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T4.3.2 Technical Skills Library – Infographic course

ORANGE: CREATIVITY, INNOVATION & TECHNOLOGY PROJECT
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Content

Module II Technical Library
Course II.6 Infographic

Chapter 1. Introduction

The purpose of the O-City project is to discover and promote the natural and cultural heritage of our cities, and, at the same time, to stimulate the orange economy injecting technical and professional knowledge in natural and cultural promotion of the cities involved. On the one hand, the promotion of the natural and cultural heritage of the cities will be achieved by creating creative multimedia items (photo, video, comic, animation, podcast, …) of each city and upload them into the O-City World platform. On the other hand, with the aim to develop the creative economy of the cities, different courses have been developed for teachers about the creative multimedia items that will be located into the O-City platform. These courses include resources about how to put into practice the contents with their students. In this way, teachers and students will create new creative multimedia items of their own cities that, after being validated, will be uploaded to the O-City World platform.

Additionally, the development of cultural, soft and business skills is also necessary for new practitioners in the orange economy. For this reason, the O-City training plan consists of the following 4 skill modules:

1. Module I. Heritage & Intellectual Property (IP): Basic content related to natural and cultural heritage (definition, classification, importance, etc.) and the protection of intellectual property (definition, categories, methods, etc.)
2. Module II. Technical: Basic content needed to develop multimedia elements (photography, video, animation, etc.) on heritage.
3. Module III. Business: Basic contents related to business and entrepreneurship skills in the orange economy (creation of business models, digital marketing, etc.)
4. Module IV. Soft skills: Contents to stimulate creativity, critical thinking and in general interpersonal skills as a tool to improve professional integration.

This document presents the Infographic Course, which is part of Module II. The aim of the course is to equip teachers with the appropriate technical knowledge and competences on how to develop an infographic, and also to provide him/her with materials and guidance to transmit this knowledge to their students in the classroom. Following the lessons proposed in this course, the students will create an infographic about some natural or cultural heritage of their cities. The course is available in open format in:

https://poliformat.upv.es/portal/site/OCW_CUR1157407_2020/tool/89b33ff0-a352-4379-abcb-6038cacb3e33

The main topics of this course are design process and visual design basics in UX; realization of an infographic. Using this knowledge, students will develop a product that presents useful information and data about a natural or cultural heritage element, providing an engaging

experience that guarantees its knowledge and subsequent promotion. Finally, the teacher will upload the infographic produced in his/her classroom to the O-City World platform after the evaluation of their quality.

This document is structured as follows. Chapter 2 details the learning objectives of the course. Chapter 3 describes the three types of learning materials developed: T2L-Teacher to learn, T2T-Teacher to teach and S2P- Student to practice. Chapter 4 reports the innovative learning methodologies that are used in the proposed course (project based learning and blended learning) and the ones that teachers can decide to use (flip-teaching, gamification and E-Scrum). Chapter 5 is dedicated to give the contents of the course, which is divided in two topics, the first one consisting of three lessons and the second one consisting of four lessons. For each lesson, all the materials (T2T, T2L and S2P) are linked and recommendations about how to plan the lessons are given. Chapter 6 describes how to apply E-SCRUM to develop an infographic series by using the resources in Chapter 5. Chapter 7 indicates the technical requirements for the infographic to be uploaded to the O-City World platform. Chapter 8 includes links to some useful tools to develop the infographic and, also, some guidelines to implement E-Scrum in this course. Chapter 9 is dedicated to evaluation/assessment: teachers will be evaluated through tests about the materials T2T; and some rubrics are provided to teachers to facilitate the evaluation of students. Chapter 10 describes the steps to be done by teachers to upload to the O-City World platform those infographics that have the required quality. Chapter 11 define the pathway to acquire competences by identifying the DIGCOMP (Ferrari, 2013) and ENTRECOMP (Bacigalupo, Kampylis, Punie, & Van den Brande, 2016) framework competencies that the students will work with each one of the proposed activities of the Infographic course. Finally, in Chapter 12 teachers can find more learning materials from other O-City modules with activities related to infographic design and realization. Teachers can decide which resources are more suitable or useful for their classroom depending on their teaching reality (educational level, subject, …). In this way, teachers will adapt the learning path of their students focusing in technical, culture, intellectual property, business and/or soft skills.

Chapter 2. Learning Objectives

The general objective of O-City project is to provide a series of virtual tools that allow teachers to be trained in multimedia issues, granting technical as well as artistic knowledge to obtain an audio-visual or visual product that is consistent with the project requirements. The final objective is that teachers transmit all this knowledge in the classroom, so that their students generate audio-visual or visual products that feed the O-City World platform.

After taking the Infographic course, the teacher (and his/her students when the course is brought to the classroom) will be able to:

1. Apply basic notions of user experience and visual design, especially user-centered and information visualization design, to cultural and natural heritage.
2. Identify the main requirements of an information visualization about a heritage reality.
3. Collect and organize information and data to be represented in the infographic about the chosen heritage reality.
4. Choose the visual representations that best suits the selected data and information.
5. Create a basic prototype of the infographic about the chosen heritage reality.
6. Evaluate the main aspects about the effectiveness and usability of the infographic.
7. Realize the infographic about the chosen heritage reality through a graphics software

and upload it on the O-City World platform.

Chapter 3. Types of educational materials

One of the purposes of O-City is that teachers use our training program, not only to learn, but also to incorporate the O-City project into their daily academic activities in the classroom, where their students will create infographics about natural or cultural heritage. In this sense, teachers will choose which contents of the Infographic course (and other related courses: culture, IP, business and soft skills) are useful for them depending of their previous training; and which contents to take to their classroom, depending on the type of subject or level of their students.

In general, the educational materials developed are classified into three types

Teacher to learn (T2L): contents (videos, ppts, pdfs, …) to provide teachers with a basic technical knowledge applied to cultural and natural heritage. Teachers will transmit this knowledge to their students (they can use the same contents in the classroom).

Teacher to teach (T2T): contents (videos, ppts, pdfs, …) and activities prepared for teachers to use in the classroom. These activities are prepared to be directly developed by the teacher in the classroom and they can be adapted to the subject and to the educational level. The T2T activities are the ones recommended to get that students create the multimedia based on photos.

Student to practice (S2P): optional extra activities prepared for students to go deep into some topic. Teachers will decide if they propose some S2P activity or not.

Chapter 4. Innovative learning methodologies

This chapter is dedicated to explain the potential innovative learning methodologies that can be used in the Infographic course when the teacher takes the course to the classroom.

Project Based Learning

The objective of this course is that students develop a specific project working individually or in teams: an infographic about a natural or cultural heritage. But not only is technical training offered, but also training in culture, IP, business and soft skills (see Chapter 12), so an integral formation in the orange economy sector is offered to students. Additionally, working in teams through the project encourage collaborative learning: responsible and team autonomous work, increased respect and tolerance, personal growth, improvement of communication skills, internalization of academic knowledge, greater control of the student in the learning process, teamwork, interest, and motivation, improvement of self-esteem, development of intellectual and professional skills and efficient use of resources.

Flip-teaching (optional)

Most of the materials prepared for teachers (T2L) can be used by students (T2T). Teachers can

propose students to work on these materials at home before the class. In this way, the time in the class can be used to answer queries about the work made at home or to go deeper into the topic. This methodology promotes students' active involvement. Moreover, it offers a chance to focus class time on the higher forms of cognitive work (application, analysis, synthesis, and evaluation). As described by Bloom's revised taxonomy, by engaging students in complex tasks with the support of the teacher and the involvement of the group of peers. Chapter 5 specifies the activities that can be proposed using this methodology. More information about this methodology can be found in (Bergmann & Sams, 2012).

Blended learning

This course combines online educational materials (such as T2T videos described in Chapter 5) and traditional place-based classroom methods. Face-to-face classroom practices are combined with computer-mediated activities that students are assigned to do at home (some T2L activities described in Chapter 5). This methodology allows students to work on their own with new concepts, while teachers can support individually students who need special or customized attention.

Gamification (optional)

Teachers can introduce gamification in the course to increase participants' engagement. Students can get points by doing the proposed activities in Chapter 5 (T2L and S2P). The teacher assigns points to each team (or to each student if the task is done individually) after assessing each activity and makes the ranking visible. At the end of the course, teacher assigns points to each infographic created and students assign points to the infographics created by their peers.

E-SCRUM (optional)

Scrum is a framework for developing complex products widely used in Information Technology (IT) development. This methodology has been adapted to manage work-teams in educational environments (E-Scrum). E-Scrum can be used in the Infographic course to develop an infographic series about cultural or natural heritage. The roles in this project are:

- **Product Owner** (the teacher who has followed one of the O-City formative plans) he determines the learning objectives and is responsible for monitoring and grading results. He/she will also facilitate the E-Scrum process and the personal and team development process. He/she will use the learning materials provided in this course.
- **The Scrum Team** is composed by four or five students who are committed to develop an infographic project (infographic series about a cultural or natural heritage).
- One of the members of the Scrum Team performs the **Scrum Master** role. The Scrum Master is a "serving, coaching leader". He/she helps their team to perform optimally - but he/she does not direct the team.
- **The Stakeholders** are people involved in O-City project who are in charge of validating the final product.

Every E-Scrum project starts with the implementation of the **Product Backlog**. This is a list of requirements and priorities of the project. This is defined by the **Product Owner** (the teacher), in collaboration with the **Scrum Team** (the students).

The work in E-Scrum is divided into **Sprints**. Every Sprint has a duration of two weeks. Sprints are composed by four events:

1. **Sprint Planning**: a meeting where the students must choose which requirements are going to be implemented in this sprint
2. **Daily Sprint:** daily meetings where students share their improvements with the rest of the team
3. **Sprint Review:** an event where the team presents the result of the Sprint, in the form of viable minimum product (VMP)
4. **Sprint Retrospective:** a meeting where the team think about how they have managed the work. This is an introspective meeting, useful to improve the team work competence.

More details about how to do the product backlog and how to divide the course in sprints is given in Chapter 6.

Chapter 5. Contents of the course

At the beginning of the course, we will show a video that introduces the two main topics, "Design process and visual design basics in UX" and "Realization of an infographic", in order to have a general overview of the course structure.
Furthermore, some infographics about some cultural heritages that are part of the O-City World platform are presented as inspiration for the activities that will be carried out during the lessons and as a reference for the final assignment of the course.

The first topic is divided into three lessons, the second into four:

TOPIC	LESSON
T1. Design process and visual design basics in UX	L1. User-Centered Design
	L2. Visual language and principles
	L3. Basic visual elements in UX
T2. Realization of an infographic	L1. Effectiveness of infographics and data visualizations
	L2. Visual representation of data and information
	L3. Different applications of information visualization
	L4. Creating an infographic

Table 1. Structure of the course in topics and lessons

The first topic analyses the more general aspects concerning the design process and the basics in visual design that are useful to improve the User eXperience (UX) with infographics (and more in general with interactive or multimedia products and systems). This knowledge is necessary to adequately learn how to deal with the different design steps and how to manage the different visual design basic elements that should be accurately considered and applied when creating an infographic. Indeed, the focus on the user in the design process and the visual design basics in UX represent the foundations allowing to make correct choices when developing an infographic. During this first part, examples and activities concerning natural and cultural heritage will be proposed to show how visual elements can be used to improve the awareness about and the experience with the heritage.

The lessons of the second topic are more focused on the visualization of data and information and on the practical realization of an infographic.

First, infographics and data visualizations are introduced as effective ways of communicating and facilitating the understanding of different kind of issues, including those related to natural and cultural heritage. Moreover, some suggestion about how to make information visualization truly effective are provided. Next, the following lessons show different ways of visually represent data and information, considering some different practical applications of information visualization. In addition, some online tools for creating infographics and data visualizations are presented. Lastly, one lesson is dedicated to explaining key steps in creating infographics, using a graphics software and some free online repositories as an example. In the end, students will be able to create infographics that can be uploaded on the O-City World platform.

In the following sections, each topic and its lessons will be indicated in detail.

Topic 1. Design process and visual design basics in UX

This topic explores the more general aspects of the design process and offers an overview on the visual principles and elements that are fundamental in creating an infographic. The main objectives of the topic are described in a video.
In detail, it is divided into three lessons:

1. **User-Centered Design:** This lesson highlights the importance of focusing on the user and his/her goals and needs during the design process. It provides some knowledge about the main steps to follow and it introduces the concepts of usability, context of use and requirements of a user interface or an information visualization, such as an infographic aiming to promote natural and cultural heritage;
2. **Visual language and principles:** In this lesson, the language of images is introduced, and the main principles of human perception are explained, thanks to the Gestalt laws, since they are a key knowledge for creating an infographic. Some examples about visual representations and user interfaces are provided. Based on this lesson, student can improve their skills regarding the analysis and the design of visual contents;
3. **Basic visual elements in UX:** In this last lesson of Topic 1, the use of basic visual elements, such as layout, colours, and typography, is explained showing how they can influence the usability and the user experience of a user interface or an information visualization. To facilitate understanding, several examples, also concerning natural and cultural and natural heritage, are shown.

Tables 2, 3 and 4 describe the materials provided to the teacher for each lesson. Each lesson corresponds to one class of the teacher with his/her students. The materials (videos and pills) prepared for the teacher to learn (T2L) can also be used directly in the classroom (teacher to teach – T2T), or a task for the students can be assigned, which consists in watching the videos at home before the class (in green colour in the tables). The latter option is known as flip-teaching, in which the time in class is used to solve doubts and go further into the project. Videos explain the theoretical concepts of a lesson, whereas pills show practical examples of these theoretical concepts to help in the understanding.
As said, the aim of the course is that at the end the students, guided by a teacher who has

followed this course, will be able to create infographics regarding natural and cultural heritage, which can be uploaded on the O-City World platform.

To achieve this goal several activities are recommended for each lesson:

- Activities (T2T – in blue colour). It is detailed if the students need to work in the classroom, in the street or at home.
- Extra activities (S2P – in salmon colour) are proposed for those teachers who want to go deeper into the topic of the lesson.

Additionally, recommendations on what to do in class in each lesson are included. All the prepared materials (lesson content in pdf, videos, video contents in pdf, and activity factsheets in pdf) are linked in the tables. Students should deliver all the proposed activities before the following lesson, when the teacher will solve their doubts (if students do not do/deliver the activity, they won't have doubts). After solving their doubts, students should correct their activities and deliver them again to the teacher.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
1 User-Centered Design	T2L/T2T	Video T1.L1. User-Centered Design (lesson content in pdf, video, video content in pdf)	Introduction to the main steps and principles of the design process used to create visual elements, such as UIs and infographics, with the aim of promoting cultural and natural heritage	20'	at home (previous to the lesson -flip-teaching) or in the classroom	Present O-City World platform (watch some examples for simplify tasks at home) Explain Video T1.L1 or solve doubts (if flip-teaching) Explain Activities T1.L1.1 and T1.L1.2 (for students to do at home), and optionally propose the Extra activity T1.L1.1
	T2L/T2T	Pill. User needs, requirements, and functions of the O-City platform (video)		5'	at home	
	T2T	Activity T1.L1.1. Identify context of use and users' needs (video, video content in pdf, activity factsheet in pdf)	Identify a product or service visualizing information about a natural or cultural asset of a city (for example a museum collection) and define the related context of use and users' needs	2h	at home	
	T2T	Activity T1.L1.2. Identify functional requirements (video, video content in pdf, activity factsheet in pdf)	Based on Activity T1.L1.1, identify the functional requirements according to the users wants and needs	2h	at home	
	S2P	Extra activity T1.L1.1. Research tour (activity factsheet in pdf)	Explore a museum or a natural park and collect information and data, especially regarding visual communication, to improve the delivered User Experience	4h	in the street	

Table 2. Materials provided for Lesson 1. User-Centered Design of Topic 1. Design process and visual design basics in UX.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
2 Visual language and principles	T2L/T2T	Video T1.L2. Visual language and principles (lesson content in pdf, video, video content in pdf)	Explanation about the main features and principles constructing graphic elements and images, in order to improve the knowledge and skills about the development of visual contents	20'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activities T1.L1.1 and T1.L1.2 Explain Video T1.L2 or solve doubts (if flip-teaching) Explain Activities T1.L2.1 and T1.L2.2 (for students to do at home), and optionally propose the Extra activity T1.L2.1
	T2L/T2T	Pill. Some examples of Gestalt principles in UX (video)		5'	at home	
	T2T	Activity T1.L2.1. Gestalt principles analysis (video, video content in pdf, activity factsheet in pdf)	Analyze the Gestalt principles followed or broken by the visual elements of a website or infographic about a natural or cultural heritage and compare the analyzed item with a similar one from the O-City platform (e.g., a museum with a museum) by evaluating the adequacy of choices made in the visual design	4h	at home	
	T2T	Activity T1.L2.2. Create icons for user interfaces and information visualizations (video, video content in pdf, activity factsheet in pdf)	Create a new set of icons that represent the main contents and functions of one of the websites or infographics analysed in Activity T1.L2.1	4h	at home	
	S2P	Extra activity T1.L2.1. Evaluate the requirements with the rest of the class (activity factsheet in pdf)	Based on Activity T1.L1.2, each student carries out a short interview with the other students to understand if the requirements have been defined correctly	3h	in the classroom	

Table 3. Materials provided for Lesson 2. Visual language and principles of Topic 1. Design process and visual design basics in UX.

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Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
3 Basic visual elements in UX	T2L/T2T	Video T1.L3. Basic visual elements in UX (lesson content in pdf, video, video content in pdf)	Explanation about how basic visual elements, such as layout, colour, and typography, can facilitate the creation of infographics, including in the field of cultural and natural heritage	30'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activities T1.L2.1 and T1.L2.2 Explain Video T1.L3 or solve doubts (if flip-teaching) Explain Activities T1.L3.1 and T1.L3.2 (for students to do in the classroom or at home), and optionally propose the Extra activity T1.L3.1
	T2L/T2T	Pill. Practical examples of good and bad layouts in visual design (video)		5'	at home	
	T2L/T2T	Pill. Practical examples of good and bad use of colour in visual design (video)		5'	at home	
	T2L/T2T	Pill. Practical examples of good and bad use of typography in visual design (video)		5'	at home	
	T2T	Activity T1.L3.1. Evaluate the icons with the rest of the class (video, video content in pdf, activity factsheet in pdf)	Each student carries out a short test with the other students to evaluate the usability of the icons created in Activity T1.L2.2	3h	in the classroom	
	T2T	Activity T1.L3.2. Layout, colour, and typography analysis (video, video content in pdf, activity factsheet in pdf)	After analysing a UI (e.g., a website or an application) or infographic, compare it with different alternatives in layout, colour, and typography, defining what are the bad and the good practices implemented	4h	at home	

	S2P	Extra activity T1.L3.1. Suggesting improvements (activity factsheet in pdf)	Suggest some changes to be made for improving the visual design and the UX of one case analyzed in the previous activities of Topic 1 (Lesson 1 and 2), according to the User-Centered Design approach and the Visual Design basics	3h	in the classroom	

Table 4. Materials provided for Lesson 3. Basic visual elements in UX of Topic 1. Design process and visual design basics in UX.

Topic 2. Realization of an infographic

This topic is dedicated to explaining the effectiveness of infographics and data visualizations, and to deliver practical knowledge that will allow students to create infographics. The main objectives of the topic are described in a video.
In detail, it is divided into four lessons:

1. **Effectiveness of infographics and data visualizations:** This lesson better defines infographics and data visualizations and explains their usefulness, based on their effectiveness in presenting data and information. Moreover, it provides practical tips on usability and reliability. Lastly, some examples are shown, with particular regard to natural and cultural heritage;
2. **Visual representation of data and information:** In this second lesson different ways to graphically represent data and information are presented, highlighting the characteristics that make them best suited to certain contents and aims. Based on this lesson, student can improve their skills regarding the correct encoding of data in a picture to make them clearly understandable and even suitable to specific user needs;
3. **Different applications of information visualization:** This lesson briefly present different practical application of information visualization, showing the wide versatility of this instrument. In addition, some online tools for quickly and effectively creating infographics and data visualizations are introduced to highlight the availability of different resources according to the type of infographic or data visualization to create;
4. **Creating an infographic:** This last lesson describes some key steps for creating an infographic. A free graphics software is used as an example to explain some functions that can be found in many tools used for creating infographics. In addition, some free online repositories with useful resources are suggested. After this lesson, students can realize an infographic that can be uploaded on the O-City World platform.

Tables 5, 6, 7 and 8 describe the materials provided to the teacher for each lesson, using the same nomenclature (T2T, T2L, STP) and the same kinds of recommendations about lessons and activities of the tables of Topic 1.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
1 Effectiveness of infographics and data visualizations	T2L/T2T	Video T2.L1. Effectiveness of infographics and data visualizations (lesson content in pdf, video, video content in pdf)	Introduction to the usefulness of information visualizations based on their effectiveness in presenting data and information	15'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activities T1.L3.1 and T1.L3.2 Explain Video T2.L1 or solve doubts (if flip-teaching) Explain Activities T2.L1.1 and T2.L1.2 (for students to do at home) Explain requirements of the infographic to be part of the O-City World platform Optionally propose the Extra activity T2.L1.1
	T2L/T2T	Pill. Different typologies of data sources about heritage (video)		5’	at home	
	T2L/T2T	Pill. Practical examples of good infographics and data visualizations (video)		5’	at home	
	T2T	Activity T2.L1.1. Case study analysis (video, video content in pdf, activity factsheet in pdf)	Analyze an infographic or a data visualization about a natural or cultural heritage. Define if it is reliable and usable and explain on which elements you ground your choice	2h	at home	
	T2T	Activity T2.L1.2. Gather data and information to use in an infographic (video, video content in pdf, activity factsheet in pdf)	Pick a natural or cultural heritage and collect different types of related materials that can be useful in creating an infographic promoting that heritage. Include information about possible users, context, and goals of the infographic	3h	at home	

	S2P	Extra activity T2.L1.1. Evaluation tour (activity factsheet in pdf)	Visit a museum or a natural park and evaluate its visual system of communication in the view of using information visualization to improve the User Experience and promote the analyzed natural and cultural heritage	4h	in the street	

Table 5. Materials provided for Lesson 1. Effectiveness of infographics and data visualizations of Topic 2. Realization of an infographic

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
2 Visual representation of data and information	T2L/T2T	Video T2.L2. Visual representation of data and information (lesson content in pdf, video, video content in pdf)	Presentation of different types of graphical representations of data and information, in order to understand how to suitably encode data in a picture	30'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activities T2.L1.1 and T2.L1.2 Explain Video T2.L2 or solve doubts (if flip-teaching) Explain Activities T2.L2.1 and T2.L2.2 (for students to do at home), and optionally propose the Extra activity T2.L2.1
	T2L/T2T	Pill. TEDEd Animation by Lea Gaslowitz about How to spot a misleading graph (video)		10’	at home	
	T2L/T2T	Pill. TEDEd Animation by Mark Liddell about How statistics can be misleading (video)		10’	at home	
	T2T	Activity T2.L2.1. Organize gathered information and data (video, video content in pdf, activity factsheet in pdf)	Based on Activity T2.L1.2, sort the gathered information and data in categories according to correlations. Then define what you want to represent (i.e., the topic) and imagine the type of infographic you want to create	4h	at home	
	T2T	Activity T2.L2.2. Visualization of data and information (video, video content in pdf, activity factsheet in pdf)	Based on Activity T2.L2.1, choose which visual representation best suits the selected data and information with the aim of facilitating understanding. Also define the type of contents to include in your infographic	2h	at home	

	S2P	Extra activity T2.L2.1. Collect and check data (activity factsheet in pdf)	Working in groups, students select one natural and cultural heritage from Activity T2.L1.2 and try to find different types of data about it. Then they check data for assure their reliability	3h	in the classroom	

Table 6. Materials provided for Lesson 2. Visual representation of data and information of Topic 2. Realization of an infographic.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
3 Different applications of information visualization	T2L/T2T	Video T2.L3. Different applications of information visualization (lesson content in pdf, video, video content in pdf)	Some of the main practical applications of information visualization are illustrated, along with some tools to create the type of infographic or data visualization that best suits a certain type of practical application	15'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activities T2.L2.1 and T2.L2.2 Explain Video T2.L3 or solve doubts (if flip-teaching) Explain Activity T2.L3.1 (for students to do at home), and optionally propose the Extra activity T2.L3.1
	T2L/T2T	Pill. TEDx Talk by Dominic Bohan about Turning Bad Charts into Compelling Data Stories (video)		20'	at home	
	T2T	Activity T2.L3.1. Infographic prototype (video, video content in pdf, activity factsheet in pdf)	After synthesizing the outcomes from previous activities of Topic 2 (T2.L1.2, T2.L2.1, and T2.L2.2) in a clear proposal, create a sketch of your infographic that defines its main visual characteristics and shows how it might look	6h	at home	
	S2P	Extra activity T2.L3.1. Comparison of the infographic projects (activity factsheet in pdf)	Based on the previous activities of Topic 2 (T2.L1.2, T2.L2.1, and T2.L2.2), students compare their projects for the infographic. Then they form groups to develop common solutions	3h	in the classroom	

Table 7. Materials provided for Lesson 3. Different applications of information visualization of Topic 2. Realization of an infographic.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
4 Creating an infographic	T2L/T2T	Video T2.L4. Creating an infographic (lesson content in pdf, video, video content in pdf)	Explanation of some key steps for creating an infographic using, as an example, a free graphics software (that shows some functions that can be found in many tools used for creating infographics), and suggesting some free online repositories, in order to make students able to realize an infographic that can be uploaded on the O-City World platform	45'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activity T2.L3.1 Explain Video T2.L4 or solve doubts (if flip-teaching) Explain Activities T2.L4.1 and T2.L4.2 (for students to do in the classroom or at home), and optionally propose the Extra activity T2.L4.1
	T2L/T2T	Pill. Some examples of infographics made with online tools (video)		5'	at home	
	T2T	Activity T2.L4.1. Infographic prototype evaluation (video, video content in pdf, activity factsheet in pdf)	Each student carries out a short test on his/her infographic prototype (with at least 5 students), collecting and analysing feedback and suggestions useful to improve it	3h	in the classroom	
	T2T	Activity T2.L4.2. Realization of the infographic (video, video content in pdf, activity factsheet in pdf)	Based on the outcomes from Activities T2.L3.1 and T2.L4.1, choose a graphics tool and realize the final version of your infographic in order to upload it on the O-City World platform	5h	at home	

	S2P	Extra activity T2.L4.1. Make your infographic interactive (activity factsheet in pdf)	Design an interactive version of the infographic defining the interactions occurring between the users and the interactive elements of the infographic. Highlight the changes that occurred in the visualization.	3h	in the classroom	

Table 8. Materials provided for Lesson 4. Creating an infographic of Topic 2. Realization of an infographic.

Chapter 6. How to implement E-SCRUM

In this section more details about the use of E-Scrum are given. This chapter is divided into three sections:

- **The team**: this section describes how to form a balanced team and proposes some tools to work collaboratively.
- **The methodology**: this section presents a use case in which we applied the E-Scrum methodology with the aim of implementing an infographic series (i.e. a group of 4 or 5 related infographics per team).
- **The evaluation rubrics**: this section shows some rubrics that can be used to evaluate each sprint of the E-Scrum methodology.

The Team

E-Scrum implies **team working,** so the teacher must divide the students into teams, up to five members in each team (Scrum Teams). If teacher knows students, it is easy for him/her to create balanced groups. These groups should contain, at least, the following characters:
- **Scrum master**: a person with leadership skills. He coordinates the team and is the contact person for the Product Owner (the teacher, as explained below).
- **Secretary**: a person with organizational skills who will be responsible of reporting the meetings, following up the work and keeping the team tools updated.
- **Innovator**: a creative person able to introduce lateral thinking in the teamwork.
- **Technician**: a person with high digital competences, who should be able to learn how to use new software quickly.

Regardless to each member´s character, all of them have to work in the implementation of the product.
Unfortunately, it may not always be possible to create such a balanced team, so the teacher shall do his/her best.

E-Scrum teams are **self-organized**; this means that they can choose the tools to perform their work, such as the collaborative software to keep the work updated. Some interesting tools are available in the market, such as those included in Office365 (OneDrive, Word, Excel, Planner, Calendar…), those provided by Google (Google Drive, Docs, Sheets, Jamboard, Calendar…) or other included in Altassian package (Jira, Trello, Bitbucket…). In any way, it is important to use collaborative tools in order to maintain **transparency** in the ongoing work. These tools should include at least:

- A canva or table where the project status is always updated
- A repository where all the files are available
- A calendar where events are marked

The methodology

In order to clarify the development of the methodology, we are going to use a fictitious example. In this example, we work with an **art teacher** of a secondary school who wants to develop, with his/her students, an **infographic series (i.e. a group of 4 or 5 related infographics per team)** that presents different information and data about a museum and the heritage it exhibits and promotes.

With the aim of making the work more realistic, the teacher takes the role of a **museum curator** that needs an infographic series to improve the user experience of the museum by giving additional information to people who want to visit it. In this case, the **Product Owner** will be the teacher, taking the role of the museum curator.

First step consists on presenting the project to the class in form of **epic**. This is a story that shows the context of the project, the needs and the expectations. In our example, the epic could be the following:

"The Fallas Museum of Gandia (Spain) is the main museum about the Fallas Festival in Valencia. One of its main goal is to give the opportunity to experience the Festival also to those who cannot visit the city during these holidays. Through well distinct spaces, the museum shows all the different details of this event, declared Intangible Heritage of Humanity by UNESCO in 2016.
*In order to **spread** this **knowledge** and **attract more visitors**, our museum want to disseminate some **information, curiosities and tips online** about the Fallas museum and festival. To better **highlight the different aspects** of the event and the **different resources of the museum**, we have decided to realize an infographic series to publish **on websites and social media**. The infographic series should present **photos, maps, statistics** and other information helping to **contextualize the tradition, discover its history, create interest in the event, promote the museum** and possibly **plan an itinerary**".*

After presenting the epic, it is time to create the **Product Backlog**, this is the list of features that the product must fulfill. This task is developed by the **Product Owner** (the teacher) in collaboration with the **Scrum Team** (the students).
The Product Backlog is composed by a sheet for each feature (called **User Story**) and each one contains the following fields:

- An **identifier** (this is a number to identify every user story)
- A **description** of the user story. This description must follow the template "*As a < type of user >, I want < some goal > so that < some reason >*".
- The **priority** of the user story, this informs about how important this feature is for the Product Owner. It is a number, the higher its value the higher its priority.
- **Time estimation**, how much time does it take to complete this user story
- Checklist to **validate** the user story

Next table shows an example of product backlog. We have included only two user stories, but it could contain more. A good practice could be that every team will develop only one user story (that means creating an infographic series for each user story). The priority informs us about the importance of each user story so teams should choose the most important in the first place.

Identifier	Description	Priority	Time	Validation checklist
01	As a museum curator I want an infographic series so that it explains the main events of the Las Fallas Festival	100	40 h	Have all the events occurring in the days of the festival been covered by the infographic series? Do the infographic series present different types of information and data? Have information and data been visually represented? Have users, contexts, and goals of the infographic series been considered? Have the different infographics of the series been made consistent and well-connected (e.g. same colour palette or layout, logical flows of contents, etc.)?
02	As a museum curator I want an infographic series so that it presents the different spaces (and the related resources) of the Fallas	80	40 h	Have all the different spaces (and the related resources) of the Fallas Museum been covered by the infographic series? Do the infographic series present different types of information and data?

	Museum			Have information and data been visually represented? Have users, contexts, and goals of the infographic series been considered? Have the different infographics of the series been made consistent and well-connected (e.g. same colour palette or layout, logical flows of contents, etc.)?
03	As a museum curator …			

Table 9. Example of product backlog for an infographic series.

Some recommendations about the Product Backlog:

- It has to be leaded by the Product Owner in order to assure that the validation checklist contains the main items that should appear in the multimedia. It is a way to focus the work of the students.
- This validation checklist is not a rubric for the evaluation. In the rubric the teacher will include all the technical aspects that he considers important to evaluate, meanwhile in the validation checklist the features of the product are included, without detailing the quality.

The implementation of the infographic series can be divided in six Sprints, as can be seen in Figure 1. Each sprint has a duration of two weeks. Teacher proposes each sprint and give students all the materials that they need to develop its outcome, which are detailed in Table 10. Rubrics for the evaluation of each sprint (Tables 11 – 16) are also shared with students so they know where to put the focus of their work. Teachers can continue with their own program in the classroom, while students can work in the project by their own at home.

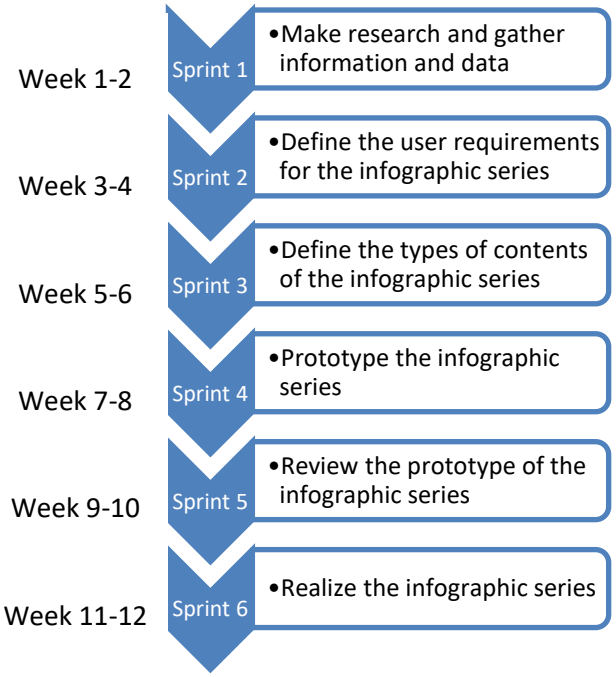

Figure 1. Division of the project in sprints.

The events of each Sprint are:

1. **Sprint Planning:** this is the first meeting of every sprint. In this meeting, the team decides what to do during the sprint and how to organize tasks, including who is responsible of each task. It is very important to define when the team considers a task as done, and this

definition is established following the criteria given in the validation checklist. A minute report has to be done in order to highlight the tasks to do, the responsibility of each member and the planning. This minute report has to be available for the teacher revision.

2. **Daily Sprint:** every day of the sprint, the team meets five minutes in order to revise the work done and plan the work to do. A minute report has to be done and it has to be available for the teacher revision.
3. **Sprint Review**: once the sprint has finished, the team presents to the Product Owner and others stakeholders the result of the Sprint in form of viable minimum product. They review the product in order to demonstrate that it accomplishes the validation checklist. The teacher and other stakeholders are spectators, but they can ask any question and propose modifications.
4. **Sprint Retrospective**: after the sprint review, the teacher meets the team and helps them to think about how they have managed the work. This is a meeting in which the team **reflects** about their way of working. For this, the teacher can:
    a. revise the minute reports in order to detect misconducts or problems in the organization of the group;
    b. ask about the roles and propose changes if he considers it is necessary;
    c. ask about the tasks done for each member;
    d. ask if there are some problems in the group; try to detect if some member is not working enough;
    e. propose some changes in the organization, way of working etc.

    This meeting can also be used to revise the product technically; the teacher utilizes the rubrics to assess the work and give feedback to the team. Rubrics for each sprint can be found in next section (Tables 11-16).

Figure 2 shows the Scrum events, detailing the roles that are involved in each one.

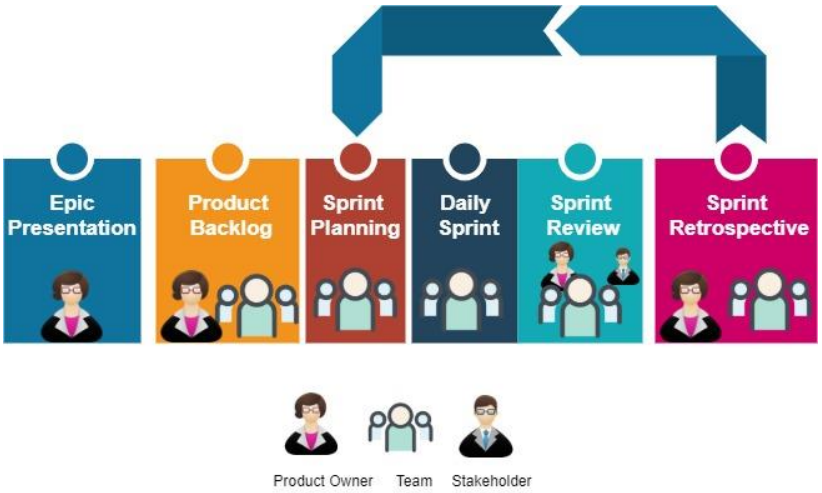

Figure 2. Scrum events and roles involved in each one.

Resources and Rubrics for evaluation

Table 10 includes the description of each sprint, its outcome, the resources to be used by students, where to find these resources and where to find the rubrics to evaluate the sprint.

Tables 11 to 16 includes the rubrics to evaluate sprint 1 to 6, respectively. Teachers must rate each specific criteria of a rubric on a scale from 1 to 5, according to the degree of compliance in which 5 corresponds to full compliance and 1 indicates non-compliance. To get the final

assessment, the rate of each criteria is converted to points and all points are added, getting a final number of points. Students must get more than 12 points for their work in the sprint to be acceptable.

Sprint	Description	Outcome	Resources	Links	Rubric
1	Make research and gather information and data	A report with all the observations made and a repository/list with all the data and the information collected about the users, the context, the museum and the heritage it exhibits and promotes	Video T1.L1 Activities A.T1.L1.1 Extra activity EA.T1.L1.1	Table 2	Table 11
			Video T2.L1 Pill T2.L1.1 Activity A.T2.L1.2 Extra activity EA.T2.L1.1	Table 5	
			Extra activity EA.T2.L2.1	Table 6	
2	Define the user requirements for the infographic series	A document specifying the context of use and presenting a list of user requirements (and the related features) for the infographic series	Video T1.L1 Pill T1.L1.1 Activities A.T1.L1.2	Table 2	Table 12
			Extra activity EA.T1.L2.1	Table 3	
			Video T2.L1 Pill T2.L1.2	Table 5	
3	Define the types of contents of the infographic series	A document specifying the type of contents and visual representations to include in the infographic series	Video T2.L2 Pill T2.L2.1 and T2.L2.2 Activity A.T2.L2.1 and A.T2.L2.2	Table 6	Table 13
			Video T2.L3 Pill T2.L3.1 Extra activity EA.T2.L3.1	Table 7	
4	Prototype the infographic series	Sketches (prototype) of the infographic series	Video T1.L2 Pill T1.L2.1 Activities A.T1.L2.2	Table 3	Table 14
			Video T1.L3 Pill T1.L3.1, T1.L3.2 and T1.L3.3 Activity A.T1.L3.2	Table 4	
			Video T2.L3 Activity A.T2.L3.1	Table 7	
5	Review the prototype of the infographic series	A document describing the different steps of the review and its results, including the list of needed changes	Video T1.L2 Pill T1.L2.1 Activities A.T1.L2.1	Table 3	Table 15
			Video T1.L3 Pill T1.L3.1, T1.L3.2 and T1.L3.3 Activity A.T1.L3.1 and A.T1.L3.2 Extra activity EA.T1.L3.1	Table 4	
			Video T2.L1 Activity A.T2.L1.1 Extra activity EA.T2.L1.1	Table 5	
			Activity A.T2.L4.1	Table	

				8	
6	Realize the infographic series	Final version of the infographic series (i.e. a group of 4 or 5 related infographics per team)	Video T1.L2 Pill T1.L2.1	Table 3	Table 16
			Video T1.L3 Pill T1.L3.1, T1.L3.2 and T1.L3.3	Table 4	
			Video T2.L3	Table 7	
			Video T2.L4 Pill T2.L4.1 Activity A.T2.L4.2 Extra activity EA.T2.L4.1	Table 8	

Table 10. Division of the project in sprints.

SPECIFIC CRITERIA to evaluate Sprint 1 - Gathering	1	2	3	4	5	Assessment	Comments
1. Information and data are correctly gathered and filtered according to the course criteria (e.g. using accurate, relevant, useful, and trustworthy sources)	X					1	
2. Students have used different information sources		X				2	
3. Students have collected different types of materials and data			X			3	
4. Students have collected pertinent and enough information and data about all the issues (i.e. the users, the context, the museum and the heritage it exhibits and promotes)		X				2	
5. Students have correctly kept track of references and sources		X				2	
Total: 25 points *(Accepted: 13-25 points; Rejected: 0-12 points)*						10	

Table 11. Rubrics to evaluate Sprint 1 – Gathering (example of use)

SPECIFIC CRITERIA to evaluate Sprint 2 - Requirements	1	2	3	4	5	Assessment	Comments
1. The students have properly specified the context of use and purpose of the infographic series	X					1	
2. The students have produced enough actionable and useful statements		X				2	
3. The students have correctly defined the user requirements based on the users' wants and needs			X			3	
4. The students have correctly identified the features and functions of the infographic series according to its users, contexts, and goals		X				2	
5. The students have properly taken into account the human behaviours, abilities, skills, limitations and needs identifying user requirements that are appropriate to create a good User Experience		X				2	
Total: 25 points *(Accepted: 13-25 points; Rejected: 0-12 points)*						10	

Table 12. Rubrics to evaluate Sprint 2 – Requirements (example of use)

SPECIFIC CRITERIA to evaluate Sprint 3 - Content types	1	2	3	4	5	Assessment	Comments
1. The sorting and categorization of the gathered information and data allows to adequately select the topics and contents of the infographic series					X	5	
2. The types of content chosen to be used in the infographic series are adequate to its purpose		X				2	
3. The types of visual representations chosen by students are suited for the information and data to be used in the infographic series			X			3	
4. The students avoided misleading visual representations of information and data					X	5	
5. The storytelling of the infographic series is clear and effective				X		4	
Total: 25 points *(Accepted: 13-25 points; Rejected: 0-12 points)*						19	

Table 13. Rubrics to evaluate Sprint 3 – Content types (example of use)

SPECIFIC CRITERIA to evaluate Sprint 4 - Prototype	1	2	3	4	5	Assessment	Comments
1. All the main visual characteristics of the infographic series that clearly show how it might look have been represented in the sketches					X	5	
2. The prototype adequately follows the requirements previously identified		X				2	
3. The composition and the arrangement of the visual elements adequately follows the visual design principles (Gestalt principles, etc.)			X			3	
4. The students have elaborated a creative and appealing proposal about the infographic series					X	5	
5. The prototype is adequate to the purposes of testing and discussing the design of the infographic series (it implies that all the elements have been identified, even if they have not been applied)				X		4	
Total: 25 points *(Accepted: 13-25 points; Rejected: 0-12 points)*						19	

Table 14. Rubrics to evaluate Sprint 4 – Prototype (example of use)

SPECIFIC CRITERIA to evaluate Sprint 5 - Review	1	2	3	4	5	Assessment	Comments
1. The students have followed a clear and adequate methodology for the review	X					1	
2. The students have adequately gathered feedback from users		X				2	
3. The visual design principles and elements (Gestalt principles, layout, colour, typography) of the infographic series have been correctly analyzed			X			3	
4. The effectiveness (usability and reliability, tone and style) of the infographic series has been correctly analyzed		X				2	
5. The students have proposed adequate changes according to the gathered feedback			X			3	
Total: 25 points *(Accepted: 13-25 points; Rejected: 0-12 points)*						11	

Table 15. Rubrics to evaluate Sprint 5 – Review (example of use)

SPECIFIC CRITERIA to evaluate Sprint 6 - Realization	1	2	3	4	5	Assessment	Comments
1. The students have chosen proper tools to graphically realize the infographic series	X					1	
2. The infographic series follows the criteria and the technical requirements established in the course		X				2	
3. The infographic series presents useful and reliable information and data that have been visually represented in a correct, pleasant, and understandable way			X			3	
4. The infographic series is adequate to users, contexts, and goals			X			3	
5. The infographic series is consistent and well-connected (e.g. same colour palette or layout, logical flows of contents, etc.)		X				2	
Total: 25 points *(Accepted: 13-25 points; Rejected: 0-12 points)*						11	

Table 16. Rubrics to evaluate Sprint 6 – Realization (example of use)

Chapter 7. Requirements of the infographic

The infographics developed in the classroom should meet two types of requirements to be uploaded to the O-City World platform:

1. Quality: teachers should use the rubrics in Chapter 9 to guarantee the quality of the infographics before uploading them (instructions in Chapter 10)
2. Technical:
    a. Concerning a natural or cultural heritage present or to insert on the O-City World platform
    b. Static image: PDF, PNG, or JPEG format
    c. Web resolution: 72 ppi
    d. Maximum file size: 144MB
    e. Language: Two versions of the same infographic, i.e. one in English and one in Local Language
    f. Avoiding any plagiarism
    g. Showing O-City and EU logos

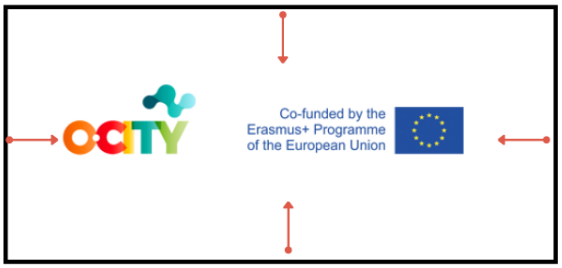

Figure 3. O-City and EU logos disposition.

Chapter 8. Useful tools

This chapter incorporates complementing resources and recommended tools for the two topics of this course:

1. Topic 1. Design process and visual design basics in UX
   - Adobe Color Wheel
   - Colormind
2. Topic 2. Realization of an infographic
   - Data Viz Project
   - Data Visualisation Catalogue
   - Gimp
   - Inkscape
   - Unsplash
   - Pexels
   - Pixabay
   - Freepik
   - Flaticon
   - Iconmonstr
   - Vecteezy
   - Font Squirrel

Chapter 9. Evaluation

This chapter is divided into two sections, the evaluation of the teacher and the evaluation of his/her students.

Teacher evaluation to obtain the Europass certificate

The Infographic course is available in open format in https://poliformat.upv.es/portal/site/OCW_CUR1157407_2020/tool/89b33ff0-a352-4379-abcb-6038cacb3e33, so teachers have all the resources to implement the project in their classroom.

If teachers are interested in obtaining a certificate, they need to register for one of the editions of the course offered by CFP UPV (Posgraduate Formation Center of Universitat Politècnica de València http://www.cfp.upv.es/), which will be announced here.

Teachers will be evaluated through tests, which ensure that the contents (T2L) have been assimilated correctly. In this way, teachers can demonstrate the correct understanding of the module materials and obtain the Europass certificate.

Evaluation proposal for students to be used by the teachers

Teachers can use rubrics in Tables 11-16 to evaluate the work of their students and give them feedback about it:

- Table 11: rubric to evaluate the gathering of information and data to use in the infographic
- Table 12: rubric to evaluate the definition of the user requirements for the infographic
- Table 13: rubric to evaluate the definition of the types of contents to use in the infographic
- Table 14: rubric to evaluate the infographic prototype
- Table 15: rubric to evaluate the review of the infographic prototype
- Table 16: rubric to evaluate the realization of the infographic

Once the infographic is finished, teachers should use rubrics in Table 17 to evaluate it and to guarantee that all the requirements to be uploaded to O-City World platform (Chapter 7) are met. Teachers must rate each specific criterion on a scale from 1 to 5, according to the degree of compliance in which 5 corresponds to full compliance and 1 indicates non-compliance. To get the final assessment, the rate of each criterion is converted to points and all points are added, getting a final number of points. The infographic must get more than 35 points to be uploaded to O-City World platform. Next chapter is dedicated to explain how teachers can upload the infographics developed in their classrooms.

TAG		SPECIFIC CRITERIA	1	2	3	4	5	Assessment	Comments
1	Heritage	The heritage reality is correctly presented and conveyed. The tone and style of the infographic is clearly identified and adequate to express the main traits of the heritage	X					1	
2	Topic and purpose	The type of infographic is suitable to the intended application. Topic and purpose of the infographic are clear and consistent		X				2	
3	User requirements	The infographic is adequate to users, context, and goals, according to the User Centered Design. User and business requirements have been properly taken into account in the design of the infographic	X					1	
4	Content	The infographic shows relevant and pertinent contents				X		4	
5	Reliability	The infographic is based on reliable and sufficient data and information	X					1	
6	Storytelling	The storytelling of the infographic is clear and effective. The information flow is not confusing or overwhelming	X					1	
7	Visualization	Information and data are correctly visualized and presented, with adequate visualization techniques that facilitate understanding and avoid misleading		X				2	
8	Perception (Gestalt laws)	The visual elements can be perceived clearly and correctly	X					1	
9	Layout, colour, and typography	Visual design elements (layout, colour palette, and typography, etc.) help in conveying meaning and, in any event, do not create dissatisfaction, confusion or difficulties in understanding	X					1	
10	Engagement	The textual content of the infographic is engaging, understandable and easy-to-read	X					1	
1	References	The references (credits) and	X					1	

1		sources of information and data are correctly and adequately cited in the infographic							
		Total: 15 ***(Accepted: 36-55 points; Rejected: 11-35 points)***						15	

Table 22. Rubrics to evaluate the final infographic

Chapter 10. Steps to upload the infographic implemented in the classroom

Different steps need to be followed depending on the existence or not in O-City World platform of the city where the natural or cultural heritage that the infographic promotes is set.

The city is in O-City World platform

After having decided which infographics are appropriate in terms of content and quality to be uploaded to O-City World platform, the teacher has to:

1. Check if the heritage that the infographic promotes is registered in O-City World platform (it should because there is a proposed activity for this). If not, propose the heritage.
2. Register as a creator user. This user will be able to upload multimedia items and evaluate the work of his own students.
3. Upload the item using the Content menu. The teacher has to specify the name of the authors of the item.
4. Once the item has been uploaded, a validator (from the municipality) will review it and publish in the platform if it is of adequate quality.

The city is not in O-City World platform

In this case, some steps need to be done before being able to upload the multimedia:

1. Search for a University or a cultural/educational organization at regional level and ask them to collaborate with O-City project. This organization will be able to create cities in the O-City World platform and to assign people responsible for the content of these cities in the platform (validators).
2. The University or regional organization has to send a letter of invitation to the mayor of the city to request his/her permission to incorporate the city to the platform. A template for the letter of invitation is included in Annex III. As this can be a long process, especially in big cities, you can continue with step 3.
3. Register as a creator user. This user will be able to upload multimedia items and evaluate the work of his own students.
4. Upload the item using the Content menu. The teacher has to specify the name of the authors of the item.
5. Once the item has been uploaded, a validator will review it and publish in the platform if it is of adequate quality.

Chapter 11. Pathway to acquire competences

In this chapter, the pathway in the Infographic course to acquire competences is defined. As concluded in WP5, we are working with DIGCOMP (Ferrari, 2013) and ENTRECOMP (Bacigalupo, Kampylis, Punie, & Van den Brande, 2016) competences.

DIGCOMP Competencies

In this section, we identify the DIGCOMP competencies that students will work with each one of the proposed activities of the Infographic course. The proposed activities will help students to develop these competences through 3 proficiency levels: A (foundation), B (intermediate) and C (advanced). The list of indicators for the development of digital competences are included in Tables A.I.1 and A.I.2, and the list of learning outcome descriptors for each competence and level of proficiency (Tables A.I.3-A.II.5). Using the learning output descriptors of the digital competences, the proficiency level that students can develop by doing the proposed activities has been identified. Tables 18 and 19 detail this information for topics 1 and 2 of this course, respectively. For each lesson, activities (T2T) are represented in blue colour and extra activities (S2P) are represented in salmon colour (see the description of the activities in Chapter 5).

ENTRECOMP Competencies

In this section, we identify the ENTRECOMP competencies that students will work with each one of the proposed activities of the Infographic course. The proposed activities will help students to develop these competences through 3 proficiency levels: A (foundation), B (intermediate) and C (advanced). These proficiency levels are summarized in Annex II (Table A.II.1). ENTRECOMP does not offer a list of indicators for the development of the entrepreneurial competences, but a detailed list of learning outcome descriptors for each competence and level of proficiency (Tables A.II.2-A.II.16). Using these lists of learning outcome descriptors, the proficiency level that students can develop by doing the proposed activities has been identified. Tables 20 and 21 details this information for topics 1 and 2 of this course, respectively. For each lesson, activities (T2T) are represented in blue colour and extra activities (S2P) are represented in salmon colour (see the description of the activities in Chapter 5).

		Lesson 1			Lesson 2			Lesson 3		
		T1.L1.1	T1.L1.2	T1.L1.1	T1.L2.1	T1.L2.2	T1.L2.1	T1.L3.1	T1.L3.2	T1.L3.1
INFORMATION AND DATA LITERACY	1.1 Browsing, searching and filtering data, information and digital content	B	B	B	B	B	B		B	B
	1.2 Evaluating data, information and digital content	B	B	B	B	B	B	B	B	B
	1.3 Managing data, information and digital content									
COMMUNICATION AND COLLABORATION	2.1 Interacting through digital technologies									
	2.2 Sharing through digital technologies									
	2.3 Engaging in citizenship through digital technologies									
	2.4 Collaborating through digital technologies									
	2.5 Netiquette									
	2.6 Managing digital identity									
DIGITAL CONTENT CREATION	3.1 Developing digital content					A				
	3.2 Integrating and re-elaborating digital content					B				
	3.3 Copyright and licences									
	3.4 Programming									
SAFETY	4.1 Protecting devices									
	4.2 Protecting personal data and privacy									
	4.3 Protecting health and well-being									
	4.4 Protecting the environment									
PROBLEM SOLVING	5.1 Solving technical problems									
	5.2 Identifying needs and technological responses	B	B	B	B	A	B	B	B	B
	5.3 Creatively using digital technologies	A	A	A	A	A	B	B		
	5.4 Identifying digital competence gaps									

Table 18. DIGICOMP competences developed with the activities proposed in Topic 1. Design process and visual design basics in UX

		Lesson 1			Lesson 2			Lesson 3		Lesson 4		
		T2.L1.1	T2.L1.2	T2.L1.1	T2.L2.1	T2.L2.2	T2.L2.1	T2.L3.1	T2.L3.1	T2.L4.1	T2.L4.2	T2.L4.1
INFORMATION AND DATA LITERACY	1.1 Browsing, searching and filtering data, information and digital content	B	B	B	B	B	B		B		B	B
	1.2 Evaluating data, information and digital content	B	B	B	B	B	B	B	B	B	B	B
	1.3 Managing data, information and digital content		A		B	B	A		B		B	
COMMUNICATION AND COLLABORATION	2.1 Interacting through digital technologies											
	2.2 Sharing through digital technologies											
	2.3 Engaging in citizenship through digital technologies											
	2.4 Collaborating through digital technologies											
	2.5 Netiquette											
	2.6 Managing digital identity											
DIGITAL CONTENT CREATION	3.1 Developing digital content							A	A	A	B	B
	3.2 Integrating and re-elaborating digital content										B	B
	3.3 Copyright and licences		A				A				B	
	3.4 Programming											
SAFETY	4.1 Protecting devices											
	4.2 Protecting personal data and privacy		A				A				A	
	4.3 Protecting health and well-being											
	4.4 Protecting the environment											
PROBLEM SOLVING	5.1 Solving technical problems											
	5.2 Identifying needs and technological responses	B	B	B	B	B	B	B	B	B	B	B
	5.3 Creatively using digital technologies					A		A	B	B	B	B
	5.4 Identifying digital competence gaps											

Table 19. DIGICOMP competences developed with the activities proposed in Topic 2. Realization of an infographic

		Lesson 1			Lesson 2			Lesson 3		
		T1.L1.1	T1.L1.2	T1.L1.1	T1.L2.1	T1.L2.2	T1.L2.1	T1.L3.1	T1.L3.2	T1.L3.1
IDEAS AND OPPORTUNITIES	1.1 Spotting opportunities	A	B	B	B	B	B	B	A	B
	1.2 Creativity	A	B	B	B	A	B	B	B	B
	1.3 Vision	A	B	A	A	B	A	A	A	B
	1.4 Valuing ideas	A	A	A	A	A	A	B	A	A
	1.5 Ethical and sustainable thinking	A	A	A	A	A	A	A	A	A
RESOURCES	2.1 Self- awareness and self-efficacy									
	2.2 Motivation and perseverance									
	2.3 Mobilizing resources									
	2.4 Financial and economic literacy									
	2.5. Mobilizing others									
INTO ACTION	3.1 Taking the initiative									
	3.2 Planning and management									
	3.3 Coping with uncertainty, ambiguity and risk									
	3.4 Working with others						A	A		A
	3.5. Learning through experience	A	B	A	A	B	B	B	A	B

Table 21. ENTRECOMP competences developed with the activities proposed in Topic 1. Design process and visual design basics in UX

		Lesson 1			Lesson 2			Lesson 3		Lesson 4		
		T2.L1.1	T2.L1.2	T2.L1.1	T2.L2.1	T2.L2.2	T2.L2.1	T2.L3.1	T2.L3.1	T2.L4.1	T2.L4.2	T2.L4.1
IDEAS AND OPPORTUNITIES	1.1 Spotting opportunities	B	A	B	B	B	B	B	B	B	B	B
	1.2 Creativity	B	A	B	A	A	B	B	B	B	B	B
	1.3 Vision	A	A	A	B	B	B	B	B	B	B	B
	1.4 Valuing ideas	A	A	A	B	B	B	B	B	B	B	B
	1.5 Ethical and sustainable thinking	A	A	A	A	A	A	A	A	A	A	A
RESOURCES	2.1 Self- awareness and self-efficacy											
	2.2 Motivation and perseverance											
	2.3 Mobilizing resources											
	2.4 Financial and economic literacy											
	2.5. Mobilizing others											
INTO ACTION	3.1 Taking the initiative											
	3.2 Planning and management											
	3.3 Coping with uncertainty, ambiguity and risk											
	3.4 Working with others								A			
	3.5. Learning through experience	A	A	B	A	A	B	B	B	B	B	B

Table 22. ENTRECOMP competences developed with the activities proposed in Topic 2. Realization of an infographic

E-SCRUM: extra DIGCOMP and ENTRECOMP Competencies

If the methodology E-Scrum is applied in the classroom, some competences will be developed at the highest level (B):

- **Working with others** (ENTRECOMP): the Sprint Retrospective is an opportunity for the Student Team to inspect themselves about how the team worked, how they used the collaborative tools, the relationship between the members of the team, … during the last sprint. The teacher can help them to learn how to manage any kind of problem.
- **Mobilizing others** (ENTRECOMP): mobilization of the team members is one of the main challenges that E-Scrum teams has to meet.
- **Taking the initiative** (ENTRECOMP): E-Scrum requires self-organized teams; it leads to develop the initiative of the team members up to a higher level than in traditional learning.
- **Planning and management** (ENTRECOMP): planning in E-Scrum is essential and teams have to define priorities and plans in order to fulfil the criteria established in each sprint.
- The use of collaborative tools to manage E-Scrum team leads to work further on some competences as **Interacting through digital technologies** (DIGCOMP), **Sharing through digital technologies** (DIGCOMP) and **Collaborating through digital technologies** (DIGCOMP).

Chapter 12. Other training related to infographic

In this chapter, teachers can find more learning materials from other O-City modules with activities related to infographic. Teachers will decide which resources to take to their classroom depending of their teaching reality. In this way, teachers will adapt the learning path of their students focusing in technical, culture, intellectual property, business and/or soft skills.

Module I. Heritage & Intellectual Property

In this section teachers will find learning and teaching resources about basic contents related to heritage and intellectual property. This module is divided into two courses, which can be opened using their link:

- I.1 Heritage
- I.2 Intellectual Property

Module III. Business

In this section teachers will find learning and teaching resources about basic contents related to business and entrepreneurship skills. The module is divided into 6 courses, which can be opened using their link:

- III.1 Business models
- III.2 Digital marketing
- III.3 Branding
- III.4 Entrepreneurial finances
- III.5 Testing business ideas
- III.6 Pitch.

Module IV. Soft Skills

In this section teachers will find learning and teaching resources to stimulate creativity, critical thinking and interpersonal skills as a tool to improve professional integration. These are the three courses of the module, which can be opened using their link:

- IV.1 Interpersonal Skills
- IV.2 Creativity
- IV.3 Critical Thinking

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Annex I. DIGCOMP: framework to develop and understand digital competences

DIGCOMP (Ferrari, 2013) defines a list of 5 competence areas (Dimension 1: Information, communication, content creation, safety and problem solving), each one with several competences as a framework for developing and understanding digital competences in Europe. DIGCOMP provide us with indicators for the development of digital competence , shown in Tables A.I.1 and A.I.2., with three proficiency levels: A (foundation level), B (intermediate level) and C (advanced level). Moreover, DIGCOMP also describes learning outcome descriptors for each competence, which are collected in Tables A.I.3, A.I.4 and A.I.5.

	Getting to A	Moving from A to B	Moving from B to C
Information	• Understanding what a search engine is • Finding out how to do searches with simple words • Understanding how to save content and information • Understanding which information is covered by Copyright • Understanding that how to trust online information	• Finding out about and using effective search methods. • Finding out how to judge information and using these strategies. • Finding out how to maintain files and content regularly and implementing practices. • Understanding terms as copyright, copy left and creative commons.	• Finding out about and trying a wider range of search techniques and strategies. • Finding out about how to cross-check and filter information and using these strategies. • Finding out about and trying a wider range of methods and tools to organise information. • Understanding about different types of licences and how to apply them.
Communication	• Finding out about different digital communication channels • Understanding how to use a few communication tools • Becoming aware of basic principles for communicating through digital means • Becoming aware of how to use technologies for cooperating with others	• Finding out about and trying more ways to communicate with others. • Finding out about and regularly using ways to shares files and content with others. • Ensuring that cooperative tools are used as regularly as possible and seeing opportunities when needs arise. • Finding out about online services • Finding out about netiquette	• Finding out and trying a wide range of communication tools and devices. • Finding out about and trying these in the context of their match to needs and purpose. • Finding out about a wide range of information sharing devices and tools, and identifying which of these tools and devices best matches different needs and purposes. • Becoming engaged in civic online participation • Understand cultural differences
Content-creation	• Finding out about different tools, software and packages to produce content • Understanding how to use some simple tools • Understanding how to modify content	• Finding out about and using different ways that ICT can produce content. • Become familiar with multimedia tools • Understanding how to apply licences to the content one has produced • Finding out about tools that support creating new programmes or applications	• Selecting ways to produce content that are not so familiar and using these in contexts appropriate to needs and purpose. • Finding out about and using ways to edit and refine content. • Finding out about and using expert ways of combining existing content such as mash-up. • Becoming familiar with different types of licences. • Learning how to code and programme.

Table A.I.1. Indicators for the development of digital competence: Information, Communication, Content Creation.

	Getting to A	Moving from A to B	Moving from B to C
Safety	• Finding out simple means of protections (passwords, anti-viruses, avoid sharing information) • Understanding how to protect self from addiction or cyber bullying	• Finding details of the information that should not be shared online, and having opportunities to put this into practice. • Finding out about and using a range of tools to protect digital devices. • Finding out about the impact of technologies on the environment	• Finding out about and using a wide range of protection strategies and how these apply to online identities. • Knowing how to change online security and privacy settings, and monitoring and adjusting these regularly as needed, checking them against expert practice. • Having access to expert sources that detail the different privacy issues, and how to address these in practice. • Finding out about the impact of technologies on society
Problem-solving	• Finding out simple means of protections (passwords, anti-viruses, avoid sharing information) • Understanding how to protect self from addiction or cyber bullying	• Having access to sources or centres that demonstrate digital technologies, and having chance to explore their use according to personal needs. • Having access to sources or centres that offer technical advice, and enable the individual to gain personal experience in solving technical problems. • Creating own network of experts to recur to for help	• Having access to a range of expert advice relating to new tools, devices, applications, software and services, to provide opportunities to review these in terms of current or future personal needs and purpose. • Having access to expert technical advice that demonstrates how to solve technical problems that arise, and being able to use this in practice. • Having access to a means to check personal competence, and being directed to sources to update competence areas that are identified as weak. • Finding out about the potential of technologies in the resolution of complex or cognitive problems

Table A.I.2. Indicators for the development of digital competence: Safety, Problem-solving

	Competence	A-Foundation	B-Intermediate	C-Advanced
Information	Browsing, searching and filtering information	I can do some online searches through search engines. I know that different search engines can provide different results.	I can browse the internet for information and I can search for information online. I can articulate my information needs and I can select the appropriate information I find.	I can use a wide range of search strategies when searching for information and browsing on the Internet. I can filter and monitor the information I receive. I know whom to follow in online information sharing places (e.g. micro-blogging).
	Evaluating information	I know that not all online information is reliable.	I can compare different information sources.	I am critical about the information I find and I can cross-check and assess its validity and credibility.
	Storing and retrieving information	I know how to save files and content (e.g. texts, pictures, music, videos, and web pages). I know how to go back to the content I have saved.	I can save, store or tag files, content and information and I have my own storing strategy. I can retrieve and manage the information and content I have saved or stored.	I can apply different methods and tools to organise files, content, and information. I can deploy a set of strategies for retrieving the content I or others have organised and stored.
Communication	Interacting through technologies	I can interact with others using basic features of communication tools, (e.g. mobile phone, VoIP, chat or email).	I can use several digital tools to interact with others using more advanced features of communication tools (e.g. mobile phone, VoIP, chat, email).	I am engaged in the use of a wide range of tools for online communication (emails, chats, SMS, instant messaging, blogs, micro-blogs, SNS). I can adopt digital modes and ways of communication that best fit the purpose. I can tailor the format and ways of communication to my audience. I can manage the different types of communication I receive.
	Sharing information and content	I can share files and content with others through simple technological means (e.g. sending attachments to emails, uploading pictures on the internet, etc.)	I can participate in social networking sites and online communities, where I pass on or share knowledge, content and information.	I can actively share information, content and resources with others through online communities, networks and collaboration platforms.
	Engaging in online citizenship	I know that technology can be used to interact with services and I passively use some (e.g.: online communities, government, hospital or medical centres, bank).	I can actively use some basic features of online services (e.g.: government, hospital or medical centres, bank, eGovernment services, etc).	I am actively participating in online spaces. I know how to get actively engaged in online participation and I can use several different online services.
	Collaborating through digital channels	I can collaborate with others using traditional technologies (e.g. email).	I can create and discuss outputs in collaboration with others using simple digital tools.	I frequently and confidently use several digital collaboration tools and means to collaborate with others in the production and sharing of resources, knowledge and content.
	Netiquette	I know basic behaviour norms that apply when communicating with others using digital tools	I know the principles of online etiquette and I am able to apply them in my own context.	I can apply the various aspects of online etiquette to different digital communication spaces and contexts. I have developed strategies to discover inappropriate behaviour.
	Managing digital identity	I am aware of the benefits and risks related to digital identity.	I can shape my online digital identity and keep track of my digital footprint.	I can manage several digital identities according to the context and purpose, I can monitor the information and data I produce through my online interaction, I know how to protect my digital reputation.

Table A.I.3. Learning outcome descriptors for competences in areas Information and Communication.

	Competence	A-Foundation	B-Intermediate	C-Advanced
Content creation	Developing content	I can create simple digital content (e.g. text, or tables, or images, or audio, etc.).	I can produce digital content in different formats, including multimedia (e.g. text, tables, images, audio, etc.).	I can produce digital content in different formats, platforms and environments. I can use a variety of digital tools for creating original multimedia outputs.
	Integrating and re-elaborating	I can make basic changes to the content that others have produced.	I can edit, refine and modify the content I or others have produced.	I can mash-up existing items of content to create new ones.
	Copyright and licences	I know that some of the content I use can be covered by copyright.	I have basic knowledge of the differences about copyright, copy left and creative commons and I can apply some licences to the content I create.	I know how different types of licences apply to the information and resources I use and create
	Programming	I can modify some simple function of software and applications (apply basic settings).	I can apply several modifications to software and applications (advanced settings, basic programme modifications).	I can interfere with (open) programmes, modify, change or write source code, I can code and programme in several languages, I understand the systems and functions that are behind programmes.
Safety	Protecting devices	I can use basic steps to protect my devices (for instance: using anti-viruses, passwords, etc.).	I know how to protect my digital devices, I update my security strategies.	I frequently update my security strategies. I can take action when the device is under threat.
	Protecting personal data	I know that I can only share certain types of information about myself or others in online environments.	I can protect my and others online privacy. I have a general understanding of privacy issues and I have basic knowledge of how my data is collected and used.	I often change the default privacy settings of online services to enhance my privacy protection. I have an informed and wide understanding of privacy issues and I know how my data is collected and used.
	Protecting health	I know how to avoid cyber bullying. I know that technology can affect my health, if misused.	I know how to protect myself and others from cyber bullying and I understand the health risks associated with the use of technologies (from ergonomics aspects to addiction to technologies).	I am aware of the correct use of technologies to avoid health problems. I know how to find a good balance between online and off-line worlds.
	Protecting the environment	I take basic measures to save energy.	I understand the positive and negative aspects of the use of technology on the environment.	I have an informed stance on the impact of technologies on everyday life, online consumption, and the environment.

Table A.I.4. Learning outcome descriptors for competences in areas Content Creation and Safety.

	Competence	A-Foundation	B-Intermediate	C-Advanced
Problem solving	Solving technical problems	I can ask for targeted support and assistance when technologies do not work or when using a new device, programme or application.	I can solve easy problems that arise when technologies do not work.	I can solve a wide-range of problems that arise from the use of technology
	Identifying needs and technological responses	I can use some technologies to solve problems, but for limited tasks. I can make decisions when choosing a digital tool for a routine practice.	I understand what technology can do for me and what it cannot. I can solve a non routine tasks by exploring technological possibilities. I can select appropriate tool according to the purpose and I can evaluate the effectiveness of the tool	I can make informed decisions when choosing a tool, device, application, software or service for the task I am not familiar with. . I am aware of new technological developments. I understand how new tools work and operate. I can critically evaluate which tool serves my purposes the best.
	Innovating and creatively using technology	I know that technologies and digital tools can be used for creative purposes and I can make some creative use of technologies.	I can use technologies for creative outputs and I can use technologies to solve problems (i.e. visualizing a problem). I collaborate with others in the creation of innovative and creative outputs, but I don't take the initiative.	I can solve conceptual problems taking advantage of technologies and digital tools, I can contribute to the knowledge creation through technological means, I can take part in innovative actions through the use of technologies. I proactively collaborate with others to produce creative and innovative outputs.
	Identifying digital competence gaps	I have some basic knowledge, but I am aware of my limits when using technologies.	I know how to learn to do something new with technologies.	I frequently update my digital competence needs.

Table A.I.5. Learning outcome descriptors for competences in area Problem Solving.

Annex II. EntreComp: the entrepreneurship competence framework

EntreComp (Bacigalupo, Kampylis, Punie, & Van den Brande, 2016) defines a list of 3 competence areas (Ideas and opportunities, Resources, Into action), each one with several competence as a framework with learning outcome descriptors to promote the entrepreneurship competence in education and work.

The EntreComp progression model consist of four main levels, Foundation, Intermediate, Advanced and Expert, each one divided into two sub-levels. However, O-City courses will develop only the three first levels, as in DIGCOMP: : A (foundation level), B (intermediate level) and C (advanced level). Table A.II.I shows an overview of the learning outcome descriptors provided by EntreComp, which are detailed in Tables A.II.2 – A.II.16.

	Competence	A-Foundation	B-Intermediate	C-Advanced
Ideas and opportunities	Spotting opportunities	Learners can find opportunities to generate value for others.	Learners can recognise opportunities to address needs that have not been met.	Learners can seize and shape opportunities to respond to challenges and create value for others.
	Creativity	Learners can develop multiple ideas that create value for others.	Learners can test and refine ideas that create value for others.	Learners can transform ideas into solutions that create value for others.
	Vision	Learners can imagine a desirable future.	Learners can build an inspiring vision that engages others.	Learners can use their vision to guide strategic decision-making.
	Valuing ideas	Learners can understand and appreciate the value of ideas.	Learners understand that ideas can have different types of value, which can be used in different ways.	Learners can develop strategies to make the most of the value generated by ideas.
	Ethical and sustainable thinking	Learners can recognise the impact of their choices and behaviours, both within the community and the environment.	Learners are driven by ethics and sustainability when making decisions.	Learners act to make sure that their ethical and sustainability goals are met.
Resources	Self-awareness and self-efficacy	Learners trust their own ability to generate value for others.	Learners can make the most of their strengths and weaknesses.	Learners can compensate for their weaknesses by teaming up with others and by further developing their strengths.
	Motivation and perseverance	Learners want to follow their passion and create value for others.	Learners are willing to put effort and resources into following their passion and create value for others.	Learners can stay focused on their passion and keep creating value de-spite setbacks.
	Mobilising re-sources	Learners can find and use resources responsibly.	Learners can gather and manage different types of resources to create value for others.	Learners can define strategies to mobilise the resources they need to generate value for others.
	Financial and economic literacy	Learners can draw up the budget for a simple activity.	Learners can find funding options and manage a budget for their value-creating activity.	Learners can make a plan for the financial sustainability of a value-creating activity.
	Mobilising others	Learners can communicate their ideas clearly and with enthusiasm.	Learners can persuade, involve and inspire others in value-creating activities.	Learners can inspire others and get them on board for value-creating activities.
Into action	Taking the initiative	Learners are willing to have a go at solving problems that affect their communities.	Learners can initiate value-creating activities.	Learners can look for opportunities to take the initiative to add or create value.
	Planning and management	Learners can define the goals for a simple value-creating activity.	Learners can create an action plan, which identifies the priorities and milestones to achieve their goals.	Learners can refine priorities and plans to adjust to changing circumstances.
	Coping with uncertainty, ambiguity and risk	Learners are not afraid of making mistakes while trying new things.	Learners can evaluate the benefits and risks of alternative options and make choices that reflect their preferences.	Learners can weigh up risks and make decisions despite uncertainty and ambiguity.
	Working with others	Learners can work in a team to create value.	Learners can work together with a wide range of individuals and groups to create value.	Learners can build a team and networks based on the needs of their value-creating activity.
	Learning through experience	Learners can recognise what they have learnt through taking part in value-creating activities.	Learners can reflect and judge their achievements and failures and learn from these.	Learners can improve their abilities to create value by building on their previous experiences and interactions with others.

Table A.II.1. EntreComp overview

Area	Ideas and opportunities	Competence	Spotting opportunities
Hint	Use your imagination and abilities to identify opportunities for creating value.		
Descriptor	Identify and seize opportunities to create value by exploring the social, cultural and economic landscape. Identify needs and challenges that need to be met. Establish new connections and bring together scattered elements of the landscape to create opportunities to create value.		

Levels of proficiency		
A - Foundation	B - Intermediate	C - Advanced
I can find opportunities to help others/ I can recognise opportunities to create value in my community and surroundings. I can find different examples of challenges that need solutions/ I can recognise challenges in my community and surroundings that I can contribute to solve. I can find examples of groups who have benefited from a solution to a given problem/ I can identify needs in my community and surroundings that have not been met. I can tell the difference between different areas where value can be created (for example, at home, in the community, in the environment, or in the economy or society)/ I can recognise the different roles the public, private and third sectors play in my region or country.	I can explain what makes an opportunity to create value/I can proactively look for opportunities to create value, including out of necessity. I can identify opportunities to solve problems in alternative ways/ I can redefine the description of a challenge, so that alternative opportunities address it may become apparent. I can recognise the different roles the public, private and third sectors play in my region or country/ I can establish which user group, and which needs, I want to tackle through creating value. I can tell the difference between contexts for creating value (for example, communities and informal networks, existing organisations, the market)/ I can identify my personal, social and professional opportunities for creating value, both in existing organisations or by setting up new ventures.	I can describe different analytical approaches to identify entrepreneurial opportunities/I can use my knowledge and understanding of the context to make opportunities to create value. I can take apart established practices and challenge mainstream thought to create opportunities and look at challenges in different ways/ I can judge the right time to take an opportunity to create value. I can carry out a needs analysis involving relevant stake-holders/ I can identify challenges related to the contrasting needs and interests of different stakeholders. I can identify the boundaries of the system that are relevant to my (or my team's) value-creating activity/ I can analyse an existing value- creation activity by looking at it as a whole and identifying opportunities to develop it further.

Table A.II.2 Learning outcome descriptors for competence Spotting Opportunities (Area Ideas and Opportunities)

Area	Ideas and opportunities	Competence	Creativity
Hint	Develop creative and purposeful ideas		
Descriptor	Develop several ideas and opportunities to create value, including better solutions to existing and new challenges. Explore and experiment with innovative approaches. Combine knowledge and resources to achieve valuable effects.		

Levels of proficiency		
A - Foundation	B - Intermediate	C - Advanced
I can show that I am curious about new things/ I can explore new ways to make use of existing resources. I can develop ideas that solve problems that are relevant to me and my surroundings/ Alone and as part of a team, I can develop ideas that create value for others. I can approach open-ended problems (problems that can have many solutions) with curiosity/ I can explore open-ended problems in many ways so as to generate multiple solutions. I can assemble objects that create value for me and others/I can improve existing products, services and processes so that they better meet my needs or those of my peers and the community. I can find examples of innovative products, services and solutions/I can describe how some innovations have transformed society.	I can experiment with my skills and competences in situations that are new to me/ I can actively search for new solutions that meet my needs. I can experiment with different techniques to generate alternative solutions to problems, using available resources in an effective way/ I can test the value of my solutions with end users. I can take part in group dynamics aimed at defining open-ended problems/ I can reshape open-ended problems to fit my skills. I can identify the basic functions that a prototype should have to illustrate the value of my idea/I can assemble, test and progressively refine proto-types that simulate the value I want to create. I can tell the difference between types of innovations (for example, process versus product innovation and social innovation, incremental versus disruptive innovation)/ I can judge if an idea, product or process is innovative or just new to me.	I can actively search for new solutions that improve the value-creating process/ I can combine my understanding of different contexts to transfer knowledge, ideas and solutions across different areas. I can describe different techniques to test innovative ideas with end users/ I can set up processes to involve stake-holders in finding, developing and testing ideas. I can describe and explain different approaches to shaping open-ended problems and different problem-solving strategies/ I can help others create value by encouraging experimentation and using creative techniques to approach problems and generate solutions. I can create (alone or with others) products or services that solve my problems and my needs/I can develop and deliver value in stages, launching with the core features of my (or my team's) idea and progressively adding more. I can describe how innovations diffuse in society, culture and the market/I can describe different levels of innovation (for example, incremental, breakthrough or transformation-al) and their role in value-creating activities.

Table A.II.3 Learning outcome descriptors for competence Creativity (Area Ideas and Opportunities)

Area	Ideas and opportunities	Competence	Vision
Hint	Work towards your vision of the future		
Descriptor	Imagine the future. Develop a vision to turn ideas into action. Visualise future scenarios to help guide effort and action		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I can imagine a desirable future/ I can develop simple future scenarios where value is created for my community and surroundings	I can develop (alone or with others) an inspiring vision for the future that involves others/ I can build future scenarios around my value-creating activity. I can explain what a vision is and what purpose it serves/ I am aware of what is needed to build a vision. My vision for creating value drives me to make the effort to turn ideas into action/ I can decide what type of vision for creating value I would like to contribute to.	I can use my understanding of the context to identify different strategic visions for creating value/ I can discuss my (or my team's) strategic vision for creating value. I can explain the role of a vision statement for strategic planning/ I can prepare a vision statement for my (or my team's) value-creating activity that guides internal decision-making throughout the whole process of creating value. I can identify the changes needed to achieve my vision/ I can promote initiatives for change and transformation that contribute to my vision.	

Table A.II.4 Learning outcome descriptors for competence Vision (Area Ideas and Opportunities)

Area	Ideas and opportunities	Competence	Valuing ideas
Hint	Make the most of ideas and opportunities		
Descriptor	Judge what value is in social, cultural and economic terms. Recognise the potential an idea has for creating value and identify		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I can find examples of ideas that have value for myself and others/ I can show how different groups, such as firms and institutions, create value in my community and surroundings. I can clarify that other people's ideas can be used and acted on, while respecting their rights/ I can explain that ideas can be shared and circulated for the benefit of every-one or can be protected by certain rights, for example, copy-rights or patents.	I can tell the difference between social, cultural and economic value/ I can decide which type of value I want to act on and then choose the most appropriate pathway to do so. I can tell the difference between types of licences that can be used to share ideas and protect rights/ can choose the most appropriate licence for the purpose of sharing and protecting the value created by my ideas.	I recognise the many forms of value that could be created through entrepreneurship, such as social, cultural or economic value/ I can break down a value chain into its different parts and identify how value is added in each part. I can tell the difference between trademarks, registered design rights, patents, geographical indications, trade secrets, confidentiality agreements and copyright licences, including open, public-domain licences such as creative com-mons/ When creating ideas with others, I can outline a dissemination and exploitation agreement that benefits all partners involved.	

Table A.II.5 Learning outcome descriptors for competence Valuing ideas (Area Ideas and Opportunities)

Area	Ideas and opportunities	Competence	Ethical and sustainable thinking
Hint	Assess the consequences and impact of ideas, opportunities and actions		
Descriptor	Assess the consequences of ideas that bring value and the effect of entrepreneurial action on the target community, the market, society and the environment. Reflect on how sustainable long-term social, cultural and economic goals are, and the course of action chosen. Act responsibly.		

Levels of proficiency		
A - Foundation	B - Intermediate	C - Advanced
I can recognise behaviours that show integrity, honesty, responsibility, courage and commitment/ I can describe in my own words the importance of integrity and ethical values. I can list examples of environmentally friendly behaviour that benefits a community/ I can recognise examples of environmentally friendly behaviour by companies that creates value for society as a whole. I can find and list examples of changes caused by human action in social, cultural, environmental or economic contexts/ I can tell the difference between the impact of a value-creating activity on the target community and the broader impact on society.	I can apply ethical thinking to consumption and production processes/ I am driven by honesty and integrity when taking decisions. I can identify practices that are not sustainable and their implications for the environment/ I can produce a clear problem statement when faced with practices that are not sustainable. I can identify the impact that taking up opportunities will have on me and my team, on the target group and on the surrounding community/ I can identify stakeholders who are affected by the change brought about by my (or my team's) value-creating activity, including stakeholders who cannot speak up (for example, future generations, climate or nature). I can tell the difference between accounting for use of re-sources and accounting for the impact of my value-creating activity on stakeholders and the environment.	I can argue that ideas for creating value should be supported by ethics and values relating to gender, equality, fairness, social justice and environmental sustainability/ I can take responsibility for promoting ethical behaviour in my area of influence, (for example, by promoting gender balance highlighting inequalities and any lack of integrity). I can discuss the impact an organisation has on the environment (and vice versa)/ I can discuss the relationship between society and technical developments, relating to their implications for the environment. I can analyse the implications of my value-creating activity within the boundaries of the system I am working in/ I can define the purpose of the impact assessment, impact monitoring, and evaluation of impact. I can tell the difference between input, output, out-comes and impact/ I can discuss a range of accountability methods for both functional and strategic accountability.

Table A.II.6 Learning outcome descriptors for competence Ethical and sustainable thinking (Area Ideas and Opportunities)

Area	Resources	Competence	Self-awareness and self-efficacy
Hint	Believe in yourself and keep developing		
Descriptor	Reflect on your needs, aspirations and wants in the short, medium and long term Identify and assess your individual and group strengths and weaknesses. Believe in your ability to influence the course of events, despite uncertainty, setbacks and temporary failures		

Levels of proficiency		
A - Foundation	B - Intermediate	C - Advanced
I can identify my needs, wants, interests and goals/ I can describe my needs, wants, interests and goals. I can identify things I am good at and things I am not good at. I believe in my ability to do what I am asked successfully/ I believe in my ability to achieve what I intend to. I can list different types of jobs and their key functions/ I can describe which qualities and abilities are needed for different jobs, and which of these qualities and abilities I have.	I can commit to fulfilling my needs, wants, interests and goals/ I can reflect on my individual and group needs, wants, interests and aspirations in relation to opportunities and future prospects. I can judge my strengths and weaknesses and those of others in relation to opportunities for creating value/ I am driven by the desire to use my strengths and abilities to make the most of opportunities to create value. I can judge the control I have over my achievements (compared with any control from outside influences)/ I believe I can influence people and situations for the better. I can describe my skills and competences relating to career options, including self- employment/ I can use my skills and competences to change my career path, as a result of new opportunities or from necessity.	I can translate my needs, wants, interests and aspirations into goals that help me reach them/ I can help others to reflect on their needs, wants, interests and aspirations and how they can turn these into goals. I can team up with others to compensate for our weaknesses and add to our strengths/ I can help others identify their strengths and weaknesses. I believe in my ability to carry out what I have imagined and planned, despite obstacles, limited re-sources and resistance from others/ I believe in my ability to understand and take the good out of experiences that others may label as failures. I can discuss how a realistic understanding and evaluation of my personal attitudes, skills and knowledge can influence my decision-making, relationships with other people and quality of life/ I can choose professional development opportunities with my team and organisation based on a clear understanding our strengths and weaknesses.

Table A.II.7 Learning outcome descriptors for competence Self-awareness and self-efficacy (Resources)

Area	Resources	Competence	Motivation and perseverance
Hint	Stay focused and don't give up		
Descriptor	Be determined to turn ideas into action and satisfy your need to achieve. Be prepared to be patient and keep trying to achieve your long-term individual or group aims. Be resilient under pressure, adversity, and temporary failure.		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I am driven by the possibility to do or contribute to something that is good for me or for others/ I am motivated by the idea of creating value for myself and others. I see tasks as challenges to do my best/ I am motivated by challenges. I can recognise different ways of motivating myself and others to create value. I show passion and willingness to achieve my goals/ I am determined and persevere when trying to achieve my (or my team's) goals. I do not give up and I can keep going even when facing difficulties/ I am not afraid of working hard to achieve my goals.	I can anticipate the feeling of achieving my goals and this motivates me/ I can regulate my own behaviour to stay driven and achieve the benefits of turning ideas into action. I can set challenges to motivate myself/ I am willing to put effort in and use resources to overcome challenges and achieve my (or my team's) goals. I can reflect on the social incentives associated with having a sense of initiative and creating value for myself and others/ I can tell the difference between personal and external factors that motivate me or others when creating value. I can overcome simple adverse circumstances/ I can judge when it is not worth continuing with an idea. I can delay achieving my goals in order to gain greater value, thanks to prolonged effort/ I can maintain effort and interest, despite setbacks.	I drive my effort by using my desire for achievement and belief in my ability to achieve/ I can coach others to stay motivated, encouraging them to commit to what they want to achieve. I can use strategies to stay motivated (for example, set goals, monitor performance and evaluate my progress)/ I can use strategies to keep my team motivated and focused on creating value. I can persevere in the face of adversities when trying to achieve my goals/ I can devise strategies to overcome standard adverse circumstances. I can celebrate short-term achievements, in order to stay motivated/ I can inspire others to work hard on their goals by showing passion and a strong sense of owner-ship.	

Table A.II.8 Learning outcome descriptors for competence Motivation and perseverance (Resources)

Area	Resources	Competence	Mobilizing resources
Hint	Get and manage the re-sources you need.		
Descriptor	Get and manage the material, non-material and digital resources needed to turn ideas into action. Make the most of limited resources. Get and manage the competences needed at any stage, including technical, legal, tax and digital competences (for example through suitable partnerships, networking, outsourcing and crowd-sourcing).		

Levels of proficiency		
A - Foundation	B - Intermediate	C - Advanced
I recognise that resources are not unlimited/ I can appreciate the importance of sharing resources with others. I value my possessions and use them responsibly/ I can describe how resources last longer through reuse, repair and recycling. I can recognise different uses for my time (for example, studying, playing, resting)/ I value my time as a scarce resource. I can look for help when I am having difficulty achieving what I have decided to do/ I can identify sources of help for my value-creating activity (for example, teachers, peers, mentors).	I can experiment with different combinations of resources to turn my ideas into action/ I can get and manage the necessary resources to turn my idea into action. I can discuss the principles of circular economy and resource efficiency/ I use resources responsibly and efficiently (for example, energy, materials in the supply chain or manufacturing process, public spaces). I can discuss the need for investing time in different value-creating activities/ I can use my time effectively to achieve my goals. I can describe the concepts of division of labour and job specialisation/ I can find and list public and private services to support my value-creating activity (for example, incubator, social enter-prise advisors, start-up angels, chamber of commerce).	I can develop a plan for dealing with limited resources when setting up my value-creating activity/ I can get together the necessary resources to develop my value-creating activity. I take into account the non-material cost of using resources when taking decisions about my value-creating activities/ I can choose and put in place effective resource- management procedures (for example, life-cycle analysis, solid waste). I can manage my time effectively, using techniques and tools that help make me (or my team) productive/ I can help others manage their time effectively. I can find digital solutions (for example, free, paid for, or open-source) that can help me manage my value- creating activities efficiently/ I can find support to help me take advantage of an opportunity to create value (for example, advisor or consultancy services, peer or mentor sup-port).

Table A.II.9 Learning outcome descriptors for competence Mobilizing resources (Resources)

Area	Resources	Competence	Financial and economic literary
Hint	Develop financial and economic know-how		
Descriptor	Estimate the cost of turning an idea into a value-creating activity. Plan, put in place and evaluate financial decisions over time. Manage financing to make sure my value-creating activity can last over the long term		

Levels of proficiency		
A - Foundation	B - Intermediate	C - Advanced
I can recall basic terminology and symbols related to money/ I can explain simple economic concepts (for example, supply and demand, market price, trade). I can judge what to use my money for/ I can draw up a simple household budget in a responsible manner. I can identify the main types of income for families, businesses, non-profit organisations and the state/ I can describe the main role of banks in the economy and society. I can outline the purpose of taxation/ I can explain how taxation finances the activities of a country and its part in providing public goods and services.	I can use the concept of opportunity costs and comparative advantage to explain why exchanges happen between individuals, regions and nations/ I can read income statements and balance sheets. I can draw up a budget for a value- creating activity/ I can judge the cash-flow needs of a value-creating activity. I can explain that value-creating activities can take different forms (a business, a social enter-prise, a non-profit organisation and so on) and can have different structures of ownership (individual company, limited company, co-operative and so on)/ I can identify public and private sources of funding for my value-creating activity (for example, prizes, crowd-funding, and shares). I can estimate the main accountancy and tax obligations I need to fulfil to meet the tax requirements for my activities.	I can explain the difference between a balance sheet and a profit-and-loss account/ I can build financial indicators (for example, return on investment). I can apply the financial planning and forecasting concepts that I need to turn ideas into action (for example, profit or not for profit)/ I can judge the cash-flow needs of a complex project. I can choose the most appropriate sources of funding to start up or expand a value- creating activity/ I can apply for public or private business support programmes, financing schemes, public subsidies or calls for tender. I can estimate how my financial decisions (investments, buying assets, goods and so on) affect my tax/ I can make financial decisions based on current taxation schemes.

Table A.II.10 Learning outcome descriptors for competence Financial and economic literary (Resources)

Area	Resources	Competence	Mobilizing others
Hint	Inspire, engage and get others on board		
Descriptor	Inspire and enthuse relevant stakeholders. Get the support needed to achieve valuable outcomes. Demonstrate effective communication, persuasion, negotiation and leadership.		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I show enthusiasm for challenges/ I am actively involved in creating value for others. I can persuade others by providing a number of arguments. I can communicate my ideas clearly to others/ I can communicate my team's ideas to others persuasively by using different methods (for example posters, videos, role-play). I can provide examples of inspiring communication campaigns/ I can discuss how different media can be used to reach audiences in different ways.	I do not get discouraged by difficulties/ I can lead by example. I can persuade others by providing evidence for my arguments/I can persuade others by appealing to their emotions. I can communicate imaginative design solutions/ I can communicate the value of my (or my team's) idea to stakeholders from different backgrounds effectively. I can use various methods, including social media, to communicate value-creating ideas effectively/ I can use media appropriately, showing that I am aware of my audience and purpose.	I can get endorsement from others to support my value-creating activity/ I can inspire others, despite challenging circumstances. I can pitch effectively in front of potential investors or donors/ I can overcome resistance from those who will be affected by my or my (team's) vision, innovative approach, and value-creating activity. I can communicate the vision for my (or my team's) venture in a way that inspires and persuades external groups, such as funders, partner organisations, volunteers, new members and affiliate supporters/ I can produce narratives and scenarios that motivate, inspire and direct people. I can influence opinions in relation to my value-creating activity, through a planned approach to social media/ I can design effective social- media campaigns to mobilize people in relation to my (or my team's) value-creating activity.	

Table A.II.11 Learning outcome descriptors for competence Mobilizing others (Resources)

Area	Into action	Competence	Taking the initiative
Hint	Go for it		
Descriptor	Initiate processes that create value. Take up challenges. Act and work independently to achieve goals, stick to intentions and carry out planned tasks.		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I can carry out the tasks I am given responsibly/ I am comfortable in taking responsibility in shared activities. I show some independence in carrying out tasks I am given/ I can work independently in simple value-creating activities. I can have a go at solving problems that affect my surroundings/ I show initiative in dealing with problems that affect my community.	I can take individual and group responsibility to carry out simple tasks in value-creating activities/ I can take individual and group responsibility in value-creating activities. I can initiate simple value-creating activities/ I am driven by the possibility of being able to initiate value-creating activities independently. I actively face challenges, solve problems and seize opportunities to create value. I can describe my goals for the future in line with my strengths, ambitions, interests and achievements/ I can set short-term goals that I can act on.	I can delegate responsibility appropriately/ I can encourage others to take responsibility in value-creating activities. I can initiate value-creating activities alone and with others/ I can help others work independently. I take action on new ideas and opportunities, which will add value to a new or existing value-creating venture/ I value others taking the initiative in solving problems and creating value.	

Table A.II.12 Learning outcome descriptors for competence Taking the initiative (Into action)

Area	Into action	Competence	Planning and management
Hint	Prioritise, organise and follow up.		
Descriptor	Set long-, medium- and short-term goals. Define priorities and action plans. Adapt to unforeseen changes		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I can clarify what my goals are in a simple value-creating activity/ I can identify alternative goals to create value in a simple context. I can carry out a simple plan for value-creating activities/ I can deal with a range of simple tasks at the same time without feeling uncomfortable. I can recall the order of steps that was needed in a simple value-creating activity I took part in/ I can identify the basic steps that are needed in a value-creating activity. I can recognise how much progress I have made on a task/ I can monitor whether a task is going to plan. I am open to changes/ I can confront and deal with changes in a constructive way.	I can describe my goals for the future in line with my strengths, ambitions, interests and achievements/ I can set short-term goals that I can act on. I can create an action plan which identifies the necessary steps to achieve my goals/ I can allow for the possibility of changes to my plans. I can develop a business model for my idea/ I can define the key elements that make up the business model necessary to deliver the value I have identified. I can prioritise the basic steps in a value-creating activity/ I can set my own priorities and act on them. I can identify different types of data that are necessary for monitoring the progress of a simple value-creating activity/ I can describe different methods for performance and impact monitoring. I can adapt my plans to achieve my goals in light of changes that are outside my control/ I can adapt my plans to achieve my goals in light of changes that are outside my control.	I can define long-term goals arising from the vision for my (or my team's) value-creating activity/I can match short-term, mid-term and long-term goals to the vision for my (or my team's) value-creating activity. I can summarise the basics of project management/ I can apply the basics of project management in managing a value- creating activity. I can develop a business plan based on the model, describing how to achieve the value identified/ I can organise my value-creating activities using planning methods such as business and marketing plans. I can define the priorities to meet my (or my team's) vision/ I can stay focused on the priorities set, despite changing circumstances. I can describe different methods for performance and impact monitoring/ I can define what data is needed to monitor how effective my value-creating activities are and an appropriate way to collect them. I can embrace change that brings new opportunities for value creation/ I can anticipate and include change along the value-creating process.	

Table A.II.13 Learning outcome descriptors for competence Planning and management (Into action)

Area	Into action	Competence	Coping with uncertainty, ambiguity and risk
Hint	Make decisions dealing with uncertainty, ambiguity and risk.		
Descriptor	Make decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes. Within the value-creating process, include structured ways of testing ideas and prototypes from the early stages, to reduce risks of failing. Handle fast-moving situations promptly and flexibly.		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I am not afraid of making mistakes while trying new things/ I explore my own ways to achieve things. I can identify examples of risks in my surroundings/ I can describe risks related to a simple value-creating activity in which I take part.	I can discuss the role that information plays in reducing uncertainty, ambiguity and risk/ I can actively look for, compare and contrast different sources of information that help me reduce ambiguity, uncertainty, and risks in making decisions. I can tell the difference between acceptable and unacceptable risks/ I can weigh up the risks and benefits of self-employment with alternative career options, and make choices that reflect my preferences. I can critically evaluate the risks associated with an idea that creates value, taking into account a variety of factors/ I can critically evaluate the risks related to the formal set-up of a value-creating venture in the area in which I work.	I can find ways of making decisions when the information is incomplete/ I can pull together different viewpoints to take informed decisions when the degree of uncertainty is high. I can apply the concept of affordable losses to make decisions when creating value/ I can compare value-creating activities based on a risk assessment. I can demonstrate that I can make decisions by weighing up both the risks and the expected benefits of a value-creating activity/ I can outline a risk management plan for guiding my (or my team's) choices while developing my value-creating activity.	

Table A.II.14 Learning outcome descriptors for competence Coping with uncertainty, ambiguity and risk (Into action)

Area	Into action	Competence	Working with others
Hint	Team up, work together, and network.		
Descriptor	Work together and cooperate with others to develop ideas and turn them into action. Network. Solve conflicts and face up to competition positively when necessary.		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I can show respect for others, their background and situations/ I am open to the worth that others can bring to value- creating activities. I can show empathy towards others/ I can recognise the role of my emotions, attitudes and behaviours in shaping others people's attitudes and behaviours and vice versa. I can show empathy towards others/ I can discuss the benefits of listening to other people's ideas for achieving my (or my team's) goals. I am open to working alone as well as with others, playing different roles and taking some responsibility/ I am willing to change my way of working in a group. I am open to involving others in my value- creating activities/ I can contribute to simple value-creating activities. I can explain the meaning and forms of association, cooperation and peer-to-peer support (for example, family and other communities)/ I am open to establishing new contacts and cooperation with others (individuals and groups).	I can combine different contributions to create value/ I can value diversity as a possible source of ideas and opportunities. I can express my (or my team's) value-creating ideas assertively/ I can face and solve conflicts. I can listen to other people's ideas for creating value without showing prejudice/ I can listen to my end users. I can work with a range of individuals and teams/ I share the ownership of value-creating activities with the members of my team. I can contribute to group decision- making constructively/ I can create a team of people who can work together in a value-creating activity. I can use the relationships I have to get the support I need to turn ideas into action, including emotional support/ I can establish new relation-ships to get the support I need to turn ideas into action, including emotional support (for example, joining a mentor network).	I can support diversity within my team or organisation. I can compromise where necessary/ I can deal with non-assertive behaviour that hinders my (or my team's) value -creating activities (for example, destructive attitudes, aggressive behaviour and so on)/ I can manage conflicts effectively. I can describe different techniques for managing relationships with end users/I can put in place strategies to actively listen to my end users and act on their needs- I can build a team based on the individual knowledge, skills and attitudes of each member/ I can contribute to creating value by teaming up with distributed communities through digital technologies. I can use techniques and tools that help people to work together/I can give people the help and support they need to perform at their best within a team. I can use my network to find the right people to work on my (or my team's) value-creating activity/I proactively make contact with the right people inside and outside my organisation to support my (or my team's) value-creating activity (for example, at conferences or on social media).	

Table A.II.15 Learning outcome descriptors for competence Working with others (Into action)

Area	Into action	Competence	Learning through experience
Hint	Learn by doing		
Descriptor	Use any initiative for value creation as a learning opportunity. Learn with others, including peers and mentors. Reflect and learn from both success and failure (your own and other people's).		
Levels of proficiency			
A - Foundation	B - Intermediate	C - Advanced	
I can find examples of great failures that have created value/ I can provide examples of temporary failures that have led to valuable achievements. I can provide examples that show that my abilities and competence have increased with experience/ I can anticipate that my abilities and competence will grow with experience, through both successes and failures. I can recognise what I have learnt from taking part in value- creating activities/ I can reflect on my experience in taking part in value-creating activities and learn from it.	I can reflect on failures (mine and other people's), identify their causes and learn from them/ I can judge if and how I have achieved my goals, so that I can evaluate my performance and learn from it. I can reflect on the relevance of my learning pathways for my future opportunities and choices/ I am always looking for opportunities to improve my strengths and reduce or compensate for my weaknesses. I can reflect on my interaction with others (including peers and mentors) and learn from it/ I can filter the feedback provided by others and keep the good from it.	I can reflect on my (or my team's) achievements and temporary failures as things develop so as to learn and improve my ability to create value/ I can help others reflect on their achievements and temporary failures by providing honest and constructive feedback. I can find and choose opportunities to over-come my (or my team's) weaknesses and to develop my (or my team's) strengths/ I can help others develop their strengths and reduce or compensate for their weaknesses. I can integrate lifelong learning into my personal development strategy and career progress/ I can help others reflect on their interaction with other people and help them learn from this interaction.	

Table A.II.16 Learning outcome descriptors for competence Learning through experience (Into action)

Annex III. Letter of invitation template to include a city in O-City

Request for permission to incorporate the city of _____
to the digital world O-City.org

Exmo. Mr. Mayor:

D. Jose Marin-Roig Ramon,
Project Manager
O-CITY (Orange: Creativity, Innovation & TechnologY)
Erasmus + (600963-EPP-1-2018-1-ES-EPPKA2-KA)
http://o-city.webs.upv.es

EXPOSES:
That the O-CITY project, funded by the European Commission, within the Erasmus Plus (Knowledge Alliances) program, develops an online application to visualize the natural and cultural heritage of the world's towns and cities. On this platform, cities can represent not only their monuments and natural spaces, but also their culture and traditions through videos, photographs, animations and other multimedia elements produced as educational projects in the classrooms of training centers and institutions.

REQUEST:
That the Polytechnic University of Valencia be authorized to incorporate _____ into the O-City.org application, to enhance the city's heritage in the online world, and stimulate digital skills in local training centers.

In the city of_____, on _____202_,

O-CITY	AUTHORISATION
José Marín-Roig Ramón Professor Universitat Politècnica de València Campus de Gandia o-city@epsg.upv.es	