T4.3.2 Technical Skills Library – Comic course

**ORANGE: CREATIVITY, INNOVATION &
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WP n° and title	WP4. Innovative toolkit
Task n° and title	T4.3. Compilation of good practices and creation of new training modules until a total amount of 6 validating the process with different cultural elements, processes or business models.
Result n° and title	R4.2. TRAINING MODULES
Full Title of the document	T4.3.2 Technical skills library- Comic course
Short Description	This document presents the Comic course, which is part of Module 2. Technical skills. The aim of the course is that the teacher acquires the technical competences about how to develop a comic, who is a language where images and text meet in a unique form of communication, capable of telling any kind of story. Comics are based on a secret pact with the reader. In this course we will learn and understand the use of drawing within narrative dynamics.
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Content

Module II Technical Library - Course II.4 Comic

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 (comics, 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 Comic course, which is part of Module 2. Technical skills. The aim of the course is that the teacher acquires the technical competences about how to develop a comic, who is a language where images and text meet in a unique form of communication, capable of telling any kind of story. Comics are based on a secret pact with the reader. In this course we will learn and understand the use of drawing within narrative dynamics. The course is available in open format in: https://poliformat.upv.es/portal/directtool/27457a82-d8a7-446c-acd9-bcd8ac82464d/.

The whole course will enable participants to create a story from images, learn drawing techniques and how to construct a story. Finally, understand that each story and therefore comic refers to a target of people who will read it. The teacher will upload the multimedia 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 and E-Scrum). Chapter 5 is dedicated to give the contents of the course, which is divided in three topics, each one consisting of three 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 the comic multimedia by using the resources in Chapter 5. Chapter 7 indicates the technical requirements for the comic multimedia to be uploaded to the O-City World platform. Chapter 8 includes links to some useful tools to develop the multimedia based on comics 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 comic multimedia 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 comics content course. Finally, in Chapter 12 teachers can find more learning materials from other O-City modules with activities related to comics. 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 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 and/or visual products that feed the O-City World platform.

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

1. Applying the basics of drawing techniques
2. Write and create a story from pictures
3. Recognize the importance of aesthetics in the service of readability
4. Understand how to compose the elements necessary for the story in the correct form.
5. Understand the functionality of composition, the use of the grid as a narrative tool
6. Generate the final comic multimedia to be uploaded to 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 multimedia based on comic. In this sense, teachers will choose which contents of the comic course (and other related courses: culture, IP, business and soft skills) are useful for them depending on 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 students to create multimedia based on comics.

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 explaining the potential innovative learning methodologies that can be used in the comics content 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 in teams: a multimedia based on comic. 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 T2L comics 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 T2T 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.

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 comics course to develop a multimedia 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 audiovisual project (multimedia based on photos-photo-video content).
- One of the members of the Scrum Team performs the **Scrum Maste**r 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
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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

To start the course, an introductory video explains how Comics Stories and books can be used to explain, promote and disseminate the main values of heritage elements, whether natural and cultural. As an example, we provide some comic strips that teachers can show in the classroom:

a) Strip drafts of the comic "Mysteries of Hydra", created by Danilo Barbarinaldi, which talks about Matera (Italy).
b) Comic strip about the Roman Helmets found near Novi Sad (Servia).

Table 1 shows the three topics, each one divided into three lessons:

TOPIC	LESSON
T1. Understanding Comics	L1. The white space
	L2. From strip to page
	L3. Noises and words
T2. Stories in images	L1. Without Conflict there is no story
	L2. The characters are the reader's mirror
	L3. Storyboard and framing dialectics
T3. Telling stories using signs	L1. Order and readability are better than beautiful
	L2. About the readability of the panel, the page and general fluency
	L3. Signs and colour

Table 1. Structure of the course in topics and lessons

The **first topic** deals with the key elements that make up a strip, a board and then a whole comic strip story. The combination of words, signs and drawings creates the comic strip and in this first topic these elements and their composition will be explained so as to create a comic strip story with the aim of illustrating and narrating Cultural Heritage.

The **second topic** deals with the general theme of the construction of the story: characters, setting, structure, shots, the search for comics references of places and people. All these elements aim to create a storyboard and then proceed to the writing of the dialogues in order to make the characters alive and create in the reader the emotional closeness to the story, so as to identify and become passionate about the story he is reading.

Finally, the **third topic** leads us to the final realization of the comic strip story. After having imagined, conceived, created, drawn and made the story tangible, now is the time to make it definitive and ready to be read. To do this we will go into the details of the composition, the shots, the drawing of the characters and their acting skills and finally the review of the final drawings and their coloring. All this will help us to make the story as truthful as possible, having places, characters and dialogues that correspond to the reality and narration of a place. In this way, the comic strip helps us to make even complex and apparently boring or difficult to tell subjects accessible to all age groups.

In the next sections each topic and its lessons will be described in detail.

Topic 1. Understanding Comics

This topic explores the key elements of comic book story writing. We will analyse the basic technical elements necessary to write and draw a comic strip story telling Cultural Heritage. The main objectives of the topic are described in a [video](.).

1. **The white space**: helps to understand the basic mechanism that gives life to the comic strip and how comics are a secret pact between author and reader and how the sequentially of words and images is in fact the foundation of this narrative tool.
2. **From strip to page**: it helps us to understand the functionality of the composition and the sense of reading a comic strip. The technical elements such as vignettes, grids, space and narrative format are the basis to start building the story.
3. **Noises and words**: we learn the right relationship between text and images in the media, their complementarity and functionality. How to use words to tell stories? Balloons are the symbol of chatter and their form can be different depending on what we want to tell. Add to this lettering, symbols, lines and other visual elements needed to bring the words to life.

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 on 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. To achieve this goal several activities are recommended for each lesson (T2T- in blue colour) and it is detailed if the students need to work in the classroom, in the street (most of them) 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 of what to do in class in each lesson are included. All the prepared materials (lesson content in pdf, videos, videos 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. Although working in team to develop the multimedia is highly recommended, most of the proposed activities can be done individually to get better results.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
1 The white space	T2L/T2T	Video T1.L1.Intro to Comics and Understand the basic mechanism (lesson content in pdf, video, video content in pdf)	Explanation about how comics can be used as a medium to manage and disseminate the main values of heritage	15'	at home (previous to the lesson -flip-teaching) or in the classroom	Present O-city World platform (watch some examples)

Explain video T1.L1 or solve doubts (if flip-teaching)

Explain ActivityA.T1.L1.1 (for students to do at home). |
| | T2T | Pill Comics in the world | Explanation about the world that recount historical events or deal with the theme of travel and the discovery of places in the world | 5' | at home | |
| | T2T | Activity A.T1.L1.1. Invent a Character(video, video content in pdf, activity factsheet in pdf) | Start inventing stories from the construction of characters | 3h | at home, in the streets | |

Table 2. Materials provided for Lesson 1. The white space of Topic 1. Understanding comics.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
2 From strip to page	T2L/T2T	Video T1.L2. Understand the functionality of the composition (lesson content in pdf, video, video content in pdf)	Explanation about how to create a strip	15'	at home (flip-teaching) or in the classroom	Solve doubts/group discussion of Activity A.T1.L1.1

Explain video T1.L2 or solve doubts (if flip-teaching)

Explain Activities A.T1.L2.1(for students to do at home) |
| | T2T | Activity A.T1.L2.1 Make up a story! (video, video content in pdf, activity factsheet in pdf) by looking for references in your city | Invent and draw a simple, recognizable character with a few signs, cartoon style. | 4h | at home | |

Table 3. Materials provided for Lesson 2. From strips to pages of Topic 1. Understanding comics.

Lesson	Type	Materials	Description	Student workload	Where do the student work?	What to do in class
3 Noises and words	T2L/T2T	Video T1.L3. Understand the use of words in comics (lesson content in pdf, video, video content in pdf)	Explanation about how to use some graphic elements to add words to drawings	15'	at home (flip-teaching) or in the classroom	Solve doubts/group discussion of Activity A.T1.L2.1 Explain video T1.L3 or solve doubts (if flip-teaching) Explain Activity A.T1.L3.1 (for students to do at home)
	T2T	Activity A.T1.L3.1 Using the materials of the previous exercise start to add dialogues (videos, video content in pdf, activity factsheet in pdf)	Create and add balloons to you story	4h	at home	

Table 4. Materials provided for Lesson 3. Noises and words of Topic 1. Understanding comics.

Topic 2. Stories in Images

The second topic goes into detail about the elements necessary for the construction of the story, in fact we will start to approach the conception and construction of the characters that will be fundamental in the relationship with the Cultural Heritage in order to make it alive and tellable in a dynamic way. The main objectives of the topic are described in a [video.](#)

1. **Without Conflict there is no story**: in this lesson we will understand how creative writing applied to comics helps us to make stories dynamic. We will address the theme, inspirations and form of graphic novels. We will start to approach the characters and the basic structure of the hero's journey.
2. **Characters are the reader's mirror**: how to use tools to create characters that are appealing both graphically and psychologically. We will ask ourselves who the reader of our stories is and how to make him/her participate in the reading through characters that are strongly characterized and able to express emotions and real lives, so as to create interest and identification.
3. **Storyboard and framing dialectics**: getting to know the practical tools needed for comic book storytelling. From theory to practice, it is now time to start fleshing out the story, by writing the outline and the storyboard, so that we can check directly on the page whether the story we have devised works

Tables 5, 6, and 7 describe the materials provided to the teacher for each lesson, using the same nomenclature (T2T, T2L, STP) and recommendations to use this topic in the classroom than tables in Topic 1.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
1 Without Conflict there is no story	T2L/T2T	Video T2.L1. How creative writing applied to comics (lesson content in pdf, video, video content in pdf)	How to use creative writing to create comics on cultural heritage	15'	at home (flip-teaching) or in the classroom	Solve doubts about previous activity T1.L3.1.

Explain video T2.L1 or solve doubts (if flip-teaching)

Explain Activity A.T2.L1.1 (for students to do at home) |
| | T2T | Activity A.T2.L1.1 Identify the characteristics of the cultural or natural good that must be transmitted and write a story (video, video content in pdf, activity factsheet in pdf) | Investigate the cultural or natural element to identify only what is relevant for the story | 4h | at home | |

Table 5. Materials provided for Lesson 1. Without conflict there is no story of Topic 2. Stories in images.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
2 Characters are the reader's mirror	T2L/T2T	Video T2.L2. Character mirror the reader (lesson content in pdf, video, video content in pdf)	Explanation of the importance and creation of characters	15'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activity A.T2.L1.1

Explain video T2.L2 or solve doubts (if flip-teaching)

Explain Activity A.T2.L2.1 (for students to do at home) |
| | T2T | Activity A.T2.L2.1. Who are the characters in the story video, comics content in pdf, activity factsheet in pdf) | Start from the story wrote in the previous exercise | 4h | At home | |

Table 6. Materials provided for Lesson 2. The characters are the reader's mirror of Topic 2. Stories in images.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
3 Storyboard and framing dialectics	T2L/T2T	Video T2.L3. What is a Storyboard (lesson content in pdf, video, video content in pdf)	Explanation about how to configure aperture	15'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activity A.T2.L2.1
	T2L/T2T	Pill T2.L3.1. How to create a storyboard (video)	Guided Creation of a storyboard	5'	at home	Explain video T2.L3 or solve doubts (if flip-teaching)
	T2L/T2T	Activity A.T2.L3.1 Create a Storyboard (video, video content in pdf, activity factsheet in pdf)	Start from the story wrote in the previous exercise	4h	at home	Explain Activity A.T2.L3.1 (for students to do at home)

Table 7. Materials provided for Lesson 3. Storyboard and framing dialectics of Topic 2. Stories in images.

Topic 3. Telling Stories using Signs

The third topic explores the elements needed to make the story you want to tell dynamic and interesting, and we will do this through the tool of creative writing.

We will understand how to give life to the various characters in the story, trying to find elements and characteristics that best represent them, to give the characters in the story a real soul. The main objectives of the topic are described in a [video.](#)

1. **Order and readability are better than beautiful:** this lesson helps us to understand the use of drawing within narrative dynamics. We move on to aspects of drawing, namely visual perception, symmetry, composition and the arrangement of elements - drawings and texts - within the vignette and the panel.

2. **About the readability of the panel, the page and the general fluency:** understanding how to compose the necessary elements of the story in the correct form. All the elements of the drawing must be kept together, from the human figure to its expressiveness, from the acting of the body to the depth and the use of light and shadow to make the drawings alive and believable.

3. **Signs and colour**: aesthetics at the service of legibility. We are at the final stage of writing our comic strip story and we have to finalise the drawings, calibrate the ink review and conclude with a colouring that can generate emotions and be faithful to the cultural heritage elements included in the story.

Tables 8, 9, and 10 describe the materials provided to the teacher for each lesson, using the same nomenclature (T2T, T2L, STP) and recommendations to use this topic in the classroom than tables in Topic 1 and 2.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
1 **Order and readability are better than beautiful**	T2L/T2T	Video T3.L1. Start to draw in details (lesson content in pdf, video, video content in pdf)	Focus on drawing, places, interior and exterior settings	15'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activity A.T2.L3.1 Explain video T3.L1 or solve doubts (if flip-teaching) Explain Activity A.T3.L1.1.
	T2L/T2T	Pill T3.L1.1. Examples (video)	Examples of comics about cultural heritage	5'	at home (flip-teaching) or in the classroom	
	T2T	Activity A.T3.L1.1. Draw in details your settings (video, video content in pdf, activity factsheet in pdf)	Identify the main characteristics of your setting using real references and go in details with the drawing	2h	at home	

Table 8. Materials provided for Lesson 1. Order and readability are better than beautiful of Topic 3. Telling stories using signs.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
2 **About the readability of the panel, the page and the general fluency**	T2L/T2T	Video T3.L2. Focus on drawing characters (lesson content in pdf, video, video content in pdf)	How to draw characters	15'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activity A.T3.L1.1 Explain video T3.L2 or solve doubts (if flip-teaching) Explain Activity A.T3.L2.1
	T2T	Activity A.T3.L2.1. How to compose all the elements (video, video content in pdf, activity factsheet in pdf)	Draws, words, settings how everything stands together	4h	at home	

Table 9. Materials provided for Lesson 2. About the readability of the panel, the page and general smoothness of Topic 3. Telling stories using signs.

Lesson	Type	Materials	Description	Student workload	Where the student work?	What to do in class
3 Signs and colour	T2L/T2T	Video T3.L3. Colours and Emotions (lesson content in pdf, video, video content in pdf)	Using colours to evoke emotions	15'	at home (flip-teaching) or in the classroom	Solve doubts about previous Activity A.T3.L2.1
	T2T	Activity A.T3.L3.1. Finalise the work (video, video content in pdf, activity factsheet in pdf)	Finalise the story with colours and layout	2h	at home	Explain video T3.L3 or solve doubts (if flip-teaching) Explain activity A.T3.L3.1

Table 10. Materials provided for Lesson 3. Signs and colour of Topic 3. Telling stories using signs.

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 a comics concept multimedia.
- **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 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 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 (GoogleDrive, 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

We use an example to better understand some scenarios in which comics can be developed to tell about territories. In this example, we work with a teacher from a secondary school who wants to develop with her students a series of comics presenting different information and data about the history and cultural heritage of the city of Matera.

With the aim of making the work more realistic, the teacher takes on the role of editor of a comic strip with talk about Matera, called "The Mysteries of Hydra". The teacher would like to create a series of comics that talk about certain places in the city and historical events in order to attract more visitors. In this case the **Product Owner** is the teacher, taking the role of the comic editor.

The **first step** is to present the project to the class in the form of **epic**. This is a story to show the context, needs and expectations. In our example, the epic could be the following:

"The comic should tell about some places in the city of Matera, and should be a continuation of the comic "The Mysteries of Hydra". The comic tells about a young boy Teo who is going to experience not only a trip to Matera with his family, but a real journey of discovery through time. In fact, the boy, in order to chase a drop of water, risks being trapped in the centuries of this city, but his encounter with a mysterious girl, who will be his travelling companion, will help him unravel mysteries and face daring trials. At their side is Hidrya, a water spirit, and a monster to defeat."

To raise awareness of this comic and to attract more visitors to the city of Matera, the teacher wants to create a sequel to the comic.
Each student should create a comic strip, which should present a story related to the comic "The Mysteries of Hydra", keeping in mind that it should tell about a characteristic place in the city.

After presenting the epic, it is time to create the Product Backlog, i.e. the list of functionalities that the product must satisfy. This task is developed by the Product Owner (the teacher) in collaboration with the Scrum Team (the students).
The Product Backlog consists of one sheet for each feature (called User Story) and each contains the following fields:
An identifier (this is a number to identify each user story).
A description of the user story. This description must follow the pattern "As < user type >, I want < some goal > so < some reason >".
The priority of the user story, this informs how important this feature is to the product owner. It is a number, the higher its value the higher its priority.
 Time estimate, how long it takes to complete this user story
Checklist to validate the user story

The next table shows an example of a product backlog. We have only included one user story, but it could contain more. A good practice would be for each team to develop only one user story. The priority informs us about the importance of each user story so teams should choose the most important one first.

Identifier	Description	Priority	Time	Validation checklist
01	As a comic editor I want a comic to present some cultural places in Matera	100	30 h	Does the comic show the main features of the story "The Mysteries of Hydra"? Does the narration highlight the main features of the places where the story takes place? Does the narration present the social context in which the story takes place?

Table 11. Example of product backlog for a multimedia based on podcast

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.

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- 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 multimedia content of the podcast can be divided into four sprints, as can be seen in Figure 1. The teacher proposes each sprint and gives the students all the materials they need to develop its outcome, which are detailed in Table 12. Rubrics for the evaluation of each sprint (Tables 13 - 16) are also shared with the students so that they know where to put the focus of their work. Teachers can continue with their programme in the classroom, while students can work on the project on their own at home.

10 days	Sprint 1	Identify the topic and research about it
10 days	Sprint 2	Storyboard
10 days	Sprint 3	Comic drawing
10 days	Sprint 4	Revision
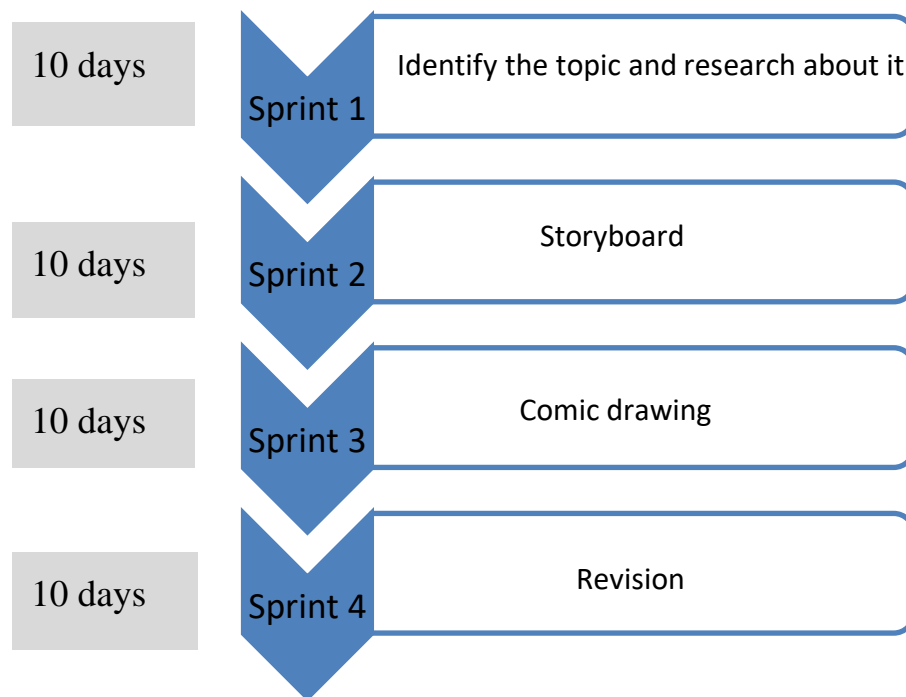
Figure 1. Division in sprints

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 stablished 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 13-16).

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 12 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 13 to 16 includes the rubrics to evaluate sprint 1 to 4, 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	Identify the topic and research about it	Document, it should contain: - a description of the topic; - a description of the conflict; - a description of the characters;	A T2.L1.1-Identify the characteristics of the cultural or natural good that must be transmitted and write a story A T2.L2.1-Who are the characters in the story	Table 5 and Table 6	Table 13
2	Storyboard	Storyboard (first draft)	A T2.L3.L1- Create a Storyboard	Table 7	Table 14
3	Comic drawing	Draw details and dialogues	A T3.L1.1- Draw in details your settings	Table 8	Table 15
			A T3.L2.1- How to compose all the elements	Table 9	
			A T3.L3.1. Finalise the work	Table 10	
4	Revision	Classroom revision	EA T3.L3.1-Look at student's comics projects with the students, so that they are the ones who analyse the different parts and can recognize the mistakes and successes. Group revision	Table	Table 16

Table 12. Division of the project in sprints.

SPECIFIC CRITERIA to evaluate Sprint 1- **Identify the topic and research about it**	1	2	3	4	5	Assessment	Comments
1. The topic has been described correctly	X					1	
2. It is contextualized		X				2	
3. Students have presented original and creative ideas			X			3	
4. Characters are correctly described		X				2	
Total: 20 points *(Accepted: 12-25 points; Rejected: 0-12 points)*						8	

Table 13. Rubrics to evaluate Sprint 1 – Identify the topic and research about it (example of use)

SPECIFIC CRITERIA to evaluate Sprint 2- Storyboard	1	2	3	4	5	Assessment	Comments
1. The selection of the panels is adequate	X					1	
2. The storyboard contains all the scenes needed to tell the story		X				2	
3. Landscape and props are directly related to the theme or purpose of the comic and enhance understanding of the scene			X			3	
4. Cultural heritage is illustrated with a precise number of details					x	5	
Total: 20 points *(Accepted: 12-25 points; Rejected: 0-12 points)*						11	

Table 14. Rubrics to evaluate Sprint 2 – Storyboard (example of use)

SPECIFIC CRITERIA to evaluate Sprint 3 - Comic drawing	1	2	3	4	5	Assessment	Comments
1. Scenes contains details that helps to contextualize the topic					X	5	
2. Drawing techniques used enhance understanding of the scene		X				2	
3. There are no spelling or grammatical errors in the text			X			3	
4. The pictures and captions reflect an exceptional degree of student creativity.					X	5	
Total: 20 points *(Accepted: 12-20 points; Rejected: 0-12 points)*						15	

Table 15. Rubrics to evaluate Sprint 3 – Comic drawing (example of use)

SPECIFIC CRITERIA to evaluate Sprint 3 - Revision	1	2	3	4	5	Assessment	Comments
1. Students properly evaluate the correctness of their project					X	5	
2. Students highlight their partner´s comic successes		X				2	
3. - Students are able to propose improvements on their partner´s comic			X			3	
4. - Students are able to recognize some referents on their partner´s comic					X	5	
Total: 20 points *(Accepted: 12-25 points; Rejected: 0-12 points)*						15	

Table 16. Rubrics to evaluate Sprint 4 – Revision (example of use)

Chapter 7. Requirements of the comic multimedia

The comics multimedia 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 multimedia before uploading them (instructions in Chapter 10)
2. Technical:
   a. Logos at the initial page: use O-City and EU logo centered..
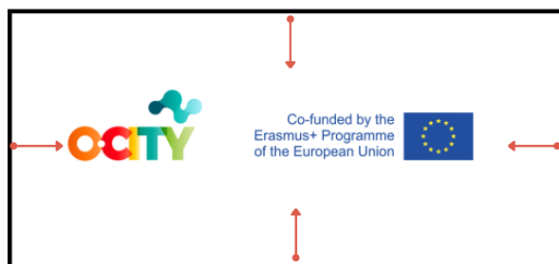
Figure 3. Start of a multimedia based on comics.

   b. Logos at the end page: add the logo of your institution as in the example in Figure 4. If necessary, place the credits before the final logos (font: Calibri, size: 12 pts, white background and black letters)

Figure 4. End of a multimedia based on comics.

   c. Text:
      i. Option 1: local language and English in the same file
      ii. Option 2: 2 files, one in local language and the other in English
   d. Comics:
      i. File format: JPG, PGN, PDF.
      ii. The comics cannot be more than 300MB

Chapter 8. Useful tools

This chapter incorporates complementing resources and recommended tools for the course:

1. Clip Studio Paint Pro
2. Graphic tablet
3. Computer
4. marvel.com/games/play/34/create_your_own_comic

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 comic concept course is available in open format in https://poliformat.upv.es/portal/directtool/27457a82-d8a7-446c-acd9-bcd8ac82464d/, 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 (Postgraduate Formation Center of Universitat Politècnica de València http://www.cfp.upv.es/), which will be announced in our web.

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 13-16 to evaluate the work of their students and give them feedback about it:

- Table 13: rubrics to evaluate the identification of the topic and research about it
- Table 14: rubrics to evaluate the storyboard
- Table 15: rubrics to evaluate the comic drawing
- Table 16: rubrics to review the complete project

Once the comic 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 multimedia must get at least 3 points in each criterion and a final assessment higher than 25 points to be uploaded to O-City World platform. Next chapter is dedicated to explain how teachers can upload the multimedia developed in their classrooms.

	TAG	SPECIFIC CRITERIA	1	2	3	4	5	Assessment	Comment
1	Heritage characterization	The patrimonial element is correctly characterized and explained			X			3	
2	Characters	There is a consistent visual style in the characters that supports the theme and story			X			3	
3	Scenes	The scenes are appropriated and add interest to the comic				X		4	
4	Text	There are no spelling or grammatical errors in the text				X		4	
5	Resource combination	The resources (strips, photos and logos) are properly combined to generate the final comics, so that the message is transmitted.			X			3	
6	Creativity	The multimedia is notable for its creativity			X			3	
7	Start	O-City and EU logos are placed centred on white background at the beginning of the comics.					X	5	
8	End	Your institution's logos and credits are placed centred on white background at the end of the comics. The type of font is calibri, size 12 pts and black letters.					x	5	
	Total: 40 *(Accepted: 25-40 points; Rejected: 0-24points)*							30	

Table 17. Rubrics to evaluate the final multimedia based on comics

Chapter 10. Steps to upload the multimedia 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 promotes the multimedia is set.

The city is in O-City World platform

After having decided which multimedia 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 promotes the multimedia 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 it in the platform if it is of adequate quality.

Chapter 11. Pathway to acquire competences

In this chapter, the pathway in the comic 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 comic 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, 19 and 20 detail this information for topics 1, 2 and 3 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 comic 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 dos 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. Table 21 details this information for topics 1, 2 and 3 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).

		Topic 1		
		Lesson 1	Lesson 2	Lesson 3
		T1.L1.1	T1.L2.1	T1.L3.1
INFORMATION AND DATA LITERACY	1.1 Browsing, searching and filtering data, information and digital content	A	A	A
	1.2 Evaluating data, information and digital content		A	B
	1.3 Managing data, information and digital content		B	A
COMMUNICATION AND COLLABORATION	2.1 Interacting through digital technologies			
	2.2 Sharing information and content		A	B
	2.3 Engaging in citizenship through digital technologies			
	2.4 Collaborating through digital technologies	A	A	
	2.5 Netiquette			
	2.6 Managing digital identity		A	
DIGITAL CONTENT CREATION	3.1 Developing digital content			
	3.2 Integrating and re-elaborating digital content			A
	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			
	5.3 Creatively using digital technologies	B		
	5.4 Identifying digital competence gaps			

Table 18. DIGICOMP competences developed with the activities proposed in Topic 1. Understanding comics

		Topic 2		
		Lesson 1	Lesson 2	Lesson 3
		T1.L1.1	T1.L2.	T1.L3.1
INFORMATION AND DATA LITERACY	1.1 Browsing, searching and filtering data, information and digital content	A	B	
	1.2 Evaluating data, information and digital content	B	A	
	1.3 Managing data, information and digital content	B	B	
COMMUNICATION AND COLLABORATION	2.1 Interacting through digital technologies	B	B	
	2.2 Sharing information and content			
	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			
	3.2 Integrating and re-elaborating digital content	B	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			
	5.3 Creatively using digital technologies			
	5.4 Identifying digital competence gaps			

Table 19. DIGICOMP competences developed with the activities proposed in Topic 2. Stories in images

		Topic 3	
		Lesson 1	Lesson 2	Lesson 3
		T1.L1.1	T1.L2.1	T1.L3.1
INFORMATION AND DATA LITERACY	1.1 Browsing, searching and filtering data, information and digital content			
	1.2 Evaluating data, information and digital content			
	1.3 Managing data, information and digital content			
COMMUNICATION AND COLLABORATION	2.1 Interacting through digital technologies			
	2.2 Sharing information and content			
	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			
	3.2 Integrating and re-elaborating digital content			
	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			
	5.3 Creatively using digital technologies			
	5.4 Identifying digital competence gaps			

Table 20. DIGICOMP competences developed with the activities proposed in Topic 3. Telling stories using signs

		TOPIC 1			TOPIC 2			TOPIC 3		
		Lesson1	Lesson2	Lesson3	Lesson1	Lesson2	Lesson3	Lesson1	Lesson 2	Lesson3
IDEAS AND OPPORTUNITIES	1.1 Spotting opportunities									
	1.2 Creativity	A	B	B	B	A	B	A	B	B
	1.3 Vision	B	B	B	B	B	B	B	B	B
	1.4 Valuing ideas	A	A	A	A	A	A	A	A	A
	1.5 Ethical and sustainable thinking									
	1.6 Spotting opportunities	A			A			A		
RESOURCES	2.1 Self- awareness and self- efficacy	A		A			A		A	
	2.2 Motivation and perseverance	A	A	A	A	A	A	A	A	A
	2.3 Mobilizing resources									
	2.4 Financial and economic literacy									
	2.5. Mobilizing others									
INTO ACTION	3.1 Taking the initiative	B		B	B	B		B	B	
	3.2 Planning and management			B	B	B		B		
	3.3 Coping with uncertainty, ambiguity and risk									
	3.4 Working with others									A
	3.5. Learning through experience		A			A			A	

Table 21. ENTRECOMP competences developed with the activities proposed in Topic 1. Understanding comics, Topic 2. Stories in images, and Topic 3. Telling stories using signs

E-SCRUM: extra DIGCOMP and ENTRECOMP Competencies

If the methodology E-Scrum is applied in the classroom, some competences will be developed at higher 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 comic

In this chapter, teachers can find more learning materials from other O-City modules with activities that can be implemented in the classroom while implementing the multimedia based on comics. 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](#)

Bibliography

This course has been created by Danilo Barbarinaldi, and it is based on his own experience as comic artist, no extra bibliography has been used.

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
I n f o r m a t i o n	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, comics, 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.
C o m m u n i c a t i o n	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
C o n t e n t c r e a t i o n	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.
S a f e t y	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
P r o b l e m s o l v i n g	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 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 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 see tasks as challenges to do my best/ I am motivated by challenges.	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 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 recognise different ways of motivating myself and others to create value.	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 persevere in the face of adversities when trying to achieve my goals/ I can devise strategies to overcome standard adverse circumstances.
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 can overcome simple adverse circumstances/ I can judge when it is not worth continuing with an idea.	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.
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 delay achieving my goals in order to gain greater value, thanks to prolonged effort/ I can maintain effort and interest, despite setbacks.	

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

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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, comics, 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 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 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 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 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 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 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 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 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 IV. 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 comics, comicsgraphs, 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.

En 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	