

Assessment

User feedback indicates what further developments are necessary in order to improve the model. Further assessment takes place in the form of a public presentation that includes the evaluation of the group that posed the challenge, such as hospitals or pre-schools (cf. Herrington & Herrington, 2006).

Technological support

The students have access to “OpenLab.Make” – a workshop with all the equipment that might be necessary to create a prototype of their product. The workshop aims be an open and creative environment where everyone feels welcome. Courses will be offered in electronics, 3D printing, prototype technology and much more during the following semesters. The technology support provided through “OpenLab.Make” includes:

- 3D printer: Ultimaker 2
- Large format printer: HP DesignJet Z2100 22”
- CNC mill: Roland DG iModela
- Sewing machine: Singer Heavy Duty 4423
- Woodworking and metalworking tools
- Soldering station
- Papercraft equipment (http://openlabsthlm.se/about/method/)

What skills for employability do students acquire in this scenario?

The course’s learning outcomes ensure that students develop knowledge from different perspectives and outlooks. The learning outcomes contribute to students’ ability to identify and analyse complex phenomena, evaluate and convert them into solutions and new ideas that can be developed and produced, providing lasting usefulness and value to a specific target audience. The learning outcomes apply an interactive and creative working methodology to handle unresolved problems and communicate the project with the chosen target group. All those skills are important to employability. An additional plus is that they have to be able to work together in English.

Discussion (possibilities, limits, impediments...)
Openlab enables students to acquire skills for employability. Through this master course, they join an interdisciplinary and international team of people from different universities. Working in teams offers several advantages as well as challenges when faced with collaborative work. Sometimes the teachers have to change the groups’ structure. Design thinking helps students learn to tackle new innovative projects and real societal challenges. Openlab is a reflection of the importance and advantages of design thinking. There are a few doubts regarding the method, however, we have not found any discussions on alternative methods in the process. In working with ongoing challenges, students collaborate with Stockholm City, the County Administrative Board and Stockholm County Council. As part of this international and interdisciplinary process, the teams learn to manage innovation projects that can be applied to practical situations. Through teamwork, the students learn to develop and evaluate new ideas for innovative projects. Their ideas can be brought to life, bringing lasting value and benefits to a target group. The teams learn to communicate with those posing the challenges as well as the target groups about their projects. Openlab emphasizes the importance of students’ own practical experiences as well as the experiences of stakeholders. These kinds of experiences can be of great importance and they are also expressed in students’ reports. However, there are no references to either the research methods and methodology or the research into the objectives on which the students focus as part of their innovative projects. By creating a theoretical framework, the projects are expected to be even more credible and innovative.

To know more
http://openlabsthlm.se
https://www.ted.com/talks/tim_brown_urges_designers_to_think_big

References


6.3 Carrying out real business projects in higher education

The context
The Technical University of Applied Sciences (TUAS) Wildau is one of five universities of applied sciences in the federal state of Brandenburg. It is located very close to Germany’s capital city, Berlin, which is easy to reach from Wildau by local train. The campus is built on a former industrial area that is fully modernized. High-tech infrastructure, direct public transport connection, and modern facilities benefit the entire the university community.

With about 4,000 students, over 23% of which are international, the Technical University of Applied Sciences Wildau is the largest university of applied sciences in the state of Brandenburg. TUAS Wildau has an attractive range of degrees, with an emphasis on applied research and development and technology transfer – a guarantee of up-to-date and state-of-the-art teaching and studies.

TUAS Wildau offers 26 full study programmes (13 bachelor’s and 13 master’s degrees), 9 dual course of study programmes with bachelor’s degrees, and 5 part-time, accompanying study programmes (2 bachelor’s and 3 master’s degrees). The modern and future-oriented range of degrees at the Technical University of Applied Sciences Wildau includes courses in business, administration and engineering. We offer Mechanical Engineering, Physics Engineering, Process Engineering, Logistics, Telematics, as well as a degree in Bioinformatics/Biosystems Engineering. We have also introduced a degree in Aviation Engineering/Aviation Logistics, a significant step in a region in which aviation will come to play an increasingly significant role in the economy. TUAS Wildau also offers degrees in Industrial Engineering (also with facility management), Business Administration, Business Computing, Business and Law, and Administration and Law, and a degree in European Management.

TUAS Wildau is very active in applied research and development. The various research groups coordinate and implement over 220 projects. The University strives to maintain direct contacts with business for both its teaching and applied research, and, as a result, TUAS Wildau has become a significant regional player and an important employer in the 26 years since it was founded. In addition, TUAS Wildau has numerous international university agreements, with 158 international partner institutions in 60 countries.

Programme:
Business Informatics

Subject:
Project I and II (2 semesters) (4th and 5th semester in the bachelor’s degree and 2nd and 3rd semester in the master’s degree; 4 hours per week)

Summary:
Instead of lectures, seminars, and tutorials, students who attend this course are challenged as a group to solve a problem/complete a real task at a company or institution over the period of two semesters. As clients, the companies or institutions involved commit to be present at the student team meetings or attend them via Skype at least every second week. Furthermore, the clients reciprocate, for example, by lending tablets to the students for the duration of the
project, financing an excursion to the company so that students experience first-hand and get insights into daily work life. Another benefit for the students is the experience they gain by completing a real business project, an experience that undoubtedly enriches their CV.

**What is the authentic scenario?**

In this course, the students are challenged as a whole with the task of solving a real business problem or completing a project that a real corporation is working on. The corporation becomes the client and hands the job over to the students so that they can develop and implement the necessary solutions.

One example of a project was the development of a virtual online department store selling products from small regional retailers (e.g. bookseller, butcher shop). It was complex logistically speaking, as all purchases ordered before 5pm were delivered the same day.

Other examples of projects include the development of a database-oriented performance specification complete with transfer process, training, guidelines, etc., a consultancy project on the logistics questions that a database should solve, and a benchmark analysis of management tools.

**What makes this a good practice?**

The students have to solve a real business problem taking all aspects into consideration, such as legal questions, the business plan, marketing and communication tasks, etc.

*Authentic context*

The context is by definition authentic because a company or institution transfers a business task they would like to complete in real life to the students.

*Authentic activities*

A group of 15 to 20 students works together to solve the problem and complete the given real-life task. The authentic task is very complex and often ill-defined, so that students have to identify and define sub-tasks. This mirrors real-life working contexts.

Returning to the previous example of the virtual online department store that sells goods from small regional retailers and includes delivery system, the following main tasks had to be carried out:

- Developing and programming an online shop
- Acquiring small retailers in the region as partners or getting them on board for the project
- Digitizing the retailers’ offers
- Business questions (e.g. how many retailers are needed that the project makes a profit)
- Legal issues (e.g. disclaimer, printout for each retailer or a common one)
The real business project covers all issues involved in business informatics. Therefore, students need to have already taken certain courses that provide them with the necessary knowledge, for example, programming or business courses like controlling.

The tasks that have to be completed and the decisions that have to be taken mirror and are by definition those performed in real-world settings.

In order to fulfil the tasks and take decisions, students have to research information, decide what is relevant for them and how this information could be useful to the project. For example, students have to conduct market/competitive research, look for possible programming tools, etc.

In most of the projects, the scrum framework is used for project management. This agile methodology is often used nowadays.

**Access to experts**

If possible, every second week representatives from the company that provided the task are present at the student team meetings and discuss and evaluate the results of the last two weeks.

Furthermore, experts are invited to hold a lecture or are consulted when special technical questions and matters arise. For example, when the scrum framework began to be employed, an expert was invited to familiarize the lecturer and the students with this kind of project management. In other cases, students consulted experts to discuss legal or cybersecurity questions with them.

**Multiple roles and perspectives**

Scrum defines three roles: the product owner, who prioritizes, takes decisions, etc.; the scrum master, who is responsible for ensuring that scrum functions; and the scrum team that freely and through self-organization fulfils the single tasks.

The role of the product owner is assigned at the beginning of the course and is maintained over the two semesters by the person in question. Because scrum is intended for up to nine team members, two product owners are selected for a course with 15 to 20 students. The lecturer takes over the role of the scrum master.

In the scrum framework, short cycles, called sprints, are defined in which small tasks, called features, have to be fulfilled in order to meet the project aim. For the course in question, the sprints last two weeks. Thus, for the other students, the scrum framework offers the possibility of choosing/drawing up new tasks or features according to their preferences, skills and experiences every second week. Therefore, students work together with different fellow students over the 30 weeks of the project.

The students and the alternating small teams have to organize themselves in order to meet the deadlines for fulfilling the features. They have to cope with the corresponding stress and
discipline themselves.

**Collaboration and reflection**

All students on the course work closely together to bring the business project to a successful conclusion. Each week they share the results of their tasks. Small teams fulfil the single tasks. Students share their knowledge, opinions and experience in both the small teams and as a group.

**Articulation**

Each week the students have to present, discuss and defend the work done with their fellow students and the lecturer. Every second week the meetings take place with a client representative present. In the case of the project discussed here, the client was present each week.

In the scrum framework, an instrument called “weekly scrum” is part of certain predefined ceremonies: within that particular ceremony, each student explains what he/she is working on, what the results are and the problems he/she is facing. This ceremony should last only 20 minutes.

Major problems are discussed by the respective student, the lecturer and fellow students who would like to help solve the problem afterwards.

**Coaching and scaffolding**

Lecturers take on different roles during the course. Their role is described as follows:

- Member of the whole team, but not the team leader
- Scrum master: supports all groups so that they all have the working conditions they need to complete their tasks
- If there is time, also draws up a feature on their own
- Mediator if conflicts between students have to be resolved

**Assessment**

The mark is given based on individual performance. For lecturers, students’ motivation, commitment and level of engagement are critical. Thus, they want to see everyone at the team meetings and see that they are involved actively in the project. Lecturers have an evaluation schema according to which they assess motivation, commitment, purposefulness, and so on.

Furthermore, every student has a compulsory appointment of about 15 minutes with the lecturer and the client at the end of a semester. At the meeting, the student presents and defends the work done, demonstrates the results, discusses possible problems and deviations, and reflects on the reasons why something did not succeed.
**Technological support**

Moodle is used as a communication tool. In addition, the group uses a collaboration platform to make appointments, share documents, etc. Furthermore, a browser and mobile application support project management according to the scrum framework.

There are always two rooms reserved for the lecture session so that the whole group can split up into small teams to work together on the defined tasks.

**What skills for employability do students acquire in this scenario?**

Students gain valuable insights into how to carry out a real business project, having their own experiences as well as making their own mistakes. Furthermore, students learn a lot about teamwork and team coordination. Students make their own business decisions, enhance their team coordination skills, and apply the skills and knowledge they acquired in their studies in a real-life setting.

Students acquire important communication skills. First of all, they learn a great deal about communication with the client. Clients formulate a vision, an idea, requirements, etc. Students have to understand the client, define specifications and find out how to communicate with the client in order to produce a good brief.

Another important aspect is the communication between the students. For example, they learn to cope with and resolve conflicts, as well as to defend their working method and results.

Sometimes, the 4 hours per week are bundled into 8 hours every second week. This is often the students’ first experience working 8 hours a day on a project just like in real life.

Furthermore, students learn about responsibility. The client wants to see and evaluate progress and results every two weeks. Here, the students are also confronted with the fact that clients are not always satisfied with or value the results. Because this is a situation that happens in real-life work settings, it is useful that students learn how to cope with these situations. Often, receiving negative feedback is a new experience for them.

**Discussion**

A real business project gives students the chance to put the multi-disciplinary knowledge acquired during their studies into practice, but in a protected environment. However, the successful conclusion of a real business project often requires a high level of commitment and involvement from the students, sometimes even voluntary overtime hours if a deadline has to be met.

The course often has 15 to 20 students. However, to successfully complete a real business project, a group of 10 students is more suitable to avoid needing more than one person to coordinate the team. Therefore, the idea is to limit the number of students to 10 people.

In the first semester of the aforementioned online department store project, the team used
classical project management tools. This led to chaos and dissatisfaction with the results on the part of both students and the lecturer. Therefore, it was decided to switch to the scrum project management framework. From that moment on, the students and the lecturer could see results and progress. The application of the scrum project management methodology also changed the roles: one student took on the role of product owner, who decides what is implemented and what not. It also adapted the relationship between the student team and the client. When the client suggested new ideas each week, the product owner rejected the ones that would hinder the project drawing to a successful conclusion after two semesters. Thus, the student team and the client met as equals.

When the project’s two semesters were over, five students continued to work for the project as working student, and four students further developed the project by writing their project thesis about it. These examples show that students not only liked and valued the course, but also identified themselves with the project.

6.4 A realistic authentic e-learning scenario in VET

The context
The Institut Obert de Catalunya (IOC) is the public e-learning institution of reference at university level in Catalonia. It is affiliated with the Government of Catalonia’s Ministry of Education.

Since 2007/08, the IOC has organized its campus through a Moodle platform, which integrates all the courses offered by the institution and a virtual secretary’s office that performs the functions of the virtual office. As of the 2017/18 academic year, 30,000 students had enrolled, with 25,000 students graduating in the last ten years.

The IOC offers courses in compulsory secondary education (ESO), general upper secondary education, vocational training and languages courses.

In Spain, ESO is a compulsory education stage aimed at developing the basic skills to which both primary and compulsory secondary education must contribute. Having achieved the core skills and objectives of this stage, students obtain their Lower Compulsory Secondary Education Certificate. Students must be over 18 years of age, otherwise they have to study on-site.

General upper secondary education corresponds to a Baccalaureate and last two academic years, generally between the ages of 16 to 18, but it is open to people of any age.

The vocational training courses prepare students for a particular profession. They are grouped into professional families, which can be of an intermediate or advanced level of training. The professional families that the IOC offers are Business and Management, Health, Social and Community Services, Electricity and Electronics, Information Technology and Telecommunications, and Maintenance and Production Services.

Area of knowledge:
Administration and Management

Programme:
Advanced-level vocational training cycle (CFGS) in Administration and Finance
Subject:
Business Simulation

Summary:
The online Business Simulation course is designed to reproduce a real working environment where students can use the knowledge acquired in the other Administration and Finance courses.

What is the authentic scenario?
In the final stage of the Business and Administration VET course, students participate in a business simulation program, which reproduces real working situations in a business context. The course provides students with a simulated working experience just like in the real world.

The simulation is carried out by a group of six or seven students, who organize themselves into different groups according to their areas of interest. Teamwork encourages the collaborative knowledge-building. The teams develop the business activity by using two platforms: the Moodle course and an external platform called "Empresaula".

Each team creates their own company, which they themselves manage as workers in the different departments in which the organization is subdivided. The paradigm of the simulated companies (documents used and internal organization) is the same as in real companies.

What makes this a good practice?
The online Business Simulation course provides an authentic context that reflects the way in which knowledge is used in a real-life business environment. Students will work asynchronously to determine the factors involved in a business innovation activity, transferring those factors to the other students to create a company. Taking into account these factors and the target market analysis, each team will choose a business idea. In the company, students will evaluate the implications of choosing an idea by discussing the advantages and disadvantages of the chosen proposal.

In a second phase, students will determine the most appropriate legal form from among the different possibilities allowed by current legislation and will define the economic resources available to begin the activity. The students apply different types of technical and financial analysis to the process. As they have to process the documentation necessary to start a company as well as engage in business management, students are given the opportunity to work with authentic and complex tasks.

Authentic context
Empresaula is a company simulation network created and managed by vocational training teachers. It is especially adapted to real-world business environments and is used by more than 100 schools from all over Spain. It is very similar to the real business world and fosters flexible and cooperative work.

Authentic activities
All activities performed by the students are carried out in a simulated real-life environment. Each company created has access to online banking. The simulated bank allows the teams to develop their financial activity in real conditions. They have bank accounts which they can operate,
Carrying out any transaction required for business management: transfers, applying for a loan, leasing, direct debit payments, etc.

The sales department creates their own website, which facilitates contact with the rest of the companies, showcasing products and/or services and making them available to the companies. To practice dealing with the government, Empresaula has web links to actual forms from the main government agencies. The students must therefore process documentation in a real-life environment.

In order to perform all these activities, students must first define which role will be carried out by each student in each department. They define the tasks and sub-tasks required to complete the activity, who is responsible for every task, and the deadlines.

Students have a significant amount of time to carry out the tasks, almost 8 weeks. There is a wide range of information and students must work out the irrelevant information and sources. The tasks are complex and are integrated across subject areas.

**Access to experts**

Course instructors are experts in the field and they post messages to guide the students. The students can contact them by e-mail and there is also technical support from the Empresaula technicians.

**Multiple roles and perspectives**

Students must rotate through the posts in the different departments. This way, they acquire an overall vision of all the job’s different perspectives. They act as both heads of departments and mere employees, carrying out different types of tasks throughout the company. Therefore, they are given an ample, more accurate perspective of each department. This even improves on the training courses given in actual companies, as there students will probably only work in one department.

**Collaboration and reflection**

This course aims to foster teamwork through collaboration, reflection and negotiation. Students apply their knowledge and work experience in carrying out the different tasks within the newly formed company. They must make the decisions necessary at different levels of management to create and manage a virtual company. They share thoughts, ideas and reflections in order to complete all the tasks, with the support of the teachers, if necessary.

**Procedure**

The students must submit a business plan indicating how the idea was developed, the corporate image, the organization and the human resources. They must also explain the product or service policy, as well as the promotion and communication policies. In addition, they must attach all the obligatory law books for business management and create a link to the activities carried out in Empresaula to manage the company.

Finally, they must upload a video in English introducing themselves as a company member and explain the project and their responsibilities.

**Assessment**
All the work done by the students is monitored, which allows each member of the group to be assessed individually as well as part of a group.

At the end of each activity submission period there is a quiz so that the students can assess themselves (self-evaluation) and the work done by their partners (evaluation by peers). There are also some questions devised to make them reflect on their work, check whether they have fulfilled their goals or verify whether they have actually worked individually or as a team.

**Technological support**

The Business Simulation course is developed in two different virtual areas. On the one hand, students have access to the virtual IOC campus, which is organized into different blocks to facilitate communication and activity management simulation.

**Tools integrated into the IOC campus:**

- Board: message tool used by the teacher to post guidelines.
- Forum: message exchange tool that allows the creation of debate threads.
- Tria groups: tool that allows the students to create a group.
- Chat: instant messaging tool that enables quick and streamlined synchronous communication between all the team members.
- Archive: virtual repository that gives access to the documents.
- Management programs: programs to manage the company’s billing and accounting activities.

On the other hand, the Empresaula platform facilitates the development of business activities in a real-life environment.

**Tools integrated into Empresaula platform:**

- The company’s departments, prepared to undertake all the necessary procedures.
- Internal mail: this is the messaging system used in the company to allow the students to communicate with the different departments, for example, when a task has been completed.
- External mail: by using an external messaging platform, students can access other companies in the virtual market.
- Web page: this is the space to interact with the other companies in the Empresaula market.
- Simulated government forms: these are the forms that must be used, for example, to communicate the taxes to the corresponding government agency.

3. What skills for employability do students acquire in this scenario?

Business simulation is a powerful learning environment, as it allows students to practice the skills they have acquired during their theoretical business management training and solve issues they will encounter in a real company once they enter the labour market.

The skills that students acquire for employability in this scenario are the following:

- Subject-specific skills
4. Discussion (possibilities, limits, impediments...)

The fact that they are working with a simulation imposes some limits on the course. The first limitation is related to the time required to develop a company. Most companies have losses in their first months of existence and there is not enough time to make the company grow, as the course lasts for only one term. Furthermore, there are a limited number of customers and suppliers because the Empresaula market only comprises the companies created by other schools, and the companies do not always belong to all business sectors.

Finally, another limitation is that the course’s activities are very time-consuming activities for both students and teachers.

5. To know more

http://empresaula.com/ca

https://ioc.xtec.cat/educacio/attachments/article/131/AFI_Simulaci%C3%B3%20Empresarial_1617S1.pdf
6. Conclusions: some paths to match skill demand and supply

Yet, even if the specific objectives of education have changed over time, the deeper purposes seem fairly constant. Their relative importance may also have varied somewhat, but it would be difficult to find a time when education did not, at least to some extent, have the following purposes: (i) preparation for the labour market; (ii) preparation for life as active citizens in democratic societies; (iii) personal development; (iv) the development and maintenance of a broad, advanced knowledge base. These purposes are not mutually exclusive. Rather, they tend to reinforce each other. I also tend to consider them equally important for contemporary society, even if much of the current debate centres on the first of them: preparing for the labour market (Bergan, 2007: 255).

To close this report it is time to look at some paths to match the demand for higher education graduates' employability skills and the supply.

Higher education institutions can take action to enhance graduates employability skills and improve the transition from education to work. A series of such actions have emerged from the data gathered through the various instruments (literature review, online focus group and the good practices identified) applied in this first report. They are:

- Internships: including practical training and work placements as an integral part of the study programme.
- New methodologies/activities/learning situations that match the real-life skills that graduates will need when entering the world of work.
- Good-quality career guidance services and support systems on employability.
- Mentoring: implementation of role models who provide students with direct experience in vocational positions.
- Employer engagement in the curriculum design and study programmes.
- Work-based learning integrated in a school-based programme (through on-site labs, workshops, simulations or real business/industry project assignments).

Skill Up aims to contribute in the following phases of the project with innovative approaches, recommendations and resources for three of these actions: 1) new teaching and learning methodologies based on authentic learning approaches; 2) the supply of career guidance services though virtual environments; and 3) cooperation between higher education institutions and the labour market.

Many HE graduates attribute part of the difficulties they find when entering the labour market to the configuration of the curricula, which they consider to be obsolete, rely too much on theory and lack practical subjects. In this sense, Skill Up's second output consists of five authentic
learning scenarios designed to develop the soft and subject-specific skills of university and VET students taking the programmes and courses prioritized by the partner institutions. The output will provide a set of indicative principles and guidelines on how authentic learning scenarios can be created, used and evaluated in ways that help bridge the gaps between the formal curricula in HE and VET and the labour market, paying special attention to the role technology plays both as a support and as a catalyst for innovation.

Career guidance in HE and VET institutions can support effective transitions to the workplace and help fill the skills gap by providing information about what types of jobs are available and the skills needed for them (OECD, 2015). However, according to the Eurobarometer survey on European area of skills and qualifications (2014), just a quarter of EU citizens have used a career guidance service, mostly while they were still in education. The main reason respondents give for never having used a career guidance service is the lack of access (Eurobarometer, 2014: 85). The third output of the project wants to offer all students anywhere the opportunity to access a career guidance and counselling service. The output is the result of the iterative design, production, implementation and evaluation of a Massive Open Online Course on Career Counselling with an emphasis on e-counselling. The MOOC trains professionals in methodologies to help students better plan their careers though virtual environments.

In most EU countries, a majority of employers (56%) point out that they have never cooperated with higher education institutions to discuss curriculum design and study programmes, while 29% answer that they have cooperated sometimes (Eurobarometer, 2010). Various studies show that there is a lack of knowledge on the part of employers about curricula and study programmes. The fourth output of the Skill Up project provides a virtual platform to bring together employers, academic staff and career counsellors in a joint effort to better prepare students for work. The platform acts as a hub to provide: a) undergraduates and new graduates with employment counselling and guidance and assistance on how to assess and improve their skills for the labour market, and a channel to find opportunities for virtual internships; b) HE and VET academic staff with a space in which to share knowledge, resources and best practices in order to create curriculum activities that take real professional world needs into account as part of students learning; c) recruiters with support to define the particular skills they require from their employees and the opportunity to participate in the programmes’ development and quality assurance, also with a channel for offering opportunities for virtual internships; d) career counsellors with accessible and affordable professional development and tools to offer their guidance and mentoring services through e-counselling.
8. References


Appendix 1. Results of the 4-day asynchronous online focus group

Summary of the main topics discussed in the focus group’s forums

1. Issues that emerged from the discussion about the results of the questionnaire on the employability skills of new graduates

Employer representatives
Regarding the highest-ranked and most important skills new graduates need, this group points out that some of the differences arising among the groups of participants have to do with the objectives each one has when talking about employability. Thus, as one participant states, students and counsellors are thinking more about job placement (which he also explains is related to the precarious employment situation facing youth in Spain), while employers look for potential and performance.

In regard to the five skills in which new graduates are more lacking, participants mention the different groups’ approaches, which give different importance to the skills required and therefore are sometimes hard to unify. Teachers prepare students with the idea of employability in any company in mind, while employers look for specific profiles for their specific workplace. It is also mentioned that the academic approach does not seem to have cross-disciplinary professional skills as a priority teaching task.

One participant is surprised that the lack of leadership skills is not mentioned by employers, although he justifies this by saying that some of the other skills could be considered elements of leadership. Another participant adds problems with comprehension and numbers as another skill that is lacking.

When considering actions that could be taken to improve the employability skills lacking in new graduates, the need for greater contact between educators and companies is highlighted. Also noted are the importance of emotional intelligence and self-knowledge to foster communication and interpersonal skills and further training and teaching innovation in cross-disciplinary professional skills.

Career counsellors
1. Communication and personal skills, crucial for employability

The career counsellor group agrees with the fact that these skills are the most important qualities that students should acquire during their education. Some participants consider that schools do not teach properly these skills. Actually, counsellors agree with students, who think
that these abilities should not be provided by external entities, and therefore ask for more responsibility on the part of educational institutions regarding the provision of these skills.

2. Adaptability and flexibility in modern business

Operating a business, closely linked with globalization, involves working with dynamic activities and constant changes. Thus, participants consider that students must acquire adaptability skills which will help them change along with the new working situations that they will face during their careers. The participants in this group feel that even though specific skills can be useful for some positions, it is more important that they become flexible and quick learners.

3. Decision-making

Decision-making is considered to be an important factor, specifically in the career counselling group. This skill combines teamwork (a skill which is identified as “important” by counsellors) with personal capabilities as a professional. These personal skills as a decision maker, stressed as a priority, are related to adaptability in order to optimize in the marketplace.

4. Internship as a solution

In general terms, the career counselling group agrees with the authentic learning activities proposed to reduce the gap between the needs for employability and the students’ lack of skills. This group proposes a considerable increase in the number of guided internships as a key solution to strengthen the connection between school and companies. This solution would complement the courses offered by schools with exposure to leading technology and first-hand knowledge of the professional marketplace.

Students and graduates

Students state that education in the field of science and technology already offers the specific skills for the positions offered. However, in the social sciences the skills obtained are more general and cross-cutting skills, so there is a demand for more job-specific skills when looking for employment.

Some agree that communication and interpersonal skills are very important in most workplaces, and that these skills are not taught enough at the universities. Some say it depends on the workplace; for certain specific jobs it is indeed very important. Other students are very surprised to find that skills seem to be more important than job-specific skills, such as critical thinking, decision-making, self-motivation, digital skills, patience and self-management. How specific the job is will determine the importance of the job-specific skills. One student raises the question: Can communication and interpersonal skills be learned? Or is it something related to our personality? His answer is yes, it can. Leadership and other aptitudes can come from training.
One student suggests creating a scenario where people focus on learning these communication skills so that graduates as well could have access to them. Another suggestion is that mentoring could be an interesting option, linking a professional with a student on a working day. This way the student could learn from an expert about the real tasks involved in the role as well as practical information. Internships as a mandatory part of the degree could be the most effective solution.

Ethics and values are broad and subjective skills, so it could be complicated to create scenarios about them, as it depends to a large extent on the person and his or her individual ideology. Another issue that is problematic is that it is the employer who sets the preferences in terms of desirable skills, because what they are looking for above all is experience.

Learning a foreign language is seen as being very important. A suggestion is that 30-50% of the courses at university be taught in English.

The participants agree with the fact that teamwork, conflict management and problem-solving are ranked highly, as these skills will be the ones most likely needed for the daily business. They add skills like the ability to negotiate. They totally agree that the best way for graduates to learn and improve upon all the skills mentioned is working in a real environment. So, there is definitely room for improvement when it comes to collaboration between companies and educational intuitions.

Professors and lecturers

- **Foreign language:** They are surprised that only students consider the lack of competitiveness in a foreign language important; however, they disagree that this might be a result of the extent to which universities have shifted to English as the teaching/learning language. In fact, some courses require learning a third language.
- **Teamwork:** There is a consensus among students, lectures and employers that teamwork is an important skill. For students and employers, this skill is lacking, however, lectures do not see it that way. Comments on this result: lectures do agree that, in their experience, they design tasks that should be solved as a team, but there isn’t actual teamwork, more a sum of individual work. Lectures should seek ways to implement teamwork more effectively.

One lecturer shares a new tactic being used: two semester-long, team-based project work. Her experience is that, in the first semester, students follow the “sum of individual work” strategy, but in the second semester, they actually engage in real teamwork. In this lecturer’s opinion, this shows that students have less experience in real teamwork and they have to learn through feedback; this feedback is given by the lecturer.

The lecturer has also implemented, for the first time, reflection tasks that include team reflection (presentation), self-reflection and reflection on teammates. The lecturer shared her questionnaires in the forum (see attachments).
The results were very useful and positive: 80% of the students took the task seriously—better teams performed better; self-reflections gave insight into contributions made and each student took something away; students who had not contributed at all were not able to/did not hand in a self-reflection.

- **Communication and interpersonal skills**: There is no surprise at them being important skills and that the three groups mention they are lacking. This skill is basic and its acquisition helps to improve other skills such as teamwork, negotiation, leadership, self-management or being results-oriented.

- Employers’ opinions about skills lacking among graduates (self-management, decision-making, teamwork, ethics and values) seem to be quite basic, that they are skills that one would expect of any graduate. They focus on more specific skills as being the most relevant (negotiation, conflict management, to put yourselves in the shoes of someone else, etc.). For one lecturer, it seems that employers are asking for high-level skills but in reality it is the basic ones they find to be missing and have to deal with. ➔ This is a clear call for action within different education systems (high schools, universities, etc.).

- **Digital skills**: One lecturer is asking: “Digital skills? I think that nowadays these skills should be assumed to be a part of any curriculum/programme [...] Is there any BA/MSc/VET programme without a focus on IT tools in their fields?”.

- **Job-specific skills**: These are viewed by lecturers as one of the most important skills. One lecture agrees, but these skills are included “in the degree” so, in his opinion, if we are thinking about graduate students, the important skills should be the ones that are not part of the degree.

2. Some issues that emerged from the discussion about good practices in authentic learning in HE and VET settings

**Employer’s representatives**

The group of employer’s representatives considers the examples shown to be good examples of authentic learning scenarios, although they would not consider them best practices. They highlight the autonomy given students in many stages and the collaborative work among them as an interesting facet.

One of the participants points out how one of the examples (Empresaula) better recreates the kind of situations and problems you can find in the real day-to-day. He feels the other examples lack certain elements, such as traceability of facts, data and figures. The students could invent things, making the simulation incomplete. In his opinion, the simulation should be as complete as possible, since what really makes it powerful and full of learning opportunities is the total planning of its different angles and outcomes.

When referring to the case of the IOC’s tool, another participant considers that it might be aimed
more at rationalizing company processes than helping to design powerful learning scenarios. He also doubts if it can aid in creating exercises according to the SMART useful learning criteria: Specific, Measurable, Achievable, Responsible and Time-related.

In order to consider these experiences as examples of authentic learning scenarios, the participants refer to the need for more interaction with the real world, as it would be preferable to interact directly with the productive real world. Other comments raised are the importance of well-oriented collaborative work to avoid free-loaders, the possibility of introducing controversies or noteworthy dilemmas in order to achieve certain changes in beliefs and values and improve their personal development, and the potential of introducing a final part to the activity consisting of focus group to reflect on the process and results, where students can think about their own experience.

One participant feels that it would be interesting to create realistic exercises based on organizational/company learning techniques that can pinpoint the important differences in relation to regular school learning, for instance, methods based on monitoring mistakes. Breaking away from regular schemas and techniques and introducing those used in management approaches could be a first step.

When considering the skills that these scenarios could help to develop, we found that teamwork and customer/user-orientation skills are the ones most highlighted. Also highlighted were communication and interpersonal skills, reflection and critical thought, as well as analytical thinking. As one participant points out, as you deal with real situations and real data, you use skills of a second order, combining several skills like self-management in a complex way to deal with the situation at hand.

Career counsellors

The counsellor group analysed the brainstorming exercises proposed in the focus group, and they pointed out that only the activities which introduce real-life situations are considered good examples of authentic learning scenarios. They state that it is important to introduce real contexts and activities with real relevance, as well as the possibility of working with experts or practitioners. This will facilitate graduates’ access to work experience.

However, the counsellors consider the majority of the listed activities to be valuable but not useful. The reason is that they are valuable for the courses being studied but are not advantageous in linking them to the labour market. They think that teachers must provide the tools for solving real-life/professional problems, as students do not know which job they will be taking in the future.

One of the counsellors considers the activities that enhance personal and individual skills more than cooperative ones of greater significance, since self-confidence and self-knowledge are considered the most important skills for employability. Thereby, the proposed activities that focus on group activities and co-working are not seen as relevant for employability. If the students cannot think for themselves, they will not be able to make decisions. This phrase sums up her view: “You hire a person; the rest you can transform”.

The participants had the opportunity to watch a video that presenting a realistic internship scenario, using an online platform that simulates the real daily activity of a real company. The counsellors think that this approach could be interesting for developing the skills required by
real jobs. This platform allows students to think for themselves and make decisions as a part of relevant activities in real scenarios.

They do not know if internship or role-play scenarios are the best way to upgrade the skills that are lacking, but they are necessary and must be implemented.

*Students and graduates*

The graduates and students think that real learning practices must focus on students directly engaging with real situations. They should be involved in activities with real responsibility, increasing the relevance of tasks as they learn to develop themselves through labour activities. Based on ideas from the brainstorming summary, they think the examples provided are good “because to solve things we work as a group instead of individually; we can understand things that others do not understand or the other way around”. However, this sometimes is a bit more difficult when applied in distance learning because not all students can connect at the same time to “debug” a problem.

One student views a few of the activities proposed in the brainstorming as being of interest to students. He considers job simulations, access to experts and activities with real-world relevance among the most useful. If students could have the opportunity to talk with an expert and observe him in his daily routine, they could learn exponentially. The importance of business projects should not be underestimated, because crucial sectors are working with projects for long periods of time, and students should get used to dealing with this procedure.

The students agree with the mentoring/real coaching activities, which guide students in their first contact with real situations. The real scenarios must offer real job situations involving real responsibility. One student points out that we have been discussing real learning scenarios to enable students’ access to the labour market, but maybe we should consider some real ways for employers to help new graduates to gain access. These scenarios help link the theoretical concepts learned to real situations. When you understand why something is done it is easier to remember and apply, remembering that it is only a concept or formula and, even more importantly, an opportunity to improve or innovate your way of working. See the link to the BTS business simulation and experimental learning site. It is a training company where one participant trained: [https://www.bts.com/business-simulations](https://www.bts.com/business-simulations).

The video explains an interesting example of a realistic case of authentic learning. This business simulator can help students to take on realistic business situations and experience specific actions carried out by companies as a part of their daily activity. The role-play model is a good example of when not only the experience is a source of learning but also seeing what others do: “Opportunity to compare with other learners”. “The video is an outstanding tool and, thus, meets almost all criteria for being defined as an authentic learning scenario.” In particular, they highlight that students have to search for relevant information from among a wide variety of documents from different departments to complete the task, and this requires students to make decisions about how to interact with other virtual businesses.
Several students also think role playing is a good idea. Students can learn from each other and have fun. However, these students are not experts. If they could have access to an expert, such as a real HR manager, who can give a class for 1-2 hours and talk about what companies expect from new graduates, or what kind of questions will come up in interviews, that would make the role playing more real for students.

**Professors and lectures**

The project team asked participants to discuss how approaches based on authentic learning can help enhance the employability skills of new graduates.

One participant from the group of professors and lecturers shared her thoughts day 3:

She points to the example of role playing as preparation for business telephone calls. Here the students can be very motivated because of the possibility of seeing the effects of learning. She mentions other cases where this is more difficult, when she has to give students a project task they cannot relate as easily, since they do not know what potential employees might expect of them and which situations may occur in their future business life.

The participant gives another example. During two semesters she engaged students in a project where they had to develop online marketing promotion measures to re-launch a company’s global website. Students had picked different regions. During the project, the company had to postpone the launch date as they had not managed to prepare everything on time. Because of this, the tasks had to be shifted slightly. From the participants’ point of view, this was a very authentic situation. The authenticity provided learning opportunities on how to deal with such a situation. From the students’ point of view, it was the company’s fault and they even considered the company to be ill-chosen (lack of competence).
Some ideas that emerged from the brainstorming carried out using a virtual wall.

**Meaning:**
- If you understand it in practice it will be very easy to remember.
- Construct the meaning of the concepts in contexts that involve real-world problems.
- Activities/practices/learning situations that match the real-life skills that graduates will need when entering the labour market.
- Experiential learning.

**Our approach to authentic learning in the Skill Up project:**

In our approach, we expand the understanding of authentic learning as educational practices, tasks and environments which reflect the manner in which the knowledge, skills and competence will be used in real-life contexts. Authentic learning is looked at as “a quality of educational processes that engage students in becoming more fully human”. This broadened notion of authentic learning incorporates not only the epistemological dimension – what students are expected to know and be able to do – but also ontological – who students are becoming or learning to be (Scanlon, 2011).

**Strategies:**
- Implementation of role models who provides students with direct experience in vocational positions.
- Importance of elementary schools, which early on (even from age 6-7) start the process of self-knowledge and awareness of surroundings.
- It is like what Ausubel said years ago: you cannot just learn concepts; it is easier to learn the procedural elements of concepts.
- Implementation of job simulation tools in some courses.
- Case-oriented tasks. Give the students real cases to work with that make them use many different and complex solutions within their field of study and that well-connected to the course.
- Literature.
- Solutions to real-life problems.
- Final degree or master’s degree dissertation related to practices, internship or work experience.
- Complementary job simulation activities.
- Teamwork.
- Business projects.

**Some criteria identified by Skill Up, based on the literature, for authentic learning scenarios:**

8 https://padlet.com/aornellas/skillup
1) Providing authentic context that reflects the way the knowledge will be used in real life.
2) Providing authentic activities, for example activities with real-world relevance and ill-defined, complex activities.
3) Investigation over a sustained period of time.
4) Interdisciplinary tasks.
5) Variety of inputs from which students have to search for relevant information to complete the task.
6) Providing access to experts/practitioners and the opportunity to observe, listen and talk to them, presenting their work-in-progress and the results of tasks to them.
7) Enabling tasks to be approached from different points of views and by taking on different roles.
8) Problem-solving as a team rather than individually.
9) Ensuring knowledge- and experience-sharing among students.
10) Requiring that students make decisions.
11) Providing the opportunity to compare with other learners.
12) Requiring that students present, articulate and defend their results, ideas, arguments, etc.
13) Lecturer has the role of a coach, supporter and adviser rather than a teacher.
14) Multiple assessment measures.
15) Marks are given for group rather than individual performance.
16) Providing technologies and/or facilities to collaborate and share knowledge and experiences.

Good practices in connecting workplace and learning in higher education
### Appendix 2. Elements of authentic learning as evaluation criteria

Source: Herrington, J., Reeves, T. C. and Oliver, R. (2010)

<table>
<thead>
<tr>
<th>Element of authentic learning</th>
<th>Guidelines for implementation</th>
<th>Continuum of characteristics</th>
<th>Evaluation questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide authentic context that reflects the way the knowledge will be used in real-life</td>
<td>a physical/virtual environment that reflects the way the knowledge will ultimately be used</td>
<td>Decontextualized ➔ Realistic</td>
<td>Does the context of the course represent the kind of setting where the skill or knowledge is applied?</td>
</tr>
<tr>
<td>Provide authentic activities</td>
<td>a non-linear design to preserve the complexity of the real-life setting</td>
<td>Fixed ➔ Flexible</td>
<td>Is the pathway students take through the learning environment flexible, where students are able to move around at will?</td>
</tr>
<tr>
<td>Provide authentic activities</td>
<td>activities that have real-world relevance</td>
<td>Academic ➔ Real world</td>
<td>Does the task mirror the kind of task performed in real world applications?</td>
</tr>
<tr>
<td>Provide access to expert performances and the modelling of processes</td>
<td>ill-defined complex activities that provide an opportunity for students to define the tasks and sub-tasks required to complete the activity</td>
<td>Multiple small tasks ➔ Complex task</td>
<td>Is the task presented as a series of small sub-steps or as an overarching complex problem?</td>
</tr>
<tr>
<td>Provide access to expert performances and the modelling of processes</td>
<td>a sustained period of time for investigation</td>
<td>Short time ➔ Long time</td>
<td>Do students work on the task for weeks rather than minutes or hours?</td>
</tr>
<tr>
<td>Provide access to expert performances and the modelling of processes</td>
<td>the opportunity for the detection of relevant versus. irrelevant information</td>
<td>Limited information ➔ Broad information</td>
<td>Are students able to choose relevant information from a variety of inputs, including relevant and irrelevant sources?</td>
</tr>
<tr>
<td>Provide access to expert performances and the modelling of processes</td>
<td>tasks that can be integrated across subject areas</td>
<td>Single discipline ➔ Multi-disciplinary</td>
<td>Are tasks and strategies relevant to other disciplines and broader knowledge?</td>
</tr>
<tr>
<td>Provide multiple roles and perspectives</td>
<td>access to expert thinking and modeling processes</td>
<td>Direct instruction ➔ Expert performance</td>
<td>Does the learning environment provide access to expert skill and opinion?</td>
</tr>
<tr>
<td>Provide multiple roles and perspectives</td>
<td>access to learners with various levels of expertise</td>
<td>Expertise ➔ Levels of expertise</td>
<td>Does the learning environment allow access to other learners at various stages of expertise?</td>
</tr>
<tr>
<td>Provide multiple roles and perspectives</td>
<td>opportunity for the sharing of narratives and stories and access to the social periphery</td>
<td>Didactic, core ➔ Narrative, peripheral</td>
<td>Are students able to hear and share stories about professional practice?</td>
</tr>
<tr>
<td>Support collaborative construction of knowledge</td>
<td>different perspectives on the topics from various points of view</td>
<td>Single view ➔ Multiple perspectives</td>
<td>Are students able to explore issues from different points of view?</td>
</tr>
<tr>
<td>Support collaborative construction of knowledge</td>
<td>the opportunity to cross the learning environment</td>
<td>Single pathway ➔ Multiple pathways</td>
<td>Are students able to use the learning resources and materials for multiple purposes?</td>
</tr>
<tr>
<td>Support collaborative construction of knowledge</td>
<td>tasks are completed in pairs or groups rather than individually</td>
<td>Cooperation ➔ Group collaboration</td>
<td>Are students able to collaborate (rather than simply co-operate) on tasks?</td>
</tr>
<tr>
<td>Support collaborative construction of knowledge</td>
<td>appropriate incentive structure for whole group achievement</td>
<td>Individual grade ➔ Group grade</td>
<td>Are grades given for group effort, rather than individual effort?</td>
</tr>
<tr>
<td>Element of authentic learning</td>
<td>Guidelines for implementation</td>
<td>Continuum of characteristics</td>
<td>Evaluation questions</td>
</tr>
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</tr>
<tr>
<td><strong>Promote reflection</strong></td>
<td>* authentic context and task that require decisions to be made</td>
<td>Pre-determined steps → Decision-making</td>
<td>Are students required to make decisions about how to complete the task?</td>
</tr>
<tr>
<td></td>
<td>* non-linear organization of materials and resources to enable students to return to any element if required</td>
<td>Linear → Non-linear</td>
<td>Are students able to move freely in the environment and return to any element to act upon reflection?</td>
</tr>
<tr>
<td></td>
<td>* the opportunity for learners to compare themselves with other learners in varying stages of accomplishment</td>
<td>No facility → Able to compare</td>
<td>Can students compare their thoughts and ideas to experts, teachers, guides, and other students?</td>
</tr>
<tr>
<td></td>
<td>* groupings of students to enable reflection with awareness</td>
<td>Individual → Group</td>
<td>Do students work in collaborative groups that enable discussion and social reflection?</td>
</tr>
<tr>
<td><strong>Promote articulation</strong></td>
<td>* a complex task incorporating inherent, as opposed to constructed, opportunities to articulate</td>
<td>Little discussion → Much discussion</td>
<td>Does the task require students to discuss and articulate beliefs and growing understanding?</td>
</tr>
<tr>
<td></td>
<td>* groups to enable articulation</td>
<td>Individual → Group</td>
<td>Does the task provide collaborative groups and forums to enable articulation of ideas?</td>
</tr>
<tr>
<td></td>
<td>* public presentation of argument to enable articulation and defence of learning</td>
<td>Little articulation → Presentations</td>
<td>Does the task enable articulation and defence of arguments?</td>
</tr>
<tr>
<td><strong>Provide coaching and scaffolding</strong></td>
<td>* collaborative learning, where more able partners can assist with scaffolding and coaching</td>
<td>Unsupported → Partner coaching</td>
<td>Are more knowledgeable students able to assist with coaching?</td>
</tr>
<tr>
<td></td>
<td>* coaching and scaffolding assistance is available for a significant portion of the activity</td>
<td>Unsupported → Scaffolded</td>
<td>Is a teacher, tutor or helper available to provide contextualised support?</td>
</tr>
<tr>
<td><strong>Provide for authentic assessment of learning within the tasks</strong></td>
<td>* the opportunity for students to be effective performers with acquired knowledge, and to craft polished, refined, performances or products</td>
<td>Raw → Polished</td>
<td>Are products or performances polished and refined rather than incomplete or rushed drafts?</td>
</tr>
<tr>
<td></td>
<td>* significant student time and effort in collaboration with others</td>
<td>Brief → Extended</td>
<td>Do students participate in the activity for extended periods of time?</td>
</tr>
<tr>
<td></td>
<td>* the assessment to be seamlessly integrated with the activity</td>
<td>Separate testing → Integrated assessment</td>
<td>Are students assessed on the product of the investigation rather than by separate testing?</td>
</tr>
<tr>
<td></td>
<td>* multiple indicators of learning</td>
<td>Single measure → Multiple measures</td>
<td>Are there multiple assessment measures rather than a single measure?</td>
</tr>
</tbody>
</table>

Good practices in connecting workplace and learning in higher education

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Appendix 3. Interview guide for identification of authentic scenarios in higher education

1. What is your function at our institution? (director of a programme, faculty, dean, etc.)
2. Which programmes/study courses do you teach?
3. What subjects?
4. What does authentic learning mean to you?
5. Could you please describe an authentic learning scenario you are using? / Could you please describe an example of how you implement authentic learning in one of your subjects?

Questions to support the description and to evaluate if the example meets our criteria for authentic learning:

a. What is the topic/title of the authentic learning scenario?

b. What is the task given to students? (consulting project or problem-solving for a company, starting a firm, management game, developing a product/service, etc.)

c. Does the task allow a range of possible outcomes?

Complexity

d. Please describe the context of the authentic learning task. Are you using examples from real-world situations? Or is the task embedded in a wider context that reflects the environment the knowledge is used in practice/real life?

Authentic activities

e. Is the task/problem presented in a complex and overarching way like in real-life settings, or is it presented as a series of small steps? Do students have to define the tasks and sub-tasks required to complete the activity?

f. Does the task mirror the kind of tasks performed in real-world settings?

g. How long do the students work on this task? (weeks, hours, minutes)

h. Do students have to find out relevant information to complete the task by themselves from a variety of inputs? (e.g., from the internet, books, by conducting interviews, etc.)

i. Do students need knowledge of other subjects to complete the task? / Do the students acquire knowledge relevant for other subjects through the completion of the task? (multidisciplinary)

Access to experts

j. Do the students have the opportunity to observe, listen and talk to experts/practitioners? (excursion, guest lecture, etc.)

k. Do students have the opportunity to present and discuss their work-in-progress and final results with experts/practitioners/company representatives?

Multiple perspectives

l. Is the task designed in such a way that students are invited and able to examine the problem/situation from different points of view?

m. Is the task designed in such a way that students have to take on different roles? Which? (different stakeholders)

Collaboration and reflection
n. Is the task designed in such a way that it cannot be completed individually or only as a team?

o. Does the design of the task require and encourage knowledge- and experience-sharing between students and peer counselling? Do students work as a team to complete the task? Do different student teams share their knowledge and experiences during the task?

p. Are students required to make decisions about how to complete the task?

q. Are students given the opportunity to compare, present and share their thoughts, ideas, solutions as they complete the task with experts, teachers and students? (or other possibilities: on conferences, on the internet)

Articulation

r. Do students have to present and defend their results, ideas, arguments, etc., to experts/practitioners/company representatives, to the teacher or to the other students?

Coaching

s. How would you describe/define your role during the completion of the task by the students? (teacher, coach, supporter, guide, helper, etc.)

t. Are there other people besides yourself who give advice and help to the students? (experts, other students)

Assessment

u. What kind of assessments do you use? (test, presentation during/at the end of the project, exam, etc.)

v. How is the mark decided? / Are there multiple assessment measures?
w. Are marks given for group or individual performance?

Technology/Tools

x. What kinds of technology, non-technical tools or facilities are offered to the students to complete the task, to collaborate, to share their knowledge and experiences, to coordinate, etc.? (Moodle forum, chat rooms, online journal, rooms, labs) / To which extent they are used by the students?

Demonstration material

y. Do you have any material we can show as a demonstration/an illustration so that others can better imagine the authentic learning scenario?