



YESict

Project co-funded by the European Union



Erasmus+

Report – Output 5&6
ICT and non-ICT tools



UNIVERSITY OF NICOSIA

FH | JOANNEUM
University of Applied Sciences



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1. INTRODUCTION

The main objective of the YESict (Young Entrepreneurial Skills by ICT) project is to promote the entrepreneurial spirit and attitudes among students aged 10-15. This O5&O6 report contains a description of the tools (both ICT and non-ICT tools) created within the framework of the YESict project, to promote entrepreneurship among young people, as well as the process followed for the creation of such tools.

The activities created in O5 & O6 mean to foster entrepreneurship among young people and include a variety of ICT and non-ICT based tools. Their creation was based on the previous outputs (O1, O2 and O3) of the YESict project.

The O1 Existing programs analysis report defines the scope of the YESict project, analysing the concept of entrepreneurship, as well as its approach in formal and non-formal education. In addition, the ICT tools that should be used in the toolkit development were defined; among which, an online platform was identified as one of the best resources, due to its accessibility, adaptability and easy appropriation.

Secondly, the "O2 Entrepreneurial Skills" report covers the skills related to entrepreneurship and identifies those that need to be developed in this project. In all, ten entrepreneurial skills were defined.

To finish with, the "O3 Entrepreneurship curricula" report defines the pedagogical methodology selected for the YESict project. The methodology is based on Challenge Based Learning, including the principles of Design Thinking. In addition, four skills were selected from those defined in O2: Creativity, Self Confidence, Collaboration and Problem Solving. Creativity will be worked in more detail. Apart from this, the age for the students experimenting the toolkit was defined as 11-12 years old.

To summarize, this O5&O6 report includes the Human Centred Design process followed for the creation of this toolkit, which shows the development of its different versions and the meetings that were organised to show and check the toolkit with possible users through the design process.

The report ends with a set of conclusions and some advice for the experimentation phase.

2. FINAL O5&O6 TOOLKIT

The O5&O6 toolkit provides all the necessary resources to carry out the pilot experimentation O9 of the YESict project.

The toolkit is divided in the following 7 stages (see Figure 1) and the students will need to go through all of them:

1. Introduction / Motivation
2. Challenge Identification
3. Team Creation
4. Exploration
5. Ideation
6. Prototyping
7. Communication



Figure 1. Stages in the toolkit

Cooperative learning strategies and handcraft activities were taken into account in the creation of these 7 stages.

There are cooperative activities in the stages 1, 2, 3 and 7. The activities included in the previous stages foster cooperative learning based on the use of ICTs. The tools that foster cooperation among the members of the group are Google Drive (to share material among the members in the same group) and Google Docs (to work on the same file at the same time).

Handcraft activities cover stages 4, 5 and 6. The activities in those stages take into account one of the foundational elements of Design Thinking, the importance of handcraft activities in the creative process.

Each stage provides some tools that the students will use as they are working on the unit. 24 tools were designed. These help in the development of the four skills defined in O3: Creativity, Self Confidence, Collaboration and Problem Solving. Table 1 shows the tools created for each stage and the estimated length for each one.

Table 1. Tools created for each phase

STAGES	TIMING	TOOLS	TYPE OF ACTIVITIES
1. INTRODUCTION/ MOTIVATION	2h	1.1 Short introductory video (The neighbourhood of my dreams) 1.2 Jigsaw <ul style="list-style-type: none"> • Oranges • Second Hand Market • School Trip 1.3 Let's ask them! 1.4 What is necessary?	COLLABORATION ACTIVITIES
2. CHALLENGE IDENTIFICATION	45'	2.1 Brainstorming plenary 2.2 What is the problem?	
3. TEAM CREATION	1h15'	3.1 Target diagram strategy 3.2 Team progress folder 3.3 Students roles	
4. EXPLORATION	3h	4.1 Association 4.2 5W + 1H 4.3 Stakeholders 4.4 Briefing	
5. IDEATION	2h	5.1 Brainstorming in group 5.2 5 senses 5.3 Superheroes 5.4 Scenarios 5.5 Selection	HANDCRAT ACTIVITIES
6. PROTOTYPING	3h	Think about how the scenarios are going to be built	
7. COMMUNICATION	5h	7.1 Poster of the proposed solution 7.2 Poster of the process followed 7.3 Preparing the presentation	COLLABORATION ACTIVITIES

2. 1. The roles of ICTs in the toolkit

The ICT tools that back up the YESict toolkit and that mean to be helpful for students are WordPress, Google Drive and Google Docs. ICTs play an important role in the activities.

All the material designed for the toolkit is being uploaded on a WORDPRESS platform (see Figure 2) as a first prototype for the piloting. Teachers and students can access the YESict toolkit in the following WordPress web page: <http://yesict.fh-joanneum.at/wordpress/>

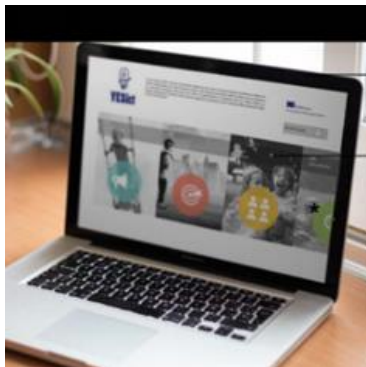


Figure 2. WordPress Platform

Students will follow the online platform structure to carry out the project. Therefore, students will download all the files from the platform and they will save them in their own Google Drive unit, which they will share with their teacher and classmates (if they are working in groups).

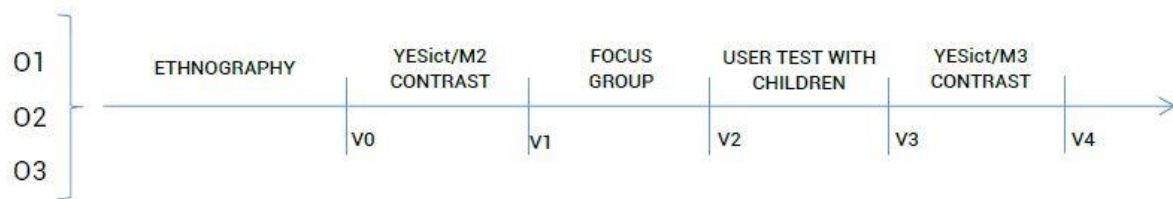
The files that were uploaded on the platform are introductory videos, Google Docs templates and PDF files.

- The videos mean to motivate students and to set in a context of entrepreneurship.
- Google Docs templates saved in Google Drive and shared with the group members foster collaborative, cooperative and simultaneous learning.
- To finish with, PDF files (that need to be printed) will be used for handcraft or manipulative activities.

3. O5&O6 HUMAN CENTERED DESIGN: THE PROCESS FOLLOWED

Following the guidelines written down in Output 3, 11-12 year old teenagers need to find a solution to a problem they have identified themselves, following the ChBL methodology and including the DTh principles.

The development of the O5&O6 toolkit was based on the Human Centred Design (HCD) Philosophy. In order to do so, different methods related to this philosophy were used: ethnographic analysis, observation, interview, focus group and user test.



The process based on Human Centred Design that we followed for creating the toolkit is the following: 1) Ethnography; 2) V0_O5&O6 toolkit; 3) Contrast with consortium partners in YESict/M2; 4) V1_O5&O6 toolkit; 5) Focus Group; 6) V2_O5&O6 toolkit; 7) User test with children; 8) V3_O5&O6 toolkit; 9) Contrast with consortium partners in YESict/M3 and 10) V4_O5&O6 toolkit.

Next, we will explain each section in more detail.

3.1. Ethnography

First, an ethnographic analysis was done. The objective of this analysis was to know and understand the students' learning process and the teachers' roles in class.

Besides, some observation sessions were carried out focused on different topics such as: ICT system, non-ICT system, team working and communication presentations.

The observation sessions took place in a primary school during 5 days, where 44 students (aged 10-12) and 5 teachers participated (see Figure 3). After those sessions, the five teachers observed in class were interviewed in order to understand the school dynamics better and to gather useful information for the creation of the output.



Figure 3. Observation session while students work in groups

Thanks to these observation sessions, we found out the ICT and non-ICT resources that the schools own nowadays, how the students work and how the tasks are introduced.

The school uses the following ICT tools: a whiteboard and laptops. They usually use laptops to look for and gather information, share files, write essays and do activities. The ICT resources used in class are generally Google Apps since these resources are known for being free of charge, easy to access, easy to use and intuitive.

The Non-ICT tools are blackboards, board games or logic games, handicraft (drawing, making sculptures...), handicraft with recycled material, books...

In reference to group work, we identified that the students are very used to working in groups. They have some established roles and they take turns to change those roles and make all the partners be involved in the group at the same level. They usually form groups of 4 students and the teacher is in charge of making them.

Oral presentations are organised for parents, other students or other target groups. The students are quite free to choose the resources they need for those oral presentations (i.e.: digital presentations, oral presentation without a digital support, role playing, and reading).

3. 2. v0_O5&O6 toolkit

A storyboard has been defined for the use of the O5&O6 toolkit in class (see figure 4 and figure 5). This storyboard shows a first approach of the use of the different stages of the toolkit in class; the steps that the students should carry out are shown.

This storyboard shows that the students will be using the toolkit for two subsequent days and that there will be 7 stages. The proposed stages cover the principals of the pedagogical methodology proposed in O3 (*Challenge Based Learning* and *Design Thinking*). Figure 4 represents the first day (DAY 1), in which the first four stages will be

carried out (01 Introduction/Motivation, 02 Challenge Identification, 03 Team Creation and 04 Exploration):

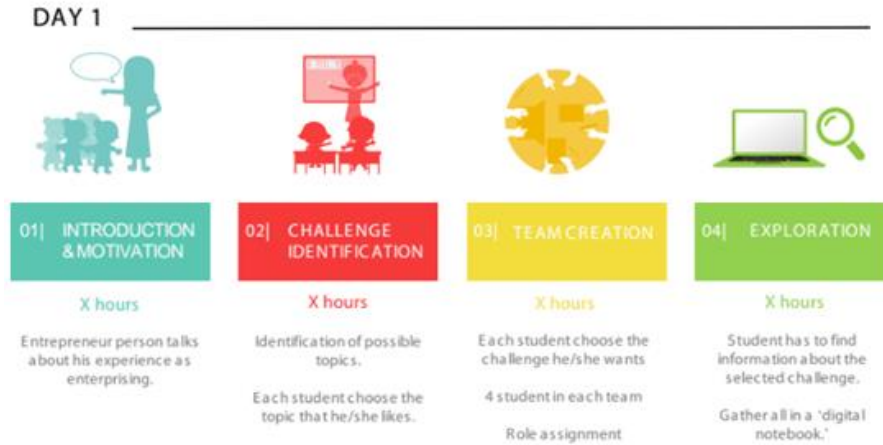


Figure 4. Children Oriented Storyboard, DAY 1

Figure 5 represents the proposal for the second day (DAY 2): 05 Ideation, 06 Prototyping and 07 Communication.

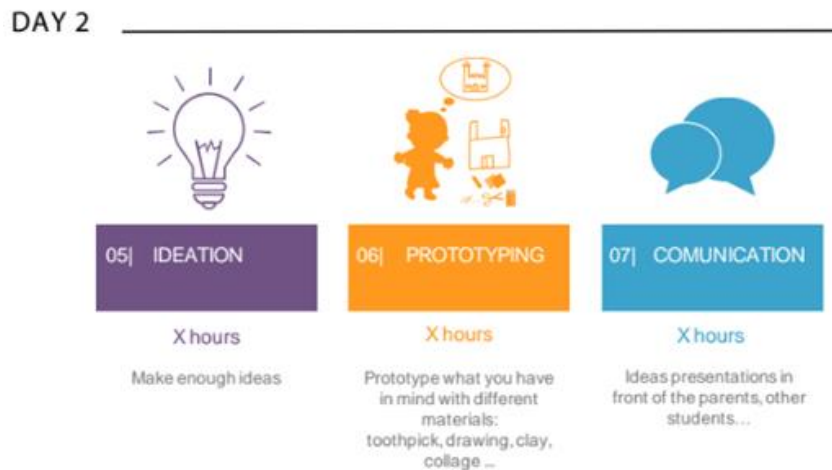


Figure 5. Children Oriented Storyboard, DAY2

3.3. Contrast with consortium partners in YESict/M2

All the analysis carried out was checked with all the members in the consortium attending the YESict/M2 meeting (see Figure 6) held in Cyprus.



Figure 6. Members in the consortium who attended YESict/M2 held in Cyprus

In the meeting we checked the conclusions obtained from all the different analysis carried out, that is to say, the ethnographic analysis (see 3.1) conclusions and the storyboard for the O5&O6 use (see 3.2) were presented. The consortium partners approved the work done and the storyboard proposal.

3.4. v1_O5&O6 toolkit

Based on the first storyboard, the 7 stages proposed were defined in more detail. In particular, (a) the timing for each stage, (b) activities to be carried out and (c) a proposal for the resources and tools that should be used in those activities were included (see Figure 7 – the original version is available in the page 18).

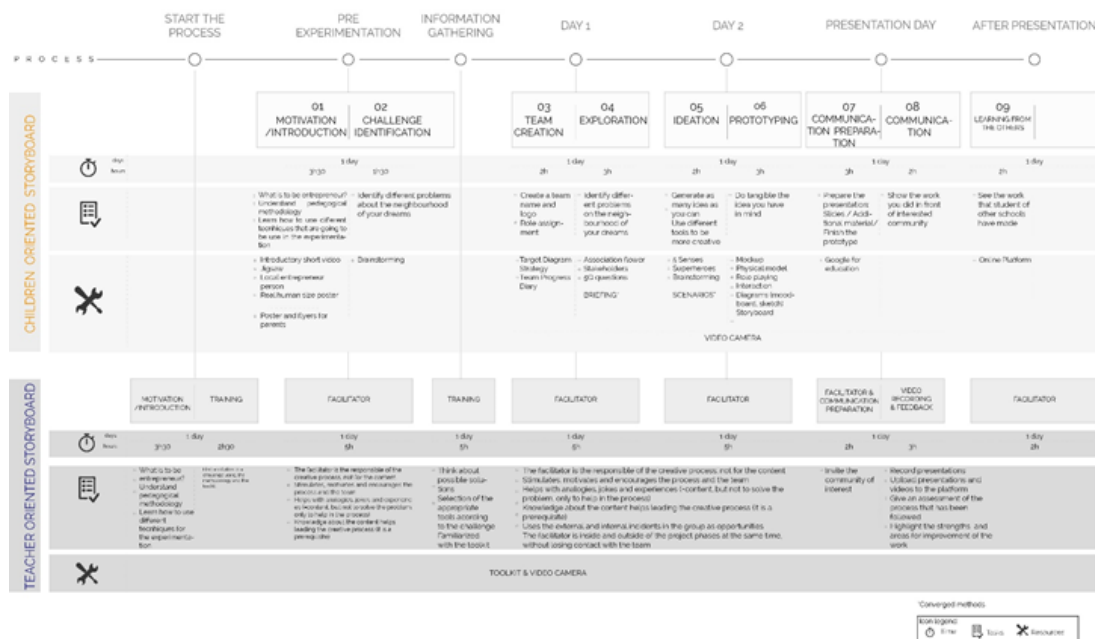


Figure 7. Children Oriented Storyboard and Teacher Oriented Storyboard, taking into account the process, the timing, activities to be carried out and the necessary resources and tools for each one

Apart from the Children Oriented Storyboard, a Teacher Oriented Storyboard was defined.

To work on the toolkit satisfactorily the teachers needs to get familiar with it. That is why teacher training will be necessary.

In this Teacher Oriented Storyboard, the following were defined: (a) estimated timing for each stage, (b) activities to carry out in each stage (the main role of the teacher would be to be a facilitator) and (c) the resources and tools that will be used in each stage.

3. 5. Focus Group

Once the piloting process was defined more in depth, the work done was checked with potential users. In order to do so, we organised a Focus Group with Primary and Secondary teachers.

We made 2 focus groups; one organised by MGEP (see Figure 8) and the other one by EHI (see Figure 9). The interviewed participants are teachers with different profiles (MGEP: 3 primary school teachers and EHI: 2 teachers; the principal and primary school teacher and a secondary school teacher).



Figure 8. Focus Group organised by MGEP with teachers from Arizmendi Ikastola, Gazteluondo Ikastetxea in Arrasate



Figure 9. Focus Group organised by EHI with teachers from Andra Mari Ikastola in Etxarri Aranatz

The main objective in this Focus Group was to explain the approach (V1_O5&O6 toolkit) and the first design to the teachers to know their opinion about it. In the end, the idea was to foresee with them possible problems or aspects to improve before the piloting, and to be able to make the necessary changes based on their feedback.

They found the general approach suitable, interesting and feasible.

According to the timing, they all agreed it is rather difficult to foresee. Therefore, we will see whether the estimated timing is appropriate or not when the first piloting is carried out.

They also pointed out the students do not need examples to know how to do an activity. They think the examples (activities with answers) are more useful for teachers, that can check them if they have any doubt; looking at those examples can be very helpful.

To finish, they suggested they would add the possibility of letting the students choose if they want to work in groups or individually in the prototyping stage.

3. 6. v2_O5&O6 toolkit

Taking into account that the assessment and the results of the Focus Group with the teachers were favourable, the storyboard did not undergo any change. We agreed to include the suggestion of letting the students choose if they want to work in groups or individually in the Prototyping Stage.

The design and development of the tools proposed for each stage was then carried out. Different templates were designed for each stage. In all, 24 tools were created.

In terms of graphic design, all templates follow the same pattern: the icon + the name of the tool with a distinctive colour for each stage, the necessary time to carry out the activities and the necessary instructions (see Figure 10).

Templates are simple and clear so that both students and teachers understand the task. You can see a template example below.

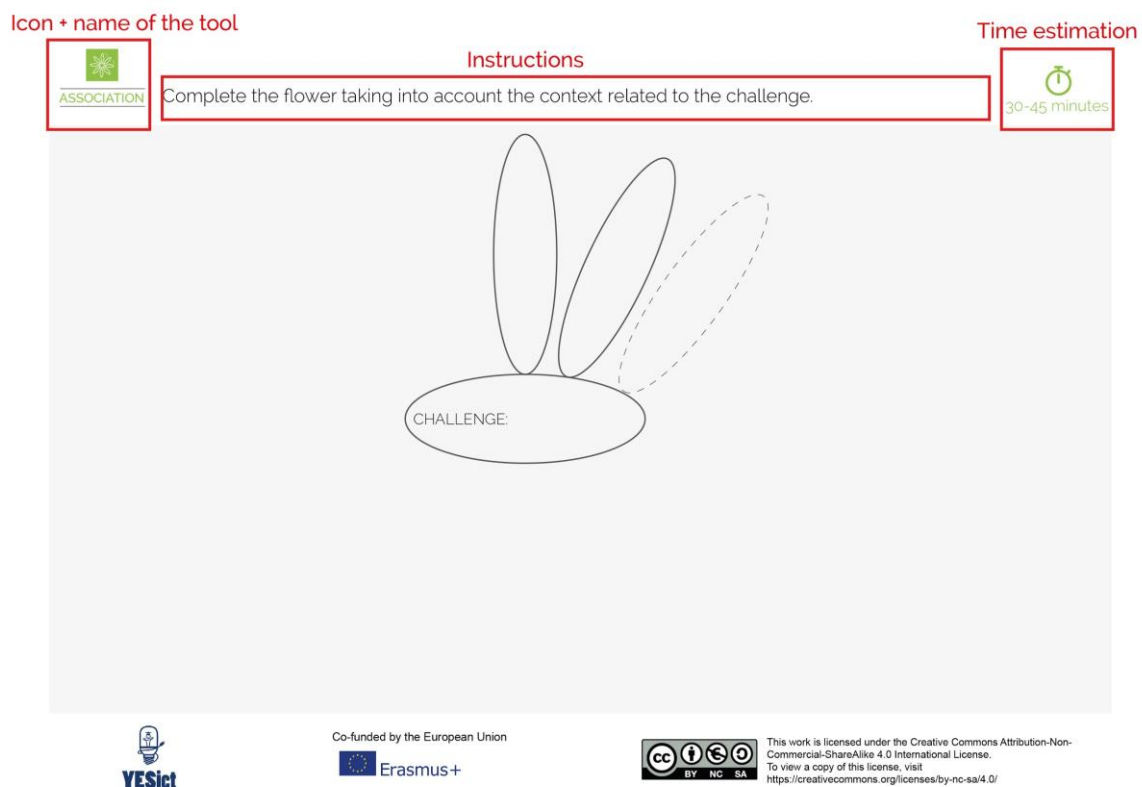


Figure 10. ASSOCIATION template

3.7. User test with children

Following the Human Centred Design, MGEP organised a workshop (see Figure 11) with children to find out, in first person, if the process and tools proposed for the toolkit were appropriate or not.



Figure 11. Workshop in which students are trying to find a solution to a problem

In this session, 18 children (aged 8-14) and 2 facilitators participated. The place where the children were working can be seen in the following Figure 12, an open space where each group had the same resources available: a blackboard, tables, chairs, pens, pencils, modelling clay, coloured card, designed templates, adhesive tape, masks, scissors...



Figure 12. Workspace

Due to timing problems, the session was organised in a single day (5 hours) with the following planning (see Figure 13).

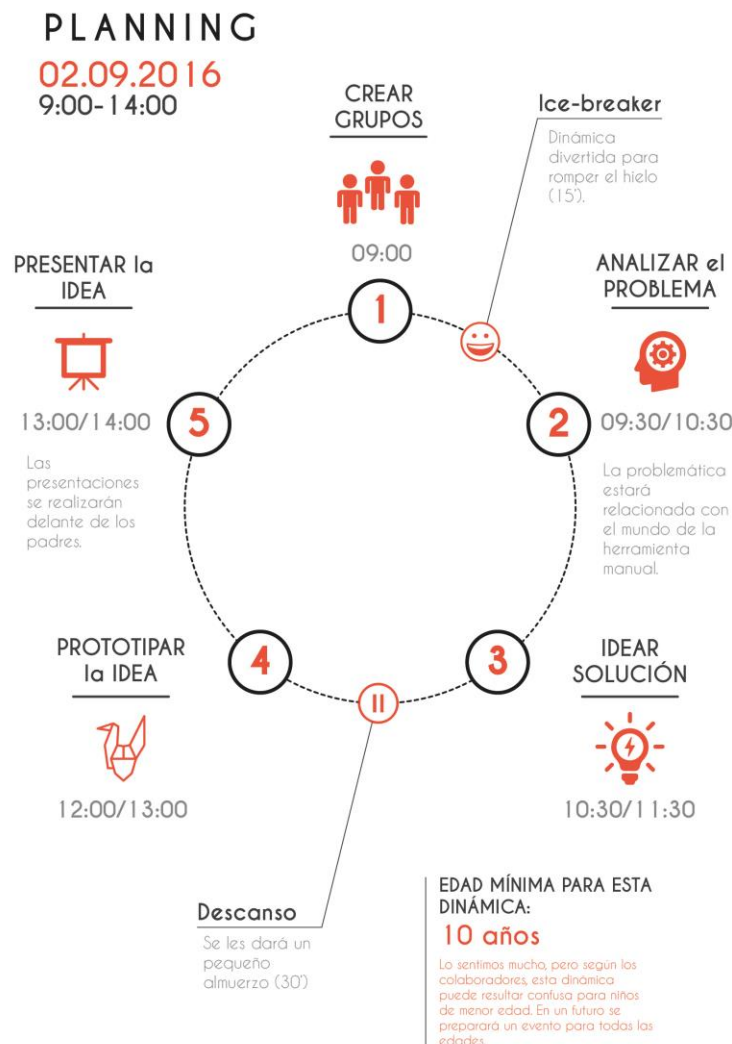


Figure 13. Workshop planning

Therefore, the planning for the piloting was modified, that is to say, some stages and tools were selected. We decided to focus on the stages that work creativity in more depth to see children's approval and reaction towards the toolkit, since it proposes a new challenging methodology. The stages chosen were 4. *Exploration*, 5. *Ideation*, 6. *Prototyping* and 7. *Communication*. The tools tested were in total 7: 5. *Association*, 5W+1H, *Brief*, *Superheroes* and *Scenarios*.

The workshop was also analysed to check the validity of the proposed tools. We saw that the timing, space, children's attitude, the material and resources used and the number of facilitators were appropriate. Besides, the children found very good and creative ideas. Likewise, the most popular stages for them were Ideation and Prototyping. In brief, both children and parents were satisfied and willing to repeat a similar experience if given the chance. Therefore, we were satisfied with the results.

We also identified some aspects to improve in the toolkit design. For example, the age of the students participating. 8-9 year-old students were identified as too young to follow the process in an appropriate way. The children had some difficulties when

identifying the real problem; the analysis stage was the most complicated one for them. Last, a group decided not to present their work because there was not a set time to prepare the presentation.

The general conclusions were the following:

- Even if the children choose the topic, the problem must be defined.
- We identified the necessity to assign roles in the group at the beginning of the process.
- Once the students finish a stage we recommend that children get some feedback so that they know how they are working and so that they are aware of their progress.
- Two tools did not work as expected: the BRIEF activity did not have enough support for the children to summarize the problem and the SUPERHEROES tool did not help the children be creative taking into account the main characteristics of the superheroes.
- Finally, a certain time should be considered to let the children prepare and rehearse their presentations.

3. 8. v3_O5&O6 toolkit

Taking into account the aspects to improve detected in the User Test, we finished the definition of the toolkit, improving the identified weaknesses. Apart from that one, the ICTs that will support the pedagogical methodology and their role in the toolkit were established.

For this purpose, this was summarized in the definitive storyboard (see Figure 14).

As we can see, it has been divided in two sections: on the one hand, in purple, we have the Teacher Oriented Storyboard and, on the other hand, in grey, the Children Oriented Storyboard.

In the Teacher Oriented Storyboard, we can see the tasks the teachers should carry out. As it is a new process, we think a training session to get familiar with the material and tools is necessary. Besides, it is a good opportunity to solve doubts and show how the process should be carried out. In the piloting process, the role of the teacher should be as facilitator in the process, indicate time limits and solve doubts.

In the Children Oriented Storyboard, we can see the tasks the students should carry out. For that purpose, the methodological process was divided in different sections; four different sections to be exact. The first section corresponds to the Pre-experimentation, it consists on explaining and letting the students know what they will be working on for a few days. As the YESict project proposes a new learning process, we should introduce the topic and motivate students. The rest of the sections, *Day1*, *Day2* and *Presentation*, are the piloting days, when they will be working the entrepreneurial skills.

The length of the piloting sessions was defined; it will last four days more or less. Besides, there is an approximate proposal for the length of each stage, too.

As we can see in previous versions of the Storyboard, different tools were defined for each stage. In this sense, we can distinguish between two types of activities with the aim of working all the competences, as we have explained in 2.1. The role of ICTs in the toolkit.



Figure 14. Storyboard summary: Children Oriented Storyboard and Teacher Oriented Storyboard

3. 9. Contrast with consortium partners in YESict/M3

Once all the toolkit was developed, the work done (the WordPress platform and the templates) were shown in the transnational meeting YESict/M3 (see Figure 15).



Figure 15. MGEP and EHI presenting the O5&O6 toolkit

Apart from presenting the tool, a brief training was carried out to make the partners involved in the experimentations get familiar with the material and to be ready for their experimentation campaigns. FHJ introduced a design proposition for the WordPress platform. Apart from this, some characteristics of the platform were discussed (where to include the teacher's guide, possibility to include material in other languages).

The feedback was positive and the proposals were taken into account and included in the toolkit. Nevertheless, some problems were detected when trying to work on some Google Doc templates on tablets.

3. 10. v4_O5&O6 toolkit

After finding satisfactory solutions to the detected problems, the toolkit is ready and working on: <http://yesict.fh-joanneum.at/wordpress/>

We would like to add that the selection of those resources was based on the investigation of Human Centred Design and on the Challenge Based Learning and Design Thinking pedagogical methodology proposed. Apart from this, the toolkit also includes the guidance defined in O1. In terms of ICTs, the WordPress platform is easy to access, easy to adapt and easy to appropriate.

4. CONCLUSIONS & RECOMMENDATIONS

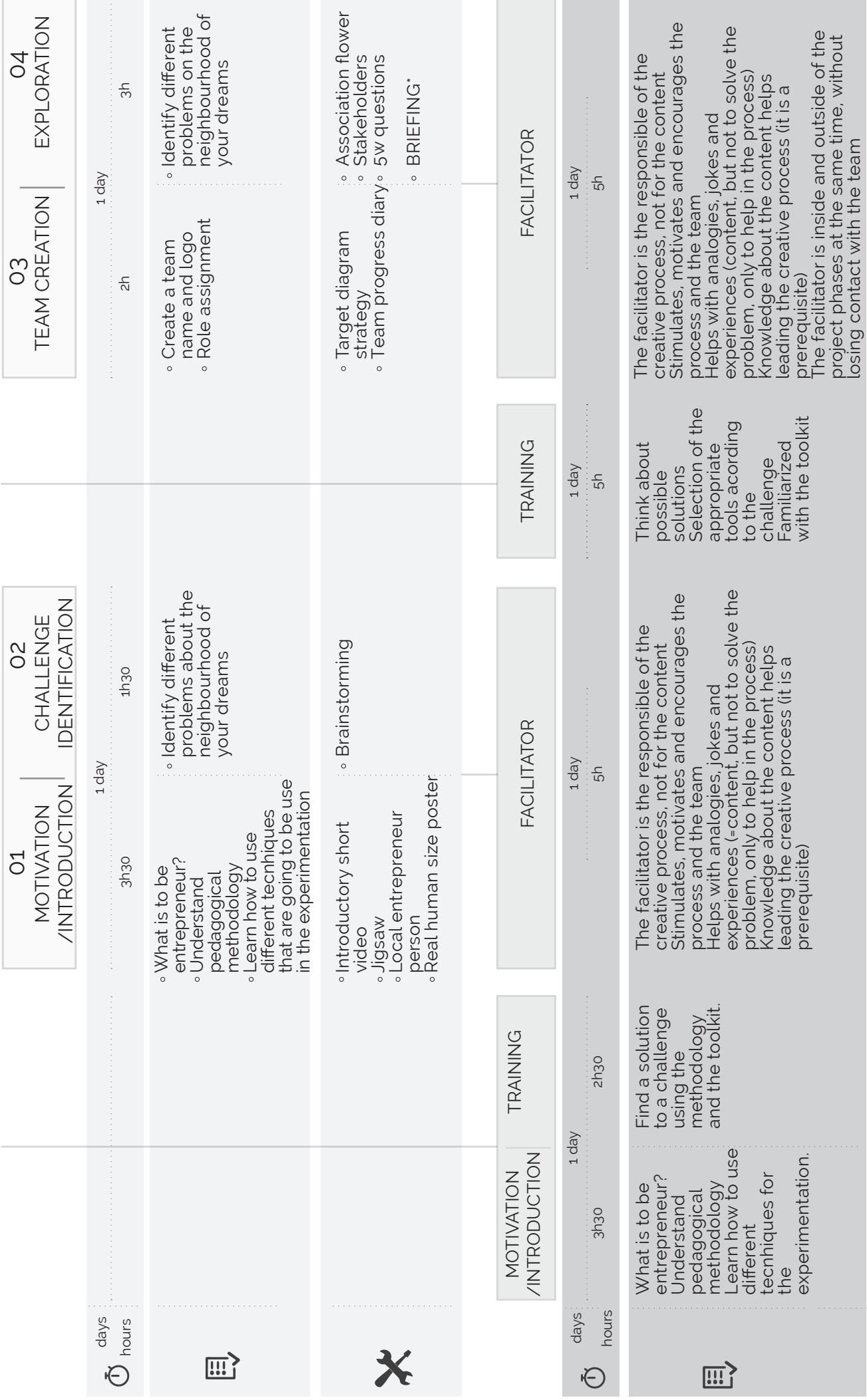
This report includes the description of O5&O6 toolkit that provides with the tools created to foster entrepreneurship, taking into account the advice from the O1, O2 and O3 reports.

In brief, the toolkit is based on an online platform that provides all the material and necessary resources to carry out the process and work the entrepreneurial skills. To see the result, you can access the following link: <http://yesict.fh-joanneum.at/wordpress/>

We foresee that the O9 piloting will take 18-20 hours. The first two stages (1. Introduction/Motivation and 2. Challenge Identification) can be done in previous sessions, not necessarily in subsequent sessions. We recommend that stages 3. Team Creation, 4. Exploration, 5. Ideation and 6. Prototyping are worked in 2 subsequent days. Finally, stage 7. Communication day will be held a few days after finishing stage 6.

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CHILDREN ORIENTED STORYBOARD

TEACHER ORIENTED STORYBOARD

What is to be entrepreneur?
Understand pedagogical methodology
Learn how to use different techniques for the experimentation.

The facilitator is the responsible of the creative process, not for the content
Stimulates, motivates and encourages the process and the team
Helps with analogies, jokes and experiences (-content, but not to solve the problem, only to help in the process)
Knowledge about the content helps leading the creative process (it is a prerequisite)

Think about possible solutions
Selection of the appropriate tools according to the challenge
Familiarized with the toolkit

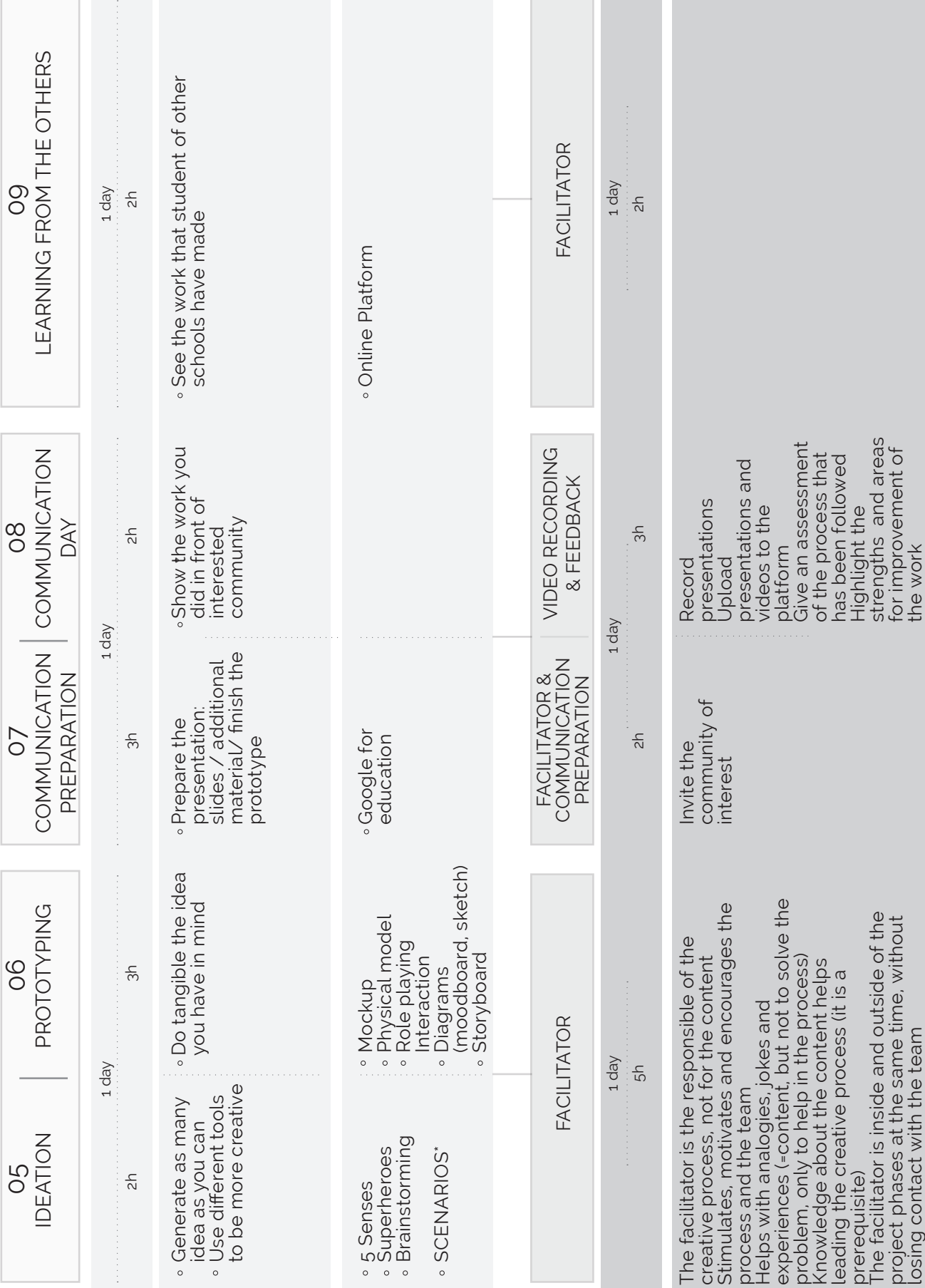
The facilitator is the responsible of the creative process, not for the content
Stimulates, motivates and encourages the process and the team
Helps with analogies, jokes and experiences (content, but not to solve the problem, only to help in the process)
Knowledge about the content helps leading the creative process (it is a prerequisite)
The facilitator is inside and outside of the project phases at the same time, without losing contact with the team



AFTER PRESENTATION

PRESENTATION DAY

DAY 2



Icon legend:

- 🕒 Time
- 📁 Resources
- 📋 Tasks