

## PROJECT PLANNING TEMPLATE for CLIL and Content-Rich Environments

Adapted from CLIL-SI 2015. More information at: <http://grupsderecerca.uab.cat/clisi/>

### IDENTIFICATION

Project teaching sequence TITLE	Cardboard Furniture
AUTHOR	Diego Gámez Pérez <i>(Project created in the GEP's second course)</i>
With the support of	Institut Banús (Cerdanyola del Vallès)
COE Level	???
Grade	2n ESO
Content areas	Technologic process
Number of sessions	4 sessions
Teacher(s) involved	Diego Gámez Pérez
Key words	Technology, process, cardboard, furniture, practice, ESO, making, recyclable materials.

## INTRODUCTION TO THE PROJECT TEACHING SEQUENCE

The **process** of creating a new product is a long hard way that not much people know about it. How can we create something not created yet? As you can imagine, it is not easy and maybe impossible for our **second of ESO** students, isn't it?

But there is another way more appropriate for them . The objective of this **practice** is to give them a real product (a **furniture**) and **some recyclable materials (cardboard's materials)**, so they must research about **the best designed ideas** created similar to their assigned product, decide which recyclable materials they will use in the **making**, design their **own project**, discuss how they assign the different work's roles in their groups and try to create their product by solving the different problems they'll find during all the making.



At the end, they will do a report adding how much it will be and a little conclusion about how could they **improve their final product**. So they'll **answer the following question:**

- Why do we want to do that?
- Why is this the best design?
- Which problems can we find during the construction progress?
- How much will it be?
- At the end, could we improve the final product? How?

To sum up, it will makes them learn and experience all the **real technological progress** behind a product, from design to its sold.

**The driving question:** *How can we create a cardboard furniture?*

GOALS	HOW DO YOU KNOW STUDENTS ARE MAKING PROGRESS?
<p><b>After my project the students will be able to...</b></p> <ol style="list-style-type: none"><li><b>1. Identify</b> the different parts of a technological process.</li><li><b>2. Know</b> different workshop tools by using them.</li><li><b>3. See</b> how difficult can be to create a new product.</li><li><b>4. Discuss, provide arguments and justify</b> why the final design has been chosen.</li></ol>	<ol style="list-style-type: none"><li><b>1.1. Identifies and recognizes</b> six of the eight phases required to create a new product (watching the next video: <a href="https://www.youtube.com/watch?v=dZuAKgWgdNg">https://www.youtube.com/watch?v=dZuAKgWgdNg</a>).</li><li><b>1.2. Describes</b> the different functions that each member will do.</li><li><b>2.1. Recognizes and points out</b> weak and strong points about oneself.</li><li><b>2.2. Identifies</b> own skills, achievements, knowledge and personal characteristics that let them use the different workshop tools.</li><li><b>3.1. Looks for</b> different knowledge and techniques about furniture's making.</li><li><b>3.2. Finds out</b> how the final product could be improved and, probably, it must make them change somethings from the original design's product and do all the technological process again (this last action won't be done but is a real part of the process that they have to learn).</li><li><b>4.1. Exposes</b> him/her own product's sketch and argues the different sketches exposed.</li><li><b>4.2. Takes</b> the best decisions discussing in group.</li></ol>

<p><b>FINAL PRODUCT</b></p> <p>What is the final product?</p>	<p>The final product will be:</p> <ul style="list-style-type: none"> <li>- <b>Create</b> an original cardboard furniture.</li> <li>- <b>Submit</b> a detailed report on the entire process of creating the cardboard furniture including and a budget for manufacturing it.</li> </ul> <p>Here you can see some examples of the final products:</p> <div style="display: flex; justify-content: space-around;">   </div>
---	---

KEY COMPETENCES		
1	Linguistic communication	✓
2	Cultural awareness and expression	✓
3	Digital competence	✓
4	Mathematical	✓
5	Learning to learn	✓

6	Sense of initiative and entrepreneurship	✓
7	Interaction with the physical world	✓
8	Social and civic competences	✓

CONTENTS (Knowledge and Skills)	
TOPIC-RELATED CONTENTS	TOPIC-RELATED SKILLS
<p><b>1. Phases in the technological process:</b> Finding information (brainstorming or find information in different formats), design (discussion of proposals, sketches, perspective views, plans ...), planning (tools and materials, assignments and make a budget), making, verification and evaluation (see if it works and if it not works then return to the design phase to change it).</p> <p><b>2. Self-learning:</b> improve their skills, achieve their objectives, work different personal characteristics and increase their knowledge by practicing and learning from their mistakes.</p> <p><b>3. Workshop:</b> learn about different methods of working in the workshop, organization of the different available spaces and the use of specialized tools with their respective safety rules.</p> <p><b>4. The structure of a complete technological report:</b> explain all the process giving more details of each phase done from the technological process of their designed product, including a complete budget.</p>	<p><b>1. Identify</b> the phases in the technological process.</p> <p><b>2. Point out</b> the strengths points about themselves and <b>strengthen</b> the weak ones.</p> <p><b>3. Teamwork:</b> <b>listen to</b> others, <b>accept</b> the decisions of the group and <b>propose</b> ideas.</p> <p><b>4. No fear</b> versus new challenges and actions.</p> <p><b>5. Design, create, justify</b> and <b>present</b> a report of the finished product.</p>

### CONTENT-OBLIGATORY LANGUAGE

Miter saw, handsaw, impact glue, screw, screwdriver, hammer, drill, drill bits, cardboard plates, cardboard tubes, budget, brainstorming, sketches, ...

Don't you think it would be better to .../ I (quite) agree/ What did you mean when you said \_\_\_?/ Let me just make sure - your point is that \_\_\_/ What do you think about \_\_\_?/ I see what you mean but in my opinion \_\_\_?/ The next aspect I'd like to consider is \_\_\_?/ There are \_\_\_ main steps in this process\_\_\_/ That's a good idea./ Very interesting. How exactly do you propose to \_\_\_?/ In my opinion, \_\_\_/ ...

The	length height width diameter	of	_____	is	_____	cm	/	What I	'm suggesting 'm trying to say meant to say should have said	is	_____	/ ...
-----	---------------------------------------	----	-------	----	-------	----	---	--------	---	----	-------	-------

### PERSONAL and EMOTIONAL DEVELOPMENT

- Make the effort to participate in class
- Give the best of yourself
- Evidence there is progress and reflection on your learning process
- Collaborative work awareness
- The satisfaction of creating something unique
- ...

### MATERIALS and RESOURCES

- Cardboard tubes and plates
- Usual workshop tools
- An empty technological process report
- Self-assessment checklist
- Youtube video: "Technologic process"
- ...

### REFERENCES

### COMMENTS

- Heterogeneous distribution of the groups to attend diversity and foster cooperative work
- Role assignment made by the group
- Teacher's follow up of the group work
- Teacher becomes the professional who improve their final design to ensure that their end product works
- ...

### ACKNOWLEDGEMENTS

I would like to thank my wife and my daughters for their patience during this task... Many hours working.

## UNIT OVERVIEW

Session	Activities	Timing	Skills	Interaction	CMC	Assessment
1	1. Before beginning with the technologic process	15'	S/W/C/R	S - S		Oral revision by the teacher at the end of the activity.
	2. Requirements	15'	W/S	S - S		
	3. Research	30'	Res/W	Individual / T - S	M/C	
2	1. Brainstorm	20'	W/T/D/I	Individual / T - S		Evaluate the individual contributions inside the group.
	2. Select the best solution	40'	W/C/D	S - S / T - S		Evaluate the selection's criteria.
3	1. Justify and Build It	80'	BC/W/L	Individual / S - S /T - S	M/C	Evaluate the individual development during the making of the product.
4	2. Use it	20'	W/V	Individual		
	3. Review and Self-assessment	20'	W/C/R	S - S		The pupils evaluate the global work individually and their contributions.



## SESSION-BY-SESSION PLANNING: SESSION 1

Activity 1: Before beginning with the technologic process	
<b>Activity description</b>	Apply your knowledge and reasoning to determine what description corresponds with each step of the technologic process.
<b>Outcomes</b>	<p><b>Speaking:</b> Each pupil argues his/her opinion.</p> <p><b>Writing:</b> Pupils fill in the descriptions considering their opinions.</p> <p><b>Conversation:</b> Interaction with classmates in order to fill the blanks in the correct order.</p> <p><b>Non-linguistic output</b></p>
<b>Input</b>	<p><b>Listening</b></p> <p><b>Reading:</b> Read the different phases' descriptions.</p> <p><b>Viewing</b></p> <p><b>Others</b></p>
<b>Subject-matter CONTENT</b>	Review their knowledge about the technologic process.
<b>Content-Obligatory LANGUAGE</b>	I (quite) agree/ What did you mean when you said ___?/ What do you think about ___?/ I see what you mean but in my opinion ___?/ In my opinion, ___/ What I'm trying to say is ___...
<b>Timing</b>	15'
<b>Format of interaction / Grouping</b>	<p><b>Individual work</b></p> <p><b>Peer interaction:</b> Pupils help each other while completing the activity.</p> <p><b>Teacher-led interaction</b></p>
<b>CMC</b> (Computer Mediated Communication)	
<b>Material</b>	Technical report.
<b>Assessment</b>	<p><b>Self-assessment:</b></p> <p><b>Peer assessment:</b></p> <p><b>Teacher assessment:</b> Oral revision at the end of the activity.</p>

## SESSION-BY-SESSION PLANNING: SESSION 1

Activity 2: Requirements	
<b>Activity description</b>	Describe the problem by answering some questions like: What is the problem or need?, Who has the problem or need?, Why is it important to solve? ...
<b>Outcomes</b>	<b>Speaking:</b> Pupils give their own opinion about their assigned object. <b>Writing:</b> Pupils will fill in the report. <b>Conversation</b> <b>Non-linguistic output</b>
<b>Input</b>	<b>Listening</b> <b>Reading</b> <b>Viewing</b> <b>Others</b>
<b>Subject-matter CONTENT</b>	Self-learning (improve their skills and increase their knowledge by discussing about his/her experiences).
<b>Content-Obligatory LANGUAGE</b>	I (quite) agree/ What did you mean when you said ___?/ Let me just make sure - your point is that ___/ The next aspect I'd like to consider is ___?/ In my opinion, ___/ What I'm trying to say is ___...
<b>Timing</b>	15'
<b>Format of interaction / Grouping</b>	<b>Individual work</b> <b>Peer interaction:</b> Pupils complete this activity with their own contributions by discussing. <b>Teacher-led interaction</b>
<b>CMC (Computer Mediated Communication)</b>	
<b>Material</b>	Technical report.
<b>Assessment</b>	<b>Self-assessment:</b> <b>Peer assessment:</b> <b>Teacher assessment:</b>

## SESSION-BY-SESSION PLANNING: SESSION 1

Activity 3: Research	
<b>Activity description</b>	Do a research of the topic/product in books, Internet... or ask for the opinion of professionals (the teacher).
<b>Outcomes</b>	<b>Speaking</b> <b>Writing:</b> Pupils will fill in the report. <b>Conversation</b> <b>Non-linguistic output:</b> Researching: Each pupil gives his/her information found.
<b>Input</b>	<b>Listening</b> <b>Reading</b> <b>Viewing</b> <b>Others</b>
<b>Subject-matter CONTENT</b>	Finding information in different formats.
<b>Content-Obligatory LANGUAGE</b>	
<b>Timing</b>	30'
<b>Format of interaction / Grouping</b>	<b>Individual work:</b> Each pupil uses different methods to looking for answers and shares these. <b>Peer interaction</b> <b>Teacher-led interaction:</b> Now, the teacher is like a professional who can answer technical questions.
<b>CMC (Computer Mediated Communication)</b>	Mobile or Computer
<b>Material</b>	Technical report.
<b>Assessment</b>	<b>Self-assessment:</b> <b>Peer assessment:</b> <b>Teacher assessment:</b>

## SESSION-BY-SESSION PLANNING: SESSION 2

Activity 1: Brainstorm	
<b>Activity description</b>	From the researched information, propose some possible solutions that you believe more suitable.
<b>Outcomes</b>	<b>Speaking</b> <b>Writing:</b> Pupils will fill in the report. <b>Conversation</b> <b>Non-linguistic output:</b> Thinking, Drawing and Innovating: Each pupil works his/her creativity.
<b>Input</b>	<b>Listening</b> <b>Reading</b> <b>Viewing</b> <b>Others:</b>
<b>Subject-matter CONTENT</b>	Brainstorming (discussion of proposals, sketches, ...).
<b>Content-Obligatory LANGUAGE</b>	What do you think about ___?/ That's a good idea./ Very interesting. How exactly do you propose to ___?/ In my opinion, ___/ What I'm trying to say is ___...
<b>Timing</b>	20'
<b>Format of interaction / Grouping</b>	<b>Individual work:</b> Each pupil defends his/her solution/product. <b>Peer interaction</b> <b>Teacher-led interaction:</b> Teacher walks around, interacts with them and provides feedbacks.
<b>CMC (Computer Mediated Communication)</b>	
<b>Material</b>	Technical report.
<b>Assessment</b>	<b>Self-assessment:</b> <b>Peer assessment:</b> <b>Teacher assessment:</b> Evaluate the individual contributions inside the group.

## SESSION-BY-SESSION PLANNING: SESSION 2

Activity 2: Select the best solution	
<b>Activity description</b>	Indicate the select solution and annotate the possible alternatives to the select project.
<b>Outcomes</b>	<p><b>Speaking</b></p> <p><b>Writing:</b> Pupils will fill in the report.</p> <p><b>Conversation:</b> Pupils discuss about the strong and weak points of the different solutions/products.</p> <p><b>Non-linguistic output:</b> Drawing: Each pupil works the skill and neatness with the pencil.</p>
<b>Input</b>	<p><b>Listening</b></p> <p><b>Reading</b></p> <p><b>Viewing</b></p> <p><b>Others</b></p>
<b>Subject-matter CONTENT</b>	Design (drawings, diagrams, perspective views, ...).
<b>Content-Obligatory LANGUAGE</b>	Don't you think it would be better to .... / I (quite) agree / I see what you mean but in my opinion ___? / The next aspect I'd like to consider is ___? / In my opinion, ___ / What I'm trying to say is ___...
<b>Timing</b>	40'
<b>Format of interaction / Grouping</b>	<p><b>Individual work</b></p> <p><b>Peer interaction:</b> Discuss and decide between them the best solution/product.</p> <p><b>Teacher-led interaction:</b> Modify, if need be, the drawings done for not redesign the product at the end.</p>
<b>CMC (Computer Mediated Communication)</b>	
<b>Material</b>	Technical report, square, bevel and felt-tip pen.
<b>Assessment</b>	<p><b>Self-assessment:</b></p> <p><b>Peer assessment:</b></p> <p><b>Teacher assessment:</b> Evaluate the selection's criteria.</p>

## SESSION-BY-SESSION PLANNING: SESSION 3&4

Activity 1: Justify and Build It	
<b>Activity description</b>	Explain the usefulness of the object and his functionality and the whole process' construction specifically.
<b>Outcomes</b>	<b>Speaking</b> <b>Writing:</b> Pupils redact their experiences during the built and make a budget. Pupils will fill in the report too. <b>Conversation</b> <b>Non-linguistic output:</b> Being Coordinated: Pupils learn good cooperation by working.
<b>Input</b>	<b>Listening:</b> Listen to teacher's and partner's contributions <b>Reading</b> <b>Viewing</b> <b>Others</b>
<b>Subject-matter CONTENT</b>	Learn about different methods of working in the workshop and the use of specialized tools.
<b>Content-Obligatory LANGUAGE</b>	Miter saw, handsaw, impact glue, screw, screwdriver, hammer, drill, drill bits, cardboard plates, cardboard tubes, budget...
<b>Timing</b>	80'
<b>Format of interaction / Grouping</b>	<b>Individual work:</b> Each pupil participates in different parts of the construction. <b>Peer interaction:</b> Some parts of the product need that pupils help between them. <b>Teacher-led interaction:</b> Teacher walks around, interacts with them and provides, if need be, solutions.
<b>CMC (Computer Mediated Communication)</b>	Mobile or Computer
<b>Material</b>	Technical report, calculator and the material assigned to the group for doing their product (restrictions).
<b>Assessment</b>	<b>Self-assessment:</b> <b>Peer assessment:</b> <b>Teacher assessment:</b> Evaluate the individual development during the construction of the product.

## SESSION-BY-SESSION PLANNING: SESSION 4

Activity 2: Use it	
<b>Activity description</b>	Test requires you to go out and test your final design with your users.
<b>Outcomes</b>	<b>Speaking</b> <b>Writing:</b> Pupils redact a critical analysis of the constructed object. <b>Conversation</b> <b>Non-linguistic output</b>
<b>Input</b>	<b>Listening</b> <b>Reading</b> <b>Viewing:</b> Pupils have the product in front of them and they must inspect it. <b>Others</b>
<b>Subject-matter CONTENT</b>	Verification and evaluation of the product (see if it works or not and why).
<b>Content-Obligatory LANGUAGE</b>	In my opinion, ____/ What I'm trying to say is ____...
<b>Timing</b>	20'
<b>Format of interaction / Grouping</b>	<b>Individual work:</b> Each pupil contributes with his/her particular analysis of the product. <b>Peer interaction</b> <b>Teacher-led interaction</b>
<b>CMC (Computer Mediated Communication)</b>	
<b>Material</b>	Technical report.
<b>Assessment</b>	<b>Self-assessment:</b> <b>Peer assessment:</b> <b>Teacher assessment:</b>

## SESSION-BY-SESSION PLANNING: SESSION 4

Activity 3: Review and Self-assessment	
<b>Activity description</b>	Now is necessary to be critic with the whole process and with each realized phases, indicating the negative valuations and the satisfactory aspects during the process.
<b>Outcomes</b>	<p><b>Speaking</b></p> <p><b>Writing:</b> Pupils redact a complete conclusion about the whole process.</p> <p><b>Conversation:</b> Interaction with classmates in order to try to improve the technologic process.</p> <p><b>Non-linguistic output</b></p>
<b>Input</b>	<p><b>Listening</b></p> <p><b>Reading:</b> Read their report to find any problem.</p> <p><b>Viewing</b></p> <p><b>Others</b></p>
<b>Subject-matter CONTENT</b>	Explain all the process giving more details.
<b>Content-Obligatory LANGUAGE</b>	Don't you think it would be better to .... / I (quite) agree / What do you think about ___? / I see what you mean but in my opinion ___? / In my opinion, ___ / What I'm trying to say is ___...
<b>Timing</b>	20'
<b>Format of interaction / Grouping</b>	<p><b>Individual work</b></p> <p><b>Peer interaction:</b> Pupils discuss or argue what things can be improved.</p> <p><b>Teacher-led interaction</b></p>
<b>CMC</b> (Computer Mediated Communication)	
<b>Material</b>	Technical report.
<b>Assessment</b>	<p><b>Self-assessment:</b></p> <p><b>Peer assessment:</b> Evaluate the global work individually and their contributions.</p> <p><b>Teacher assessment:</b></p>

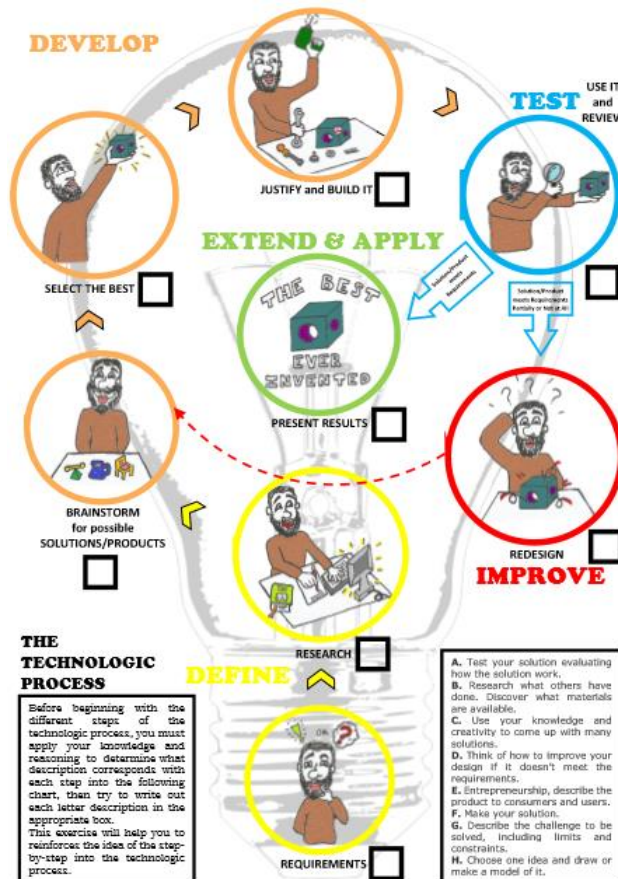




## ASSESSMENTS

(For each group/project)

### SESSION 1: Activity 1: Before beginning with the technologic process



#### SOLUTIONS:

- A. Test your solution evaluating how the solution work. *USE IT and REVIEW*
- B. Research what others have done. Discover what materials are available. *RESEARCH*
- C. Use your knowledge and creativity to come up with many solutions. *BRAINSTORM*
- D. Think of how to improve your design if it doesn't meet the requirements. *IMPROVE*
- E. Entrepreneurship, describe the product to consumers and users. *PRESENT RESULTS*
- F. Make your solution. *JUSTIFY and BUILD IT*
- G. Describe the challenge to be solved, including limits and constraints. *REQUIREMENTS*
- H. Choose one idea and draw or make a model of it. *SELECT THE BEST*

Here, the teacher argues the solutions using the different mistakes done by the pupils. IT'S NOT NECESSARY TO DO A RUBRIC.

## SESSION 2: Activity 1: Brainstorm

	4 pts - Exceeds Expectations	3 pts - Meets Expectations	2 pts - Nearly Meets Expectations	1 pts - Below Expectations.	Points
<b>Quantity of Ideas</b> How many ideas have you explored?	There are many ideas explored.	There are some ideas explored.	There are few ideas explored.	There are nearly no ideas explored.	
<b>Variety of ideas</b> Is there are a wide variety of ideas indicated in the brainstorm?	There is a very wide variety of ideas indicated in the brainstorm.	There is a variety of ideas indicated in the brainstorm.	There little variety of ideas indicated in the brainstorm.	There is no variety of ideas indicated in the brainstorm.	
<b>Depth of Detail</b> Are ideas supported with Detail?	All ideas are well supported with many details.	Most ideas are supported with details.	Some ideas are supported with detail.	Few ideas are supported with details.	
<b>Creativity of Ideas</b> Have you used your creativity to all its potential?	Writer has presented numerous creative ideas.	Writer has presented several creative ideas.	Writer has presented some creative ideas.	Writer has presented few creative ideas.	
				<b>TOTAL</b>	

**SESSION 2: Activity 2: Select the best solution**

Design Requirements and Criteria from <i>The Best Solution</i>	3 pts - Highly Achieved/Qualified	2 pts - More or Less Achieved/ Qualified	1 pts - Not Achieved/ Qualified
Requirement number 1: _____			
Requirement number 2: _____			
Requirement number 3: _____			
Requirement number 4: _____			
<b>Elegance</b> The solution is simple, clever, or ingenious			
<b>Robustness</b> The solution is sturdy, resilient and unlikely to fail			
<b>Aesthetics</b> The solution is tasteful and pleasing to look at			
<b>Cost &amp; Resources</b> You can get the materials you need			
<b>Time</b> You have time to make the solution and debug it			
<b>Skill Required</b> You have the skills to make the solution			
<b>Safety</b> The solution is safe to build, use, store and dispose of			
<b>TOTAL</b>			

### SESSION 3&4: Activity 1: Justify and Build It

	5 pts - Excellent	4 pts - Good	3 pts - Fair	2 pts - Undeveloped	1 pts - Non-Compliance	Points
<b>Job Completion</b>	The project was 100% complete and worked according to the task description.	The project was complete and worked, but needed minor modifications. Only required 2-3 modifications.	The project was complete but did not work; needed several minor modifications. Required more than 3 modifications of task but didn't impact others around him to do task severely.	The project was complete but did not work; needed several major modifications.	Students did not complete project in time period given, refused to start project or abandoned project once started.	
<b>Demonstrate Knowledge of Process</b>	Students know and are able to identify and explain necessary theories/ task for completion of the project. Rely on own memory skills to get task done.	Students are able to identify and explain necessary theories/ task for completion of the project with some assistance. Use own words to describe task.	Students are unable to identify or explain concepts without major prompting. Require teacher assistance to get job done. Use very little vocabulary to describe the task.	Students are not able to both identify and explain major theories/task. Use others views to explain the task and don't complete task on own for any of steps.	Students lacked interest in demonstrating knowledge of project and/or process.	
<b>Ability to Follow Directions</b>	Followed directions to the letter. Used others for guides.	Followed directions. Listened to others around him when needed.	Moderately followed directions. Worked at a pace that was productive but didn't listen to the adult coaching him or the customer.	Did not follow directions for any of the task and at times refused to slow down to do task well.	Students were non-compliant when given directions 100% of the time.	
<b>Level of Needed Assistance</b>	Students were able to complete the task without assistance.	Students were able to complete the task with little assistance.	Students were able to complete the task with moderate assistance.	Students were unable to complete task without major assistance.	Students refused or were unable to start the project when offered assistance/ accommodations	
<b>Time Management</b>	Routinely used time well throughout the project to get the job done on time.	Used time fairly well throughout the project.	Procrastinated somewhat but did get the job done on time.	Were unable to adequately meet timeline due to inability.	Students showed no interest in completing project on time.	

<b>Students Attitude During Project</b>	Students turned in a project they considered a reflection of their diligent efforts.	Students turned in a project they are pleased with.	Students turned in a project that is semi-decent to receive a fair grade.	Students turned in project simply to receive credit.	Students refused to complete project	
<b>Application of Safety Practices</b>	Students followed all safety rules.	Students followed most safety rules, may have forgotten one.	Students attempted to follow safety rules but failed to meet several.	Students failed to follow a significant number of safety rules.	Students was not safe enough to enter/ participate in class	
					<b>TOTAL</b>	

### SESSION 4: Activity 3: Review and Self-assessment

<b>Evaluate your partners.</b> 5 pts - Always, 4 pts - Often, 3 pts - Sometimes, 2 pts - Rarely, 1 pts - Never	Name	Name	Name	Name	Name
He/She contributes with ideas and questions					
He/She listens to the opinions of the partners					
He/She delivers in time his/her assigned work					
He/She searches and analyzes useful information for the group					
He/She encourages and motivates the partners					
His/her contribution in the final work has been important					
He/She is tolerant and respectful with the partners					
He/She facilitates the agreements and the commitments					
	<b>TOTAL</b>				

# *Technical Report*



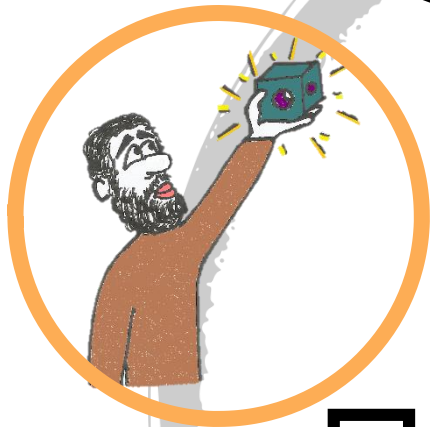
<b>PROJECT</b>						
<b>PUPIL/S</b>						
<b>PROFESSOR</b>						
<b>LEVEL AND GROUP</b>	1st ESO __	2nd ESO __	3rd ESO __	4th ESO __	1rt Hsec __	2nd Hsec __
<b>DATE OF DELIVERY</b>						



# INDEX

Before beginning...	<b>3</b>
Introduction to the technologic process	<b>4</b>
<b>DEFINE</b>	
Requirements	<b>5</b>
Research	<b>5</b>
<b>DEVELOP</b>	
Brainstorm	<b>6</b>
Select the best solution	<b>7</b>
Justify and Built it	<b>9</b>
<b>TEST</b>	
Use it	<b>13</b>
Review	<b>13</b>
<b>WORK'S ASSESSMENT</b>	<b>14</b>

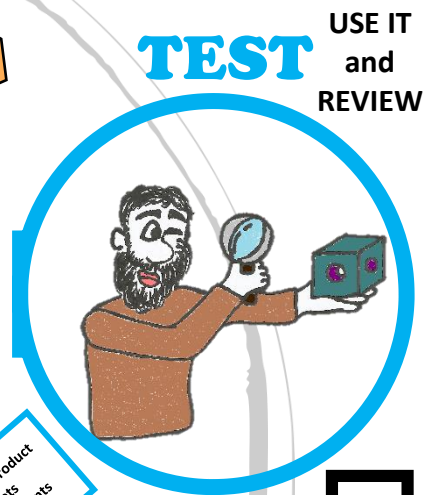
# DEVELOP



SELECT THE BEST



JUSTIFY and BUILD IT



TEST

USE IT and REVIEW

## EXTEND & APPLY



THE BEST  
EVER  
INVENTED

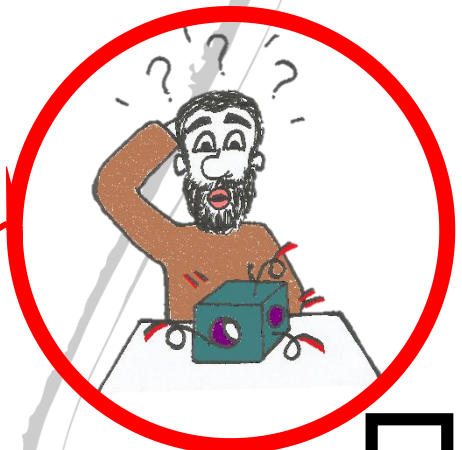
PRESENT RESULTS



BRAINSTORM  
for possible  
SOLUTIONS/PRODUCTS

Solution/Product meets Requirements

Solution/Product meets Requirements Partially or Not at All



REDESIGN

IMPROVE



RESEARCH

## DEFINE



REQUIREMENTS

### THE TECHNOLOGIC PROCESS

Before beginning with the different steps of the technologic process, you must apply your knowledge and reasoning to determine what description corresponds with each step into the following chart, then try to write out each letter description in the appropriate box.

This exercise will help you to reinforce the idea of the step-by-step into the technologic process.

- A. Test your solution evaluating how the solution work.
- B. Research what others have done. Discover what materials are available.
- C. Use your knowledge and creativity to come up with many solutions.
- D. Think of how to improve your design if it doesn't meet the requirements.
- E. Entrepreneurship, describe the product to consumers and users.
- F. Make your solution.
- G. Describe the challenge to be solved, including limits and constraints.
- H. Choose one idea and draw or make a model of it.





# **Introduction to the technologic process:**

## ***Set the Stage***

Notice that the system showed before can be used for all types of creative problem-solving, from Art to Psychology. The skills learned in Technology are useful in many facets of everyday life.

The technologic process helps engineers and other problem-solvers come up with creative solutions/products. **NOW YOU ARE AN ENGINEER.** Look for your assigned product and follow the steps to create it.



# DEFINE

## Requirements

What is? How does it work? What source of energy does it use? Principally, what materials is it made with? Which are their principal features? What needs or problems does it solve? Are there any restrictions or criteria?

## Research

Consult books, catalogues, shops and specialized trades. Do a research of the topic/product in Internet. Ask for the opinion of professionals...

## *Images*





# DEVELOP

## Brainstorm

From the researched information, propose some possible solutions that you believe more suitable. Make sure these can be done both technically and economically. And, obviously, that could develop with the material or the tools of the workshop of Technology.

## Sketches



## Select the best solution

Is it possible to realize with the means that we have? Is it viable economically? Is it the best option that meets to the requirements? Indicate the select solution and annotate the possible alternatives to the select project.

### **Sketch** (in different views)

### **Drawings and diagrams**

For a good presentation you should:

- Follow the rules for dimensioning the sketch.
- Identify the author scale plane name and date of preparation.
- Use appropriate tools ( 2H pencil , square and bevel ... ).
- Neatness.



<i>Project</i>	<i>Scale</i>
<i>Pupil(s)</i>	<i>Date</i>
<i>Professor</i>	<i>Level/ Group</i>



# Justify and Build it

## ***Specifications***

Here is explained the usefulness of the object and his functionality. To facilitate the explanation it is possible to answer to the questions of the previous paragraph of requirements as well as the advantages that it has regard to other solutions of the problem, the disadvantages that it can have or the precautions that it is necessary to have on using it.

## ***List of materials***

Here are detailed all the materials used in the montage and their quantity (kinds of wood, irons, plastic, screws, batteries, engines, clothes, specific pieces, ...). In the blank of quantity the units are specified correctly, that is, meters, cm<sup>2</sup>, kg, grams, ...

<b><i>MATERIAL</i></b>	<b><i>QUANTITY</i></b>

## ***Special materials***

For example, glues for the union of pieces, tin, all kinds of adhesives, water, alcohol, paintings, glazes, ...

<b><i>MATERIAL</i></b>	<b><i>QUANTITY</i></b>



### List of tools

Here is done a relation of all the indispensable and necessary tools to realize the assembly and the construction of the object. You must indicate in what phase each tool is used.

TOOL	PHASE

### Step-by-step project's guide

All the steps necessary are explained to be able to realize the assembly indicating the order in which it has been realized and the tools and materials used. Indicate the approximate time used.

STEP	MATERIALS	TOOLS	TIME
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
		<b>TOTAL</b>	

### Timing

Make a Gantt diagram with the actual dates of the project. Don't forget to specify what phases are precedents.

PHASE	DATES																																								



***Daily***

Compilation of what is done every day indicating: date, work done, incidents that have occurred and how they have been solved.





## **Budget**

Deduction of material cost of the project based on unit prices and quantities (in a real case you would add staff , energy , buildings ... )

	<b>MATERIAL</b>	<b>QUANTITY</b>	<b>UNIT PRICE</b>	<b>TOTAL</b>
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
			<b>TOTAL without IVA</b>	€
			<b>TOTAL with IVA</b>	€

## **Description**

Written description of the object, colour, functionality...

## **Photos**



# TEST

## Use it

Critical analysis of the functionality of the constructed object (the object built meets the initial requirements? In what evidence has been submitted? What aspects of the initial project must tweak or change to improve it? ... )

## Review

Here, in the last point, it is necessary to be critic with the whole process and with each realized phases, indicating the negative valuations and the satisfactory aspects during the process (was the research enough?, were the proposed designs enough?, were all the requirements considered in the selection of the best solution?, were the drawings or diagrams precise?, were the materials the suitable ones?, is the economic cost very high?, do we have all the necessary tools for his construction?, was the sequence of assembly correct ?, ...)



# **WORK'S ASSESSMENT**

Once finished the report, made an assessment of the percentage of work that has provided each member of the group.

<b>PUPIL(S)</b>	<b>WORK(%)</b>
	<b>100 %</b>