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MOOCS AND SOFT SKILLS: A COMPARISON OF DIFFERENT COURSES ON CREATIVITY

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The development of soft skills in undergraduate students is a key factor to ensure an effective transition from university to the labour market. The eLene4work project, carried out between 2014 and 2017, focused on the selection and definition of these soft skills, including digital soft skills. The project proposes a series of actions and practical tools to help students better understand the employers' expectations, to assess their own level of competency and to develop their skills through MOOCs (Massive Open Online Courses) and OERs (Open Educational Resources). The overall goal of the project is to test and monitor the possibilities offered by these resources to fill the gaps between the university and the labour market. It might seem quite challenging to develop soft skills through online resources since these skills are mainly behavioural components. One of the main outputs of the project consisted in designing an Orientation Guide for students and young workers, to help them in choosing and effectively using MOOCs to train

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soft skills and digital soft skills. This paper reports the results of the work carried out by the project partners during the selection and classification of MOOCs. Furthermore, the comparison of different MOOCs on creativity, based on distinctive pedagogical approaches and involving different types of activities and assessment tools, highlights some important trends in the ways used to foster students' learning behaviours and different patterns of engagement.

1 Introduction

In the last few years many studies, surveys, even newspapers articles highlighted a problem of the labour market: they reported a skill shortage. For example, we know that in the USA more than 600.000 positions in manufacturing went unfulfilled due to a skill shortage in employees (Deloitte, 2011) and this skill shortage concerns mainly applied skills, such as work ethic, punctuality and professionalism.

According to many documents issued by the European Union (European Commission, 2012) and human resources experts (ISFOL, 2012; IUL, CRUI, & Centromarca, 2012; Manpower Group, 2012) soft skills are closely connected with employability but they are not thought at University. Mourshed, Patel & Suder (2012) highlight that providers, employers, and young people seem to operate in "parallel universes": for example, in Europe 74 percent of education providers are confident that their graduates are prepared for work, yet only 38 percent of youth and 35 percent of employers agree.

Companies need a more skilled workforce and opportunities should be given to young people to develop those soft skills, such as entrepreneurial skills, coping skills (i.e. the capacity to deal with a problem in a creative way), learning to learn and other skills (such as the ability to work in team, to communicate clearly and effectively, to adapt to different cultural contexts, to solve problems, to manage conflicts, to show endurance in complicated or stressful situations etc.) that will help university students to make a successful transition from full-time education to entering the labour market.

Nevertheless, at present, EU countries have different methodologies and approaches to the teaching and recognition of skills for employability. This has led to a mismatch between academic education and skills required in the labour market. The presence of such discrepancies requires that cooperation is strengthened among the different stakeholders to find common solutions and educational models that provide a common set of skills and of training tools. Another obstacle is represented by the absence of a common language. There are different ways of naming 'soft skills' (sometimes called even 'competences'), different definitions of them, different ways of classifying and clustering them (Cinque, 2016). Furthermore, the theme of soft skills intersects and sometimes overlaps with that of the so called 21st century skills (Ananiadou & Claro,

2009) or of future work skills 2020 (IFTF, Institute for the Future, 2011), that refer to all those skills which should be acquired by all citizens, in order to ensure their active participation in society and the economy, taking into account the major drivers of change.

This paper presents some results of the eLene4work project, which was focused on the selection and definition of soft skills, including digital soft skills. The project proposes a series of actions and practical tools to help young talents better understand the employers' expectations, to assess their own level of competency and to further develop these skills through open educational resources, particularly MOOCs (Massive Open Online Courses). It might seem quite challenging to develop soft skills through online resources since these skills are mainly behavioural components. The paper analyses the results of the work carried out by the project partners during the selection and classification of MOOCs. Furthermore, the comparison of different MOOCs on creativity, based on distinctive pedagogical approaches and involving different types of activities and assessment tools, highlights some important trends in the ways used to foster students' self-regulation and autonomous learning.

2 The project

The eLene4work project (http://elene4work.eu), supported by the ERASMUS+ programme (Key Action 2, Strategic Partnerships) involves 11 partners from 9 European States. The project is tackling the definition of soft skills, including digital soft skills, and proposes a series of actions and practical tools to help young talents better understand the expectations of employers, to assess their own level of competency and to further develop these skills through open education initiatives such as MOOCs (Massive Open Online Courses) and OERs (Open Educational Resources).

The first output of the project is represented by a comparative analysis on the state of the art of soft skills and digital soft skills in different European countries (Belgium, Finland, France, Germany, Greece, Italy, Poland, Spain and UK). In order to collect the data from all these countries in a homogenous way, the project consortium agreed on a common definition of "soft skills". According to the eLene4work definition: "soft skills represent a dynamic combination of cognitive and meta-cognitive skills, interpersonal, intellectual and practical skills. Soft skills help people to adapt and behave positively so that they can deal effectively with the challenges of their professional and everyday life". Moreover, a template was designed and a glossary with the definition of the different soft skills was made available to all the partner institutions in order to share a common framework to work with. Results of this work include an overview of the main initiatives carried out in different countries and

transnational projects.

The second output of the project is represented by a report, *Which soft skills do students have and which should they have?*, that describes and compares qualitative data about soft skills gathered through focus groups carried out in 9 partner countries.

The third output is focused on the design and implementation of a self-evaluation tool for the assessment of students' soft skills and digital soft skills, while the fourth one consists in the design of an Orientation Guide for students and young workers, to help them in choosing and effectively exploiting their participation in MOOCS aimed at the training of soft skills and digital skills.

The preliminary steps to design the Orientation Guide consisted in defining a list of the soft skills and digital soft skills to be developed by students, and in identifying already existing MOOCs through which these skills could be developed. The soft skills selected during the previous phases of the project included: *social/inter-personal skills* (communication, team work, conflict management, negotiation); *personal/intra-personal skills* (leadership, self-evaluation, adaptability and flexibility), *methodological skills* (learning to learn, analytical skills, creativity and innovation, problem solving), *digital skills* (information and data processing, digital communication, digital content creation, digital problem solving).

As far as concerns the MOOC selection, the partners involved in the fourth output identified 20 platforms to be explored. After that, a common template was defined, in order to collect homogeneous information for each MOOC. The results of this work are illustrated in this paper, highlighting some important findings concerning the tools used to foster self-regulation and active learning.

2.1 MOOCs and soft skills

There is growing evidence to suggest that MOOCs will have an important role to play in the continuing development of the 'soft skills' of employees throughout their careers. As Brabon (2014) highlights, while MOOCs seem to offer the opportunity to gain subject-specific knowledge and understanding, the lack of systematic accreditation, detailed attention to questions of learning outcomes and 'levelness', as well as programme planning, mean that the majority of MOOCs are not designed to create subject-specialists who will go on to obtain a degree. Although the topic of a MOOC may initially attract learners who simply want to know more about a specific subject, the underlying impact of the learning experience is more readily quantified through an appreciation of the 'soft skills' that MOOCs can nurture. Through their different pedagogies and self-directed learning, many MOOCs cultivate communication and problem-solving skills, flexibility and creativity, as the primary features of

the formative learning journey. It is here that MOOCs can make a significant intervention into enhancing these often nebulous and personal characteristics of 'soft skills' that are highly valued by employers. MOOCs require individual learners to be able to self-regulate their learning, determining when and how they engage. However, MOOCs attract a diverse range of learners, each with different motivations and prior experience.

Margaryan and colleagues (2015) analyzed the instructional design quality of 76 randomly selected MOOCs, including 26 connectivist cMOOCs and 50 xMOOCs, in the light of ten instructional principles derived from contemporary learning and instructional theories about effective instruction. The study found that the majority of MOOCs of both types rely on design principles that privilege high quality content rather than overall instructional design and learning experience.

In order to foster active learning and self-regulation, some instructional researchers (for example Scagnoli, 2012; Bartoletti, 2016) highlight that there are some important elements that need to be considered when creating a MOOC so that students get the benefit of education from an expert but also feel contained and empowered to share and open their minds to grow in knowledge and within a new community of learning.

These elements are:

1. *Novelty and leverage for previous experience*: content that challenges and interests any participants with any level of expertise in a topic, no matter what their previous experiences about the topic are.
2. *Input from diversity of sources*: Rich amount of sources that come from diverse perspectives to help participants think and develop understanding of the topic. Videos, readings, ebooks, movie clips, and a variety of digital materials that can enrich the experience of being informed and learning.
3. *Gauge for understanding and further thinking*: Self graded activities that allow participants to check their understanding of the weekly topic or discussion, and at the same time, make the participant think deeply about the issues presented in the week.
4. *Motivation for engagement and community learning opportunities*: Encourage participants to select topics within the topic of the class to have their own discussions and learning hubs. Invite them to use class materials to trigger conversations and learning.
5. *Planning for legacy*: Inspire participants to create digital spaces that will continue the discussion or the information seeking for the topic of the class. Suggest students to take what they learn and be agents of change or discovery in their worlds of work or life.

Some of the inputs gathered from this framework represented our background while planning the MOOC guide, fundamental part of the orientation tool for students and young workers.

3 The selection and analysis of MOOCs

As previously mentioned, the fourth output of eLene4work project consists in an orientation tool specifically designed for university students and young workers interested in developing their soft skills and digital soft skills.

The aim of this tool, which is hosted in a website[1], is to help them to understand:

1. the transversal skills required by the international labour market, useful for the mobility in European Countries (the tool will include the updated data on the subject, gathered during the first two phases of the project);
2. the new learning model that eLearning implies and the main differences between studying online compared to face to face;
3. the potential of MOOCs. The tool will include information about their classification, organisation, and functioning (e.g. enrolment, teaching assistance, assessment);
4. how to optimise their participation in a MOOC;
5. what pre-requirements are necessary;
6. what obstacles students may encounter in attending a MOOC and how to overtake them.

To reach these goals, the orientation tool will be structured into the three following sections:

1. "Explanation of the learning process" (section A);
2. "How to develop soft skills and digital soft skills through MOOCs and OERs" (section B);
3. "The MOOC Guide" (section C).

For the subject discussed in this paper, the third and last section of the tool is of interest. This MOOC Guide is indeed the first guide to map all the existing MOOCs on soft skills and digital soft skills.

Five partners were directly involved in this phase of the project: European University College Association (Belgium; activity leader), University of Helsinki (Finland), University of Bremen (Germany), Maria Curie-Skłodowska University (Poland), and METID - Politecnico of Milan (Italy). The coordination of the Output and the design of the guide was carried out by another partner: University of Aunege (France).

[1] http://og.elene4work.eu/en/

MOOC providers were equally distributed between partners, who analysed 20 platforms totally: Canvas; Coursera; ECO; eGeneral Studies UniBremen; EdX; EMMA; FUN; FutureLearn; iMoox; Iversity; Mooin; NovoEd; Open2Study; OpenHPI; OpenUpEd; POK – Polimi Open Knowledge; Saylor; Udacity; Udemy; World Education University.

Partners were asked to fill in templates concerning MOOCs on the soft skills and the digital soft skills identified in the previous phases, indicating the following information:

- MOOC title
- Language
- Main soft skills or digital soft skills trained in the MOOC (max 3)
- Creating institution
- MOOC Provider
- Link to the source
- Period of activation (self-paced, next opening period)
- Duration
- Cost (for free, fee for enrolment, fee for final certificate etc.)
- Target (students, professionals, others, not specified)
- Level of commitment required
- Level of assistance offered
- Learning outcomes
- Final examination methodology and general assessment methodology
- Program
- Teaching learning methodology
- Partner's opinion on the need to add the MOOC into the final guide (in case of negative answer, we asked to justify it)
- Keywords.

All the templates, filled-in with information, were then sent to the EucA staff to be analysed, since they will constitute the basis of the MOOC Guide.

A total of 165 MOOCs on soft skills and digital soft skills were found by the partners, thus divided: Canvas (8); Coursera (16); ECO (1); EdX (28); eGeneral Studies UniBremen (5); EMMA (2); FUN (1); FutureLearn (11); iMoox (4); Iversity (5); Mooin (3); NovoEd (15); Open2Study (9); OpenHPI (4); OpenUpEd (1); POK – Polimi Open Knowledge (3); Saylor (15); Udacity (1); Udemy(32); World Education University (1). 151 out of the 165 MOOCs analysed train one or more soft skills and/or digital soft skills identified during the previous phases of the eLene4work project: communication (44); leadership (19); adaptability and flexibility (14); self-evaluation (11); learning to learn (10); teamwork (10); digital communication (8); analytical skills (7); digital

content creation (7); creativity and innovation (6); negotiation (5); problem solving (5); information and data processing (3); conflict management (2).

Most of the MOOCs on soft skills and digital soft skills we identified are taught in English. Some exceptions are: 1 MOOC in French, 2 MOOCs in Italian, and 16 MOOCs in German.

Furthermore, we analysed the tools used in these MOOCs to foster self-regulation and active learning with the categories created by Scagnoli (2012) and highlighted, for each one, different activities and tools.

Table 1
ANALYSIS OF MOOCS ON SOFT SKILLS AND DIGITAL SOFT SKILLS

Element	Activities/Tools
Previous Experience	Presentation of the theme and final activating question Videos on Youtube News and/or reports Questions
Input	Instructor's short videos (5-10 mins.) Readings Videos from other sources Other digital content
Check for Understanding	Multiple Choice or True/false Matching exercise Investigate and complete Cloze – Fill in Blanks Instructor wrap up and setting a stage for the next session
Engagement	Community Regulated Discussions Digital materials that result from the discussions (for example: a poster that reflects the community conclusions; a web page; a blog etc.)
Legacy	Spaces that students may create to continue the conversation after course is done: Blog Website Social Media Site Video or Photo Blog Wiki

We observed that the first three elements (recall of previous experiences, input and check of understanding) are required to complete courses, whilst the last two ones (engagement and legacy) are optional and only concern highly self-motivated participants.

Tools aimed recalling *Previous experiences* are triggers for thought or discussion, content that may appeal to students' reflection and will help as a starting point for the topic. Everybody will process the information in a

different way, based on their own experiences, and everybody will bring new insights to the interaction. Instructional designers of MOOCs have to be ready to accommodate people with no knowledge about the topic to people with PhD's in the subject.

The *Inputs* offered in MOOCs are, generally, rich number of sources that come from diverse perspectives to help participants think and develop understanding of the topic.

Check for understanding include self graded activities that allow participants to check their understanding of the weekly topic or discussion, and at the same time, make the participant think deeply about the issues presented in the week. Activities can range from simple to more complex dimensions, from identify and respond, to analyse, and to search and respond.

To foster *Engagement* it is important to encourage participants to select topics within the topic of the class to have their own discussions and learning hubs. Forum moderators should also invite them to use class materials to trigger conversations and learning.

How to motivate participants to continue their activities even after the end of the course, i.e. to look for *Legacy*? It is important to promote participant-created digital spaces that will expand and continue the discussion or the information seeking for the topic of the class. Participants may take what they learn and be agents of change or discovery in their worlds of work or life.

4 The comparison of four MOOCs on creativity

In order to further investigate on this theme we carried out a qualitative analysis selecting four different courses on creativity:

1. *Ser màs creativos*, a course published by the Universidad Nacional Autónoma de México on Coursera;
2. *Reinvent yourself*: *unleash your creativity*, published by the University of Texas, Houston, on Edx;
3. *A crash course on creativity*, published by Stanford University on NovoEd;
4. *Creative problem solving*, published by the University of Minnesota, on Coursera.

We enrolled in the courses for the whole duration of the paths (respectively 5 weeks for the first course, 9 weeks for the second, 6 weeks for the third and the fourth) and compared them in terms of pedagogical approaches, activities, progress monitoring and assessment. A brief overview of the results is illustrated in Table 2.

Table 2
COMPARISON OF 4 MOOCS

Ser màs creativos	Reinvent yourself: unleash your creativity	A crash course on creativity	Creative problem solving
Pedagogical approach: Content-based (xMooc)	**Pedagogical approach:** Reflection-based	**Pedagogical approach:** Project-Based	**Pedagogical approach:** Activity Based
Structure: Session-based 5 weeks	**Structure:** Self-paced but with TA 9 weeks	**Structure:** Session-based 6 weeks	**Structure:** Session-based 6 weeks
Activities: Videos (teacher with slides; interviews, testimonials) Tests	**Activities:** Videos Stop and think exercises (Reflections + Case studies) Topic Wrap-Up (and 5 tests) Project (optional) Homework (optional) Weekly Readings Voting up best projects	**Activities:** Videos Assignments (2 individual and 4 group assignments)	**Activities:** Videos Readings Tests Assignments and Review Peer Graded Assignments: DSD (Do Something Different) Eat Something different; Talk to a stranger; Give differently
Progress Monitoring / Assessment: Tests Final Peer Grading Assessment	**Progress Monitoring / Assessment:** Tests Stop & Think Discussions (at least 30 on a total of 40) Project Self-Assessment	**Progress Monitoring / Assessment:** Peer Graded Assignments	**Progress Monitoring / Assessment:** Peer Graded Assignments Tests

As illustrated in Table 2, the first course, *Ser màs creativos*, is mainly based on videos and tests; it is focused on contents and has the structure of a "x-MOOC", i.e. a traditional course organization with a clearly specified syllabus of recorded lectures and self-test problems. Although the course is session-based (i.e. it has a starting date and an end), teacher-student interactions and student-student interactions are very rare or limited.

The second course, *Reinvent yourself: unleash your creativity*, is based on different tasks that involve reflection. It includes very original activities, besides videos, such as Stop and think exercises (Reflections + Case studies), Topic wrap-up (and 5 tests), Project (optional), Homework (optional) etc. Nevertheless, all these activities are designed to be carried out mainly alone, since the course is self-paced and does not require interaction among the participants.

The *Crash course on creativity* published by Stanford University on NovoEd requires participants, after two individual assignments, to create groups (mainly

international, cross-cultural groups) and to work in team to produce creative ideas and creative products. The course is project-based and involves the production of real artefacts. Even the shape of final State of accomplishment was designed by some participants. The platform has additional tools (in comparison with other MOOC providers) to help people create teams and organize their works. During the course participants can explore several tools and approaches that can be used to increase both individual creativity and the creative energies of teams and organizations. Futhermore, participants are invited to create groups in Social media and to continue the "discourse" even outside the platform and beyond the course. As a matter of fact, after the end of the course a group of participants created a team that aims to solve "real world problems".

The fourth MOOC, *Creative problem solving*, is also session-based and involves participants in different kind of activities (videos, readings, tests, assignments and reviews) but also on a specific type of peer graded assignments called DSD, *Do Something Different*. Participants are required, for each assignment, to undertake new, creative initiatives and to document them (with videos, pictures, or a report). These activities might include "eating something different", "talking to a stranger", "giving/donating differently" etc. Students are challenged to identify and change their own cultural, habitual, and normal patterns of behaviour and they are encouraged to understand creativity as a construct of societal norms. For this course, the persistence of the creative person is developed through practice through creative exercises. Course tasks are also designed to challenge students to consider how others (i.e. different people, different cultures) view creativity. This course supports an active learning environment for students to examine how the ideas presented in class fit within integrated education, the goal for scholarship, and the creation of new knowledge. The creative work of the learner and groups of learners (team projects) are central to the course curriculum.

The comparison of the four MOOCs shows that different tools can be used to foster different patterns of engagement. The four examples presume different learning behaviours that can be classified following the categories created by Littlejohn, Milligan and Margaryan (2011): consume, connect, create and contribute. Of course, this does not mean "ranking" the four courses, since different learning paths might be useful for different kind of learners. Furthermore, each learning practice brings together a combination of these components to form a distinct learning pathway, providing a baseline for rethinking combinations of practices for more effective learning and soft skill development.

Having an understanding of different learners and the factors affecting participation can aid MOOC developers in ensuring the success of MOOCs.

Littlejohn *et al.* (2011) suggested that while many learning environments concentrate on providing opportunities to consume information and connect with resources and people, more emphasis needs to be provided on allowing learners to create and contribute, to learn through experience, discussion, self-study and by teaching others.

Conclusions

Educational institutions as well as education technology such as MOOCs are trying to provide 21st century skills (including both soft skills and digital skills) to their students so that they are better prepared for the labour market. However, according to Gamage *et al.* (2016), MOOCs are not effective in teaching these skills and the MOOC hype would have been fading in the last 4 years because MOOCs are not interactive and collaborative enough for students.

This might be furthermore true for soft skills, since they are "behavioural components".

MOOCs gather participants from different parts of the world and with different personal, demographic and professional backgrounds. The only thing that all participants have in common is their interest in the topic of the course. This interest, however, is diverse as well and, although they all may be interested in the topic, not all the participants enrolled have the same commitment or motivation for learning about that topic, and their interest has perspective. The interest may go from learning more about a topic, to confirming concepts, to being curious, to finding a community to host discussion and concerns.

Audience heterogeneity makes it very hard to create a course that will appeal to all levels. The analysis of 151 MOOCs on soft skills selected and the qualitative comparison of four creativity MOOCs highlighted that different elements might help an instructor plan and be prepared for diversity, creating a space that will give inspiration and intellectual challenge to any levels of participation.

We do believe that MOOCs might help train soft skills and digital soft skills but some limitations must be underlined. First of all, the majority of MOOCs are in English. Therefore, also for MOOCs on soft skills and digital soft skills, it is true what Sanchez-Gordon and Luján-Mora (2014), and Gaebel *et al.* (2014) pointed out: language can still represent a barrier to participation in MOOC learning.

Furthermore, it seems that MOOC instruction tends to substantiate as an opportunity to develop employability skills (both soft skills and digital soft skills) for those who have already benefitted from Higher Education and for those who are already employed, i.e. lifelong learners. To sum up, work has still to be done for MOOCs to set ground for digital inclusion, becoming

dynamic systems, in which those that cannot access education, because of socio-economic constraints or special needs, feel comfortable and valued.

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