



LIFELONG LEARNING PROGRAMME  
LEONARDO DA VINCI: TRANSFER OF INNOVATION



## Teaching through ProjectX

### GUIDELINES TO MAKE A PROJECTX



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### 1. INTRODUCTION

This guide is written to help teachers to design and create what we have called “**ProjectX**”. It is one of the final products of the **one2one** project, a Transfer of Innovation Project funded by the European Commission. Its full name is “**One teacher and one student working with ProjectX**”.

You will find instructions for designing ProjectXs from the beginning to the end. The aim of the ProjectX is twofold: on one hand this methodology makes the student to be the protagonist of his own learning process. On the other hand allows the teacher to attend the student in a very personalized way, one-to-one.

This pedagogical methodology can be applied in all countries: a ProjectX is an independent unit that can be included within all official academic programs. Therefore, this methodology **boosts the mobility** of students and teachers: students can do activities that will be validated by the sending institutions, and teachers can travel to other colleges to drive –teach– one common ProjectX.

Consequently, the network of Vocational centres can increase with new institutions that want to join us by adding new ProjectX. In this way this methodology is aligned with the European Strategy 2020 which boosts the mobility of students and teachers in a high grade of quality.



## 2. KNOWING A PROJECTX

A “ProjectX” is a methodological guide for the student to carry out a concrete activity, **one to one** with the teacher, in which theory and practice are both perfectly integrated and is related to the real workplace.

Each ProjectX is developed on the basis of Learning Outcomes. It is a tool based in the ECVET credit system, which will allow the mobility of students and teachers between the institutions that have ProjectX.

- A ProjectX is a practical work -“a practice”-, with tasks perfectly defined.
- A ProjectX is a “closed work”, a “final product”, something “independent”.
- A ProjectX requires learning theoretical concepts and practicing practical skills.
- A ProjectX is a practical activity that is meaningful for companies.
- In a ProjectX everything is done by the student, it is based on his own responsibility: he/she is the protagonist of self-learning.
- A ProjectX is a tool that allows the teacher to attend the students individually, paying attention to each one and respecting their own personal learning rhythms.
- A ProjectX is not bounded to a knowledge level: in some way it is independent...

## 3. MAKING A PROJECTX

We distinguish three levels for constructing a ProjectX:

- **Level 1:** It is a general description. The two faces of the coin in this level are the title and the Learning Outcomes that will be achieved.
- **Level 2:** it is the “Student Guide”. All the tasks to be performed by the student must be described, and all the materials needed must be added as annexes or said where to find them.
- **Level 3:** in this level it is described the tools for making the ProjectXs transferable according with the European guidelines: the EQF and the ECVET credit system.

### A. LEVEL 1: GENERAL DESCRIPTION.

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The objective in this level is to describe the general idea of the ProjectX. See document in Annex 1: it is a template to fill in.

Below we describe each one of the items included in the template and some advices to be taken into account.



### 1) TITLE OF THE PROJECTX.

It is convenient that the title describes the final product.

### 2) CORE AREA<sup>1</sup>.

It describes the specialty (knowledge in a general sense) and the concrete activity to perform.

In our particular case, the core is related with Maintenance and Engineering.

Id	Knowledge area	Id	Activities to perform
1	Air Conditioning	1	Assembly
2	Automation	2	Bending
3	Automotive	3	Comunication
4	Construction	4	Cutting
5	Electronics	5	Drawing
6	Electricity	6	Design
7	Engineering	7	English
8	Gas	8	Environment
9	Hydraulic	9	Equality
10	Heating	10	Enterpreunerial
11	Computer	11	Forming
12	Insulation, sealing and protection systems	12	Industrial equipment
13	Lenguages	13	Industrial process
14	Mechanic	14	Internship
15	Management	15	Manufacturing
16	Mathematics	16	Materials
17	Photovoltaic	17	Measurement
18	Physics	18	Maintenance
19	Plumbing	19	Others
20	Pneumatic	20	Project
21	Refrigeration	21	PLC
22	Security	22	Planning
23	Soft skills	23	Programming
24	Telecommunications	24	Quality
25	Thermal Solar Energy	25	Robot
		26	Reading
		27	Laboral Regulations
		28	Surface
		29	Safety
		30	Statistical
		31	Welding

### 3) PROMOTING SCHOOL

It is the name of the School / College / University / Vocational Centre that has written the ProjectX.

<sup>1</sup>[www.topmost.es](http://www.topmost.es)



#### 4) SCHOOLS PARTICIPANTS IN THE REVISION OF THE PROJECTX

As a ProjectX is a concrete activity, measurable in time, other schools can take it and include it within the list of its own projects. In other words, the school can accept it as its own project.

In this way, if two teachers agree with the final definition of a ProjectX:

- a) Students who travel abroad can perform the ProjectX in the same way as they would perform it in his own school. Thus the evaluation done in the hosting institution can be validated by the sending institution.
- b) One teacher can travel abroad converting himself as a “home teacher” in conducting the ProjectX.

In this epigraph, it is written the names of the schools that will participate in the revision of this particular ProjectX, because they understand that could be applicable in their own schools.

#### 5) LEVEL OF THE STUDENTS (According with the EQF – European Qualification Framework)

Every country has its own scale of levels: the National Qualification Framework (NQF). This information can be interesting for institutions in other countries if they are conscious about the educational system in that country.

But for trying to find a common point of reference, it is interesting to refer this activity to the European Qualification Framework (EQF).

This information really is not necessary for performing the ProjectX. That is to say that the particular activities to perform in a ProjectX could be interesting in different levels, in different curricula, in different subjects... A project is not bounded to any Level...

#### 6) LEARNING OUTCOMES ACHIEVED (LO)

In this epigraph are written the learning outcomes that are expected to be achieved by the student by performing the ProjectX. They can be one, two three...

The concept of LO is complicated to understand. We define it as:

**WHAT A STUDENT IS EXPECTED TO BE ABLE TO DO AS A RESULT OF A LEARNING ACTIVITY.**

- a) **The key word in the definition of learning outcomes is the word, “Do.”** The word suggests what skill, knowledge or behaviour a student is able to demonstrate as a consequence of a learning activity. What is important is that there must be a doing in the do of a learning outcome.

Examples of words that suggest such a doing are:



**Words which suggest actions are examples of doing in “Do,” such as**

Define	Discuss	Apply	Diagram	Express
Describe	Explain	Build	Differentiate	Compose
Identify	Give Examples	Compute	Illustrate	Generate
Label	Explain	Build	Prioritize	Arrange
List	Summarize	Implement	Compare	Plan
Tell	Estimate	Assess	Contrast	Write

**Words which are less suggestive of actions and tend to result in weaker, less measurable learning outcomes are:**

Know	Understand	Comprehend	Feel	Learn	Appreciate
------	------------	------------	------	-------	------------

- b) **Learning activity.** For most classroom situations, learning activities are fairly easy to identify, since instruction and discussion are the common currency of course instruction. For School Life the history of learning activities may not be profoundly pronounced, but a careful inspection of current activities and programs could suggest a broad range of contacts with students that might be identified as learning activities. Learning activities can be found in such areas as, all of which are part of School Life’s programs:

Advisement	Counseling	Leadership	Service	Planning	Workshops
------------	------------	------------	---------	----------	-----------

- c) **Expected to be able to DO.** The inclusion of “what is expected” in the definition of a learning outcome suggests intentional learning rather than coincidental, incidental or accidental. When members of School Life identify intentional learning outcomes, they develop learning activities as the result of desired result, rather than having lots of activities and hope they result in learning. Activities are “expected” to result in specific learning outcomes.

## 7) TIME THAT IS NECESSARY TO PERFORM THE PROJECTX

Here is written the number of hours needed to carry out the ProjectX.



To perform a ProjectX we distinguish two concepts:

- a) Hours for theory
- b) Hours for practice

Of course this information is for guidance only. It is known that each student has his own rhythm, and it is never possible to determine exactly the number of hours required to perform the work. But it is an indicative figure when programming student mobility.

## 8) LINK TO REAL COMPANIES IN YOUR REGION

One of the most important principles in Vocational Training is that everything the student learns is orientated to the “real world”, the world of the companies.

So the question is: which companies would be happy that a student develops this ProjectX? In which companies of the Region this student could perform the same tasks he has performed doing the ProjectX.

As you can understand, this information is for guidance only, but forces the teacher to design ProjectXs that are valuable for the companies. It is **very important to increase the employability of our students**, working together with companies.

## 9) OBJECTIVES OF THE THEORETICAL KNOWLEDGE

A ProjectX is a practical activity to perform. BUT, for being able to do it, ordinary it is necessary to learn theoretical concepts.

In traditional lessons, the teacher explains the theory to all students. THIS IS NOT OUR CASE. In a ProjectX the student is the one who must investigate, read, study... on his own. We want to boost the personal responsibility.

But always he will have the teacher beside him. To explain to him each question or doubt he has. And, in addition, in a personalized way.

According to this, in this section are described all the objectives that the student has to reach.

Logically the question is: **which is the starting point?** There is no answer to this question. Because we could go back to learn to read and to learn to add.

But this problem is very easy to solve, because the teacher who is designing the ProjectX is thinking in a real situation, in his own class. So he needn't to think about the starting point...

And the teacher of other school who is going to make the revision of the ProjectX, when he reads it immediately he realizes who of his students are in disposition to perform the ProjectX.



In this paragraph it is only defined the objectives. In the next level (Level 2, the Guide for the student) these objectives will be deeper described.

#### **10) LIST OF ACTIVITIES**

In this paragraph there is a list of activities to check if the student has understood the theory and has achieved the objectives described before.

It depends on the objectives which activity is more appropriate. Some examples are the following:

- D. To answer some questions in a questionnaire
- E. To do a Test
- F. To explain the teacher a concept
- G. To perform a work
- H. ... etc.

#### **11) BRIEF DESCRIPTION OF THE PRACTICE**

This is a summary of the practical work the student must do.

Mainly this information is relevant for other teachers to understand and decide to accept the ProjectX as their own.

#### **12) STEPS OR ACTIVITIES TO BE PERFORMED BY THE STUDENT**

In this paragraph all the steps for making the ProjectX are numerated and described.

It is also relevant information for other teachers to understand and decide to accept the ProjectX as their own.



## **B. LEVEL 2: STUDENT GUIDE.**

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The objective in this level is to make a document for the student to understand FULLY and CLEARLY what are the tasks he must perform:

- a) For studying and understanding the theoretical knowledge
- b) For the assessment of the theoretical knowledge [Theoretical Activities]
- c) For understanding what the ProjectX is about:
- d) For knowing with precision every step he must do in order to make properly the ProjectX
- e) For having points of reference for the student can make an auto evaluation

See document in Annex 2: it is a template to fill in. NOTE: fields in green means that this information is in Level 1

### **1) TITLE OF THE PROJECTX.**

It is the same of what is written in Level 1.

### **2) PRESENTATION.**

Briefly it is described what this ProjectX is about:

- What the student is going to do
- Why this project is important in the Industry
- What could be the main problems
- Why this ProjectX is important for the future in this subject

### **3) THEORETICAL KNOWLEDGE.OBJECTIVES**

It is the same of what is written in Level 1

### **4) THEORETICAL KNOWLEDGE. REFERENCE**

To overcome each objective, the student must do some activities that are defined in this chapter. As for example:

- To read and study some paragraphs of the Text Book
- To read and study some documents provided by the teacher (specific notes, photocopies, etc.)
- To read and understand the contents of an specific website
- To watch a video online
- To enter in the school platform and read some documents
- --- ETC!



IMPORTANT: if the student doesn't understand what he is doing, he must ask the teacher for an explanation

#### 5) THEORETICAL KNOWLEDGE. ACTIVITIES

The aim of this step is to check whether the student has understood the theory or not. For this reason the student must do some control tasks.

The name of the activities are already written in Level 1

#### 6) THEORETICAL KNOWLEDGE. REFERENCE

It is described CLEARLY where to find the appropriate document, as for example:

- An annex to the Student Guide
- A document to download from the School Website Intranet
- A document to fill in from the School Platform
- Etc.

#### 7) STUDENT'S EVALUATION

For each item in the previous chapter, once the student has finished the work he must make self-assessment.

#### 8) TEACHER'S EVALUATION

For each item in the previous chapter, once the student has made his own assessment then the teacher has to do it.

The assessment is related with the evaluation that would be done in a Company:

- [D] Unsatisfactory = you must repeat the exercise because you have not understand the theoretical content
- [C] Sufficient (but mediocre)
- [B] You've understood the theory
- [A] You are Excellent, because could explain without problems the theory to other colleagues

Our philosophy:

**THE ASSESMENT IS AN EXCELLENT INSTRUMENT FOR THE STUDENT TO ASSIMILATE  
(TAKE IN, UNDERSTAND) THE KNOWLEDGE**



## 9) PRACTICE. BRIEF DESCRIPTION OF THE PRACTICAL ACTIVITIES

It is the same of what is written in Level 1.

## 10) STEPS OR ACTIVITIES TO BE PERFORMED BY THE STUDENT

This chapter is the most difficult to describe, as each project is unique, singular. Reading what is written in this chapter, the student must be able to do correctly the exercises required with high marks. So everything **MUST BE VERY WELL DESCRIBED**, very detailed.

In order to orientate on how to fill in this chapter, maybe can help this TWO images.

- a) Imagine that the student is “deaf and mute”.
- b) Imagine that in your class there is a foreign student and you cannot speak a single word in his language.

## 11) NAME OF THE STEP

It is written in Level 1

## 12) STEP'S DESCRIPTION

It must be described, step by step:

- What to do
- Where to find the required materials (wood, cables, batteries, welder, tools, etc.
- Template for making the budget
- Which scheme or diagram to follow (i.e.)
- ... Etc.

## 13) STUDENT'S EVALUATION

Once the student has finished one of the STEPS of the previous chapter, the he must make a personal assessment of his work done and go to the teacher to show him what he has done. This process has to be repeated for each STEP.

## 14) TEACHER'S EVALUATION

Once the student has made his own assessment, then the teacher must do it.

The assessment is related with the evaluation that would be done in a Company:

- [D] Unsatisfactory = you must repeat task. It is not well done
- [C] Sufficient (but mediocre)
- [B] It is a good job



- [A] You are Excellent, because could explain without problems how to do it well to other colleagues

### 15) FINAL CONCLUSIONS

Both the student and the teacher write their own conclusions at the end of the ProjectX: if it is good, if can be improved in the future, what have been the difficulties, etc.

### 16) FINAL EVALUATION

It is made by the teacher.

It is referred to the Learning Outcomes described in Level 1.

### 17) LEARNING OUTCOME

It is written in Level 1.

Depending on each ProjectX, the student can achieve the Learning Outcomes completely or partially. In this section the teacher has to evaluate the achieved KSC within each LO

### 18) FINAL MARK

Depending on each country here is written the final mark of the whole ProjectX

## C. LEVEL 3: REFERENCE TO EQF & ECVET

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In this level it is described the tools for making the ProjectXs transferable according with the European guidelines: the EQF and the ECVET credit system.

You can find lots of information on the web related to those topics. As an example you can check the following website: <http://www.ecvet.net/c.php/ecvet/glossary.rsys>

Some important concepts to take into account in this level:

### LEARNING OUTCOMES

Learning outcomes are statements of what a learner is expected to know, understand and/or be able to do, or is able to demonstrate, after completion of any learning process or at the end of a period of learning. [TWG ECVET]

### KNOWLEDGE

The facts, feelings or experiences known by a person or a group of people [EQF]

### SKILL



The knowledge and experience needed to perform a specific task or job. [EQF]

## COMPETENCE

Competence includes:

1. **Cognitive competence** involving the use of theory and concepts, as well as informal tacit knowledge gained experientially;
2. **Functional competence** (skills or knowhow), those things that a person should be able to do when they are functioning in a given area of work, learning or social activity;
3. **Personal competence** involving knowing how to conduct oneself in a specific situation; and
4. **Ethical competence** involving the possession of certain personal and professional values. [TWG ECVET]

**FOR EACH LEARNING OUTCOME MUST BE DESCRIBED THE KNOWLEDGE, SKILLS AND COMPETENCES**

Finally, in order to prepare the mobility of students and teachers, it is described the reference to the National Qualifications Framework of the countries that have shared the ProjectX.

## 4. GUIDELINES FOR PERSONALIZATION.

### A. FRAMEWORK.

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It is undisputed that each school must respect their own national educational system and the Programs that have been approved by management team of the school. A ProjectX has nothing to do with changing those matters.

It is the teacher in each school the one who has to decide if a particular ProjectX can be executed in the subject he teaches. As a matter of fact, initially is the teacher the one who writes a ProjectX in accordance with his ordinary job: it is him the one who has the initiative of implementing this methodology in his own class. And this is because the ProjectX fits with his programming, it is useful for him.

At the same time his ProjectX –the one he has written– can be validated by a teacher of another school in a different country. In other words, that ProjectX written by another teacher could have been written by himself/herself and, consequently, fits perfectly with his/her plan, the subject

he/she teaches and respects perfectly the official school program.

The ProjectXs don't describe the previous knowledge required. It is a concrete practical work that can be inserted within different programs, courses or subjects. It is a decision of the teacher to establish the student's requirements for doing it.

Finally, if one student travels abroad to a school in a foreign country and makes a ProjectX that is recognized by the teacher in his own school, logically the assessment made in the host school can be validated by the sending institution.

## **B. THE ROLE OF THE TEACHER.**

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Normally a ProjectX doesn't need special explanations of the teacher.

The teacher is the conductor of the ProjectX and the ProjectX evaluator. The student has the guide for making the ProjectX and must follow all the instructions written in it.

When he/she is learning theoretical concepts and doing the evaluation activities, logically he/she can need some help to understand the concepts. So he/she goes to the teacher and asks the doubts.

When he/she is doing the practical activities he/she can also need the advice of the teacher (for finding materials, for interpret a map, etc.). So he/she goes to the teacher and asks him/her his/her doubts.

Consequently the teacher normally is "seated in his chair" in the classroom waiting for the questions of the students, and revising the student's work.

## **C. THE ROLE OF THE STUDENT.**

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The student makes his work individually: this is the reason of the adaptability of the ProjectX. Each student can work on his own velocity, faster or slower: he/she becomes protagonist of his/her learning.

Whether he/she is a fast or a slow student, due to his/her specific characteristics, programming through ProjectX allows the teacher to achieve "the minimum" in each subject. A faster student can perform more ProjectX (or more complex ones); a slower student can only do less of them. It must be clearly defined the minimum ProjectX to do in order to pass the subject in an academic year.

The students work under the teacher's supervision, who gives them support according with their particular needs.



# ProjectX Level 1 - Template

## A. GENERAL DESCRIPTION

### Title of the ProjectX

### Core area

GENERAL / KNOWLEDGE:

PARTICULAR / ACTIVITY:

### Promoting school

### Schools participants

### Level of the students (according to EQF) → [see Europass supplement certificate]

### Learning Outcomes related with the ProjectX

- 1.
- 2.
- 3.
- ...

### Time that is necessary to do the ProjectX (in hours)

Theory:

Practice:

### Link to real companies in your region (it is just informative)

- |                |                  |
|----------------|------------------|
| 1. NAME: _____ | WORKPLACE: _____ |
| 2. NAME: _____ | WORKPLACE: _____ |
| 3. NAME: _____ | WORKPLACE: _____ |



## B. THEORY

### Objectives of the theoretical knowledge

- 1.
- 2.
- 3.
- ...

### List of activities

- 1.
- 2.
- 3.
- ...

## C. PRACTICE

### Brief description of the Practice

### Steps or activities to be performed by the student



## ProjectX Level 2 – TEMPLATE

(Information in green colour is taken from Level 1)

### Title of the ProjectX

(1)
-----

### A. PRESENTATION (2)

--

### B. THEORETICAL KNOWLEDGE

	OBJECTIVES (3)	REFERENCE (4)
1		
2		
3		
+		

(3) It is written in Level 1

(4) It says clearly where to find the theoretical contents for the student to study

### Activities

	ACTIVITY (5)	REFERENCE (6)	St. (7)	Tch (8)
1				
2				
3				
+				

(5) It is written in Level 1

(6) It says clearly where to find the Documents required for making the activities

(7) It is the student assessment

(8) It is the Teacher assessment



**C. PRACTICE – PRACTICAL ACTIVITIES**

**Brief description of the Practice (9)**

(9) It is written in Level 1

Step 1: ----- (10)	St. (12)	Tch (13)
(11)		

Step 2: : ----- (10)	St. (12)	Tch (13)
(11)		

Step 3: : ----- (10)	St. (12)	Tch (13)
(11)		

+ : ----- (10)	St. (12)	Tch (13)
(11)		

(10) It is written in Level 1

(11) Description of the practical task

(12) Student's assessment

(13) Teacher's assessment



**D. FINAL CONCLUSIONS & FINAL EVALUATION (14)**

Student conclusions

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Teacher conclusions

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**FINAL EVALUATION (15)**

<b>Learning Outcome 1:</b>	(16)
<b>Knowledge:</b>	<b>Skills:</b>

<b>Learning Outcome 2:</b>	(16)
<b>Knowledge:</b>	<b>Skills:</b>

<b>Learning Outcome 3:</b>	(16)
<b>Knowledge:</b>	<b>Skills:</b>

<b>Learning Outcome +:</b>	(16)
<b>Knowledge:</b>	<b>Skills:</b>

(16)It is written in Level 1

<b>FINAL MARK (17)</b>	
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## ProjectX Level 3 – TEMPLATE

Title of the ProjectX

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EQF		ECVET points	
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<b>Learning Outcome:</b>			
<b>Knowledge:</b>	<b>Skills:</b>	<b>Competences:</b>	

Reference to National Qualifications (NQF)

Spain	Finland	Romania	Portugal	United Kingdom	Turkey	France

