## THE DESIGN PROCESS

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t Served and Representation

### Designing and making a

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Topic: The Design Process.		LESSON PLAN 1	
Subject: Tecnologia Level: 4rt ESO Timing: 1session	<ul> <li>TRANSFERABLE SKILLS:</li> <li>Communicative skills: Pupils will able</li> <li>to debate and reason out with peers and the teacher</li> <li>to give their opinion about the topic</li> <li>Methodological skills: Pupils will be able</li> <li>to analyse, relate and deduce the stages and definitions of a generic design process</li> <li>Personal skills: Pupils will be able</li> <li>to take decisions</li> <li>to develop collective activity</li> </ul>		
TEACHING	eason out the design project ar	COMUNICATION	t each stage involves
OBJECTIVES	LEARNING OUTCOMES	COMONICATION	CULTURE/CITIZENSHIP
<ul> <li>A.CONTENT</li> <li>Definition of the Design Process</li> <li>Stages and correct order in D.P.</li> <li>Definition of stages</li> </ul>	stages of the D.P.	<ul> <li>Language of learning         <ul> <li>Key vocabulary: stages and process actions</li> </ul> </li> <li>Language for learning         <ul> <li>Expressing opinions and explaining</li> <li>Language through learning</li> </ul> </li> </ul>	<ul> <li>Realise that the Design Process is everywhere around them</li> </ul>
<ul> <li>B.COGNITION</li> <li>To revise some D.P. learned stages</li> <li>To identify and match stages with definitions</li> <li>To compare definitions</li> <li>To decide the suitable order</li> </ul>	<ul> <li>B.COGNITION</li> <li>Comparison between definitions and between stages.</li> <li>Matching stages and definitions</li> <li>Put in order both, stages and definitions</li> </ul>	- Asking and demanding	
• Cooperate in the gr	<b>RIA:</b> Pupils should be able to oup greements, reasoning, participat	ion/intervention	

Topic: The Design Process.		LESSON PLAN 2	
Subject: Tecnologia Level: 4rt ESO Timing: 1 session	<ul> <li>TRANSFERABLE SKILLS:</li> <li>Communicative skills: Pupils will able</li> <li>to relate explanations and give opinions</li> <li>to interpret what they are expected to do</li> <li>Methodological skills: Pupils will be able</li> <li>to transform instuctions, advice and recommendations into a challenge for their thinking skills</li> <li>Personal skills: Pupils will be able</li> <li>to create suitable groups</li> <li>P, S &amp; C SKILLS:</li> <li>Social and Civic:</li> <li>To understand the differences between their social context and other countries' ones</li> <li>To be engaged in a project to cooperate in our plural society</li> </ul>		
To enquire about the second seco	hat are they expected to do in the assessment points	· ·	
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
<ul> <li>A.CONTENT</li> <li>Skills needed for the D.P.</li> <li>The project as a summary of skills, knowledge and workgroup</li> <li>The outputs (toy, report and presentation)</li> <li>B.COGNITION</li> </ul>	Realise the work required     Language for learning     Asking any doubts     Language through learning     Language that comes out when listening to the teacher, reading		of solidarity as a
<ul> <li>To understand the aims of the project</li> <li>To form groups following the teacher's advice</li> </ul>	<ul> <li>Interpreting the aims and instructions given</li> <li>Expressing opinions</li> <li>Forming groups</li> </ul>	instructions or forming groups.	

ASSESSMENT CRITERIA: Pupils should be able to

Keep the interest and attention, to raise doubts and to form suitable groups •

Topic: The Design Process. Designing and		LESSON PLAN 3	
making a toy Subject: Tecnologia Level: 4rt ESO	<ul> <li>TRANSFERABLE SKILLS:</li> <li>Communicative skills: Pupils will able</li> <li>to interact with the group and to describe their Design Brief</li> <li>Methodological skills: Pupils will be able</li> <li>to interpret and put into practice processess of reasoning leading to solving the problem</li> <li>Personal skills: Pupils will be able</li> <li>to initiate a collective activity</li> <li>to create a collective Design Brief</li> </ul>		
<ul><li>Aims:</li><li>To learn what to take</li><li>To do their Design</li></ul>	e into account to do the Desig Brief	n Brief	
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
A.CONTENT	A.CONTENT	Language of learning	Take into account
<ul> <li>The Design Brief</li> <li>Considerations to take into account to do a design brief</li> </ul>	<ul> <li>Knowing what is and how to do a Design Brief</li> <li>Choosing the premises</li> <li>- toys vocabulary</li> <li>- existing toys real market</li> <li>- asking and demanding</li> </ul>		
<b>B.COGNITION</b>	<b>B.COGNITION</b>	Language through learning	
<ul> <li>To understand the design brief and its premises</li> <li>To apply the premises to their problem</li> </ul>	<ul> <li>Looking for a/some reason for their toy to exist</li> <li>Creating a Design Brief</li> </ul>	- language that comes out when doing tasks	
<ul> <li>ASSESSMENT CRITERIA: Pupils should be able to</li> <li>Do a suitable Design Brief using the premises</li> </ul>			

Topic: The Design Process.				
making a toy	TRANSFERABLE SKILLS: Communicative skills: Pupils will able			
Subject: Tecnologia Level: 4rt ESO	<ul> <li>to interact in their group to</li> <li>to ask and answer question</li> <li>Methodological skills: Pupils</li> <li>to assimilate the content ar</li> </ul>	analyse areas of research ns will be able… nd to apply it		
Timing: 1-2 sessions	Personal skills: Pupils will be	and make agreements		
Aims: • To find areas to res	earch by asking and attemptir	ng answers		
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP	
<ul><li>A.CONTENT</li><li>Wh- questions</li><li>The design of a mindmap</li></ul>	<ul> <li>A.CONTENT</li> <li>To reason out Wh- questions</li> <li>Learn how to do a mind map</li> <li>To interpret a mind map</li> </ul>	<ul> <li>Language of learning         <ul> <li>Wh-questions</li> <li>Mindmaping</li> </ul> </li> <li>Language for learning         <ul> <li>auxiliaries (could, should)</li> <li>pronouns (who, where, why, when, what)</li> </ul> </li> </ul>	To be aware of the importance of thorough analysis in any design and of its productivity/output.	
<b>B.COGNITION</b>	<b>B.COGNITION</b>			
<ul> <li>To analyse possible areas to research</li> </ul>	<ul> <li>To find and decide as many answers as possible to Wh- questions</li> <li>To make a mind map</li> </ul>	<ul> <li>questioning</li> <li>Language through</li> <li>learning</li> <li>language that comes out</li> </ul>		

when doing tasks

# ASSESSMENT CRITERIA: Pupils should be able to

To explain their areas

in their context

of research

Make a mindmap having answered the Wh- questions in their context •

Topic: The Design Process.		LESSON PLAN 5	
	TRANSFERABLE SKILLS: Communicative skills: Pupils will able • to interact with other people		
_ ·  •	to give accounts of experie		
Level: 4rt ESO	lethodological skills: Pupils to interpret the information	they are given	
Timing: 2 sessions P	knowledge ersonal skills: Pupils will be	ay of resources to transform in able lective research with confider	
Aims: • To find out useful in:	formation for the project		
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
A.CONTENT	A.CONTENT	■ Language of learning	• to interact out of the
Research techniques	<ul> <li>To understand the different techniques</li> <li>To realise what each technique is suitable for</li> </ul>	- measuring, experimenting, disassembling, researching, questioning, concluding	school with: - people (manufacturers, experts, common users) - real objects
B.COGNITION	B.COGNITION	Language for learning	<ul> <li>media (books, magazines, internet)</li> </ul>
<ul> <li>To think about complete research</li> <li>To assess which techniques are most advisable for certain research</li> </ul>		<ul> <li>- heading for scientific experiments</li> <li>- main sizes</li> <li>-</li> <li><b>Language through</b></li> <li>learning</li> <li>- language that comes out when doing tasks</li> </ul>	magazinos, internet)
<ul> <li>ASSESSMENT CRITERIA: Pupils should be able to</li> <li>Propose and do suitable research and to reach some conclusions</li> </ul>			

Topic: The Design Process.		LESSON PLAN 6	
Subject:       Tecnologia       Level: 4rt ESO	<ul> <li>TRANSFERABLE SKILLS:</li> <li>Communicative skills: Pupils will able</li> <li>To understand, interpret and apply the specification points and the radar chart</li> <li>Methodological skills: Pupils will be able</li> <li>To process and assimilate new knowledge, seeking and making use of guidance</li> <li>To synthesise the main points of the specification</li> <li>Personal skills: Pupils will be able</li> <li>To apply new knowledge in order to create a collective activity</li> </ul>		
<ul><li>Aims:</li><li>To learn what a Department</li></ul>	sign Specification is and how to	o do and evaluate it and finall	y to do both
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
<ul> <li>A.CONTENT</li> <li>Primary and secondary functions</li> <li>Design Specification</li> <li>Radar Chart</li> </ul>	<ul> <li>A.CONTENT</li> <li>To be aware of the importance of the secondary functions</li> <li>To understand the Design Specification points</li> <li>To know how to use a Radar Chart</li> </ul>	<ul> <li>Language of learning</li> <li>Primary and secondary functions</li> <li>specification points: materials, target market, techniques, appearance, safety aspects, sturdiness, purpose</li> <li>radar chart</li> </ul>	<ul> <li>To realise that storage, cleaning and maintenance questions (secondary functions) are included in any design</li> </ul>
<ul> <li>B.COGNITION</li> <li>To apply the content to their project</li> </ul>	<ul> <li>B.COGNITION</li> <li>To decide and write their exact points of the Design Specification</li> <li>To reason out the D.S. points</li> <li>To evaluate the Design Specification through the Radar Chart</li> </ul>	<ul> <li>Language for learning         <ul> <li>cause, result, opposition and addition conjunctions</li> </ul> </li> <li>Language through learning         <ul> <li>language that comes out when doing tasks</li> </ul> </li> </ul>	
<ul> <li>ASSESSMENT CRITERIA: Pupils should be able to</li> <li>Make and evaluate their own Design Specification using the given points and the radar chart</li> </ul>			

Topic: The Design Process.		LESSON PLAN 7	
Subject: Tecnologia Level: 4rt ESO Timing: 2 sessions	<ul> <li>To apply basic knowledge</li> <li>Methodological skills: Pupils</li> <li>To communicate informatic</li> <li>To apply strategic thinking</li> <li>Personal skills: Pupils will be</li> </ul>	ents to give and receive advice of artistic drawing to express will be able on (proposals) using drawing t and cooperation and self-eva	proposals echniques luation skills
To use suitable tec	e of appropriate solutions hniques to show the designs		1
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
<ul> <li>A.CONTENT</li> <li>Design Specification Check</li> <li>Guidelines for designing alternative proposals</li> </ul>	<ul> <li>A.CONTENT</li> <li>To understand the D.S. checking</li> <li>To understand the guidelines to do the alternative proposals</li> </ul>	<ul> <li>Language of learning         <ul> <li>perpective drawing</li> <li>freehand sketching</li> <li>brainstorming</li> <li>orthographic projections</li> </ul> </li> <li>Language for learning         <ul> <li>advantages and</li> <li>disadvantages</li> </ul> </li> </ul>	<ul> <li>To Appreciate peers' advices as a key to take into account when improving own first design</li> <li>To help other colleagues by giving our personal improvements to their</li> </ul>
<b>B.COGNITION</b>	B.COGNITION	- shapes, functions, users, colours	designs
<ul> <li>To take into account peers' suggestions</li> <li>To apply the guidelines to all the alternative solutions</li> </ul>		<ul> <li>Language through learning</li> <li>language that comes out when doing tasks</li> </ul>	
<ul> <li>ASSESSMENT CRITERIA: Pupils should be able to</li> <li>Design accurately three alternative proposals which matche the Design Specification</li> </ul>			

Topic: The Design Process.				
Subject:	RANSFERABLE SKILLS: Communicative skills: Pupils will able To relate previous observations and explanations and to develop argument To use language as an object of observation and analysis			
Timing: 2 sessions	<ul> <li>To use language as an object of observation and analysis</li> <li>To apply the orthographic projection technique and conventions to the drawings</li> <li>Methodological skills: Pupils will be able</li> <li>To process and assimilate intellectual skills making use of the guidance</li> <li>To activate thinking skills in order to organise, analyse and synthesise</li> <li>Personal skills: Pupils will be able</li> <li>To develop collective projects</li> </ul>			
Aims: • To make an argue	d decision and to expose all the	e information that the final pro	posal will include	
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP	
A.CONTENT	A.CONTENT	Language of learning		
<ul> <li>Ways to develop a design</li> </ul>	<ul> <li>To understand the different ways to develop a realistic solution</li> <li>To understand how to examine and explain all the items</li> </ul>	<ul> <li>orthographic projections, dimensioning rules</li> <li>components</li> <li>mechanisms for movement transmission (pulleys, gears)</li> <li>Language for learning</li> <li>argumentation</li> <li>cause and consequence</li> </ul>		
<b>B.COGNITION</b>	B.COGNITION			
<ul> <li>To argue/justify a decision</li> <li>To develop the realistic solution</li> </ul>	<ul> <li>To choose a solution</li> <li>To argue l'elecció</li> <li>To explain accurately all the items (components, materials, sizes, methods of construction and</li> </ul>	<ul> <li>Language through</li> <li>learning</li> <li>specific methods of construction, electric circuits and assembling that come out when</li> </ul>		

preparing the solution

ASSESSMENT CRITERIA: Pupils should be able to

•

• argue their decision and to develop a real solution with all the items needed

assembling)

To illustrate the toy

an orthographic projection to scale

and its components by

Topic: The Design Process.		LESSON PLAN 9	
Subject: Tecnologia Level: 4rt ESO Timing: 2 sessions	<ul> <li>TRANSFERABLE SKILLS:</li> <li>Communicative skills: Pupils will able</li> <li>To interpret and develop diferent kinds of charts</li> <li>To express their explanations and thoughts in order and acurately</li> <li>Methodological skills: Pupils will be able</li> <li>To deduct, classify and organize the information</li> <li>To apply strategic thinking and cooperation skills</li> <li>Personal skills: Pupils will be able</li> <li>Develop activities with confidence, responsibility and critical thinking</li> </ul>		
Aims: • planning a making	process	1	1
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
<ul><li>A.CONTENT</li><li>The work chart</li><li>The flow chart</li></ul>	A.CONTENT     To understand the work and flow chart	Language of learning - work chart, processes, tools, materials and machines	<ul> <li>to realise the need of being observant and accurate in planning in order to save manufacturing effort</li> </ul>
B.COGNITION	B.COGNITION	<ul> <li>Language for learning</li> <li>specific processes of</li> </ul>	
To use the work and flow chart to plan their making process	<ul> <li>To decide the different steps to make their toy</li> <li>To arrange the best order to follow in the making</li> <li>To plan for each step the materials, tools, machines and timing</li> <li>To produce the flow chart</li> </ul>	<ul> <li>making (moulding plastics, fittings) and specific devices (holding devices, marking out tools, shaping tools)</li> <li>Language through learning</li> <li>language that comes out when doing tasks</li> </ul>	
ASSESSMENT CRITERIA: Pupils should be able to Make a work chart and a flow chart of their making process			

Topic: The Design Process.		LESSON PLAN 10	
making a tov	<ul> <li>TRANSFERABLE SKILLS:</li> <li>Communicative skills: Pupils will able</li> <li>To use language as a tool to show the observations and experiences</li> <li>Methodological skills: Pupils will be able</li> <li>To transform information into an object</li> </ul>		
Subject: Tecnologia			
Level: 4rt ESO	To apply their technical skil Personal skills: Pupils will be		
Timing: 7 sessions		sponsibility to deal with the ma	aking process
Aims: • to make a toy with o	cooperative work		
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
A.CONTENT	A.CONTENT	■ Language of learning	To realise how     difficult it is to
<ul> <li>The log book</li> <li>The writing down of the difficulties and comments</li> <li>The real timing</li> </ul>	<ul> <li>To be aware of the necessity of writing down all the difficulties found in the making process</li> </ul>	<ul> <li>the log book</li> <li>Language for learning</li> <li>explaining and solving</li> <li>problems</li> </ul>	<ul> <li>manufacture even a simple toy</li> <li>To be aware of how long it takes to finish all the processes implied</li> </ul>
<b>B.COGNITION</b>	<b>B.COGNITION</b>	Language through learning	<ul> <li>To appreciate accurate work and</li> </ul>
<ul> <li>To use the new inputs for their making</li> </ul>	<ul> <li>To make their toy following their charts</li> <li>To note the problems and the chosen solutions</li> <li>To note the real timing in the work chart</li> </ul>	- language that comes out when doing tasks	cooperative work
ASSESSMENT CRITERIA: Pupils should be able to			

ASSESSMENT CRITERIA: Pupils should be able to

• To make their toy following the planning, writing down the difficulties and the solutions adopted and working cooperatively in the group

Topic: The Design Process.	LESSON PLAN 11	
Designing and making a toy	TRANSFERABLE SKILLS: Communicative skills: Pupils will able	
<b>Subject:</b> Tecnologia	<ul> <li>To interact with other people</li> <li>To interpret some situations they can encounter in everyday context</li> <li>Methodological skills: Pupils will be able</li> </ul>	
Level: 4rt ESO	<ul> <li>To transform information into knowledge activating thinking skills in order to organize, relate and deduce</li> </ul>	
Timing: 1-2sessions	<ul> <li>Personal skills: Pupils will be able</li> <li>To initiate, create and develop an individual and collective activity</li> </ul>	

#### Aims:

• To have an objective assessment of our toy through the testing process

A.CONTENTA.CONTENTLanguage of learning - testing, simulating and usingAppreciate the collaboration of other people in their testing stage• Testing methods • Objective assessment• To understand the testing methods• Language of learning - testing, simulating and using• Appreciate the collaboration of other people in their testing stage• To realise what is an objective assessment• To realise what is an objective assessment• Language for learning - assessment utterances - likes and dislikes • Language through learning - language that comes out when doing tasks• Realise the need for being observant and collaborative with other people• To apply the testing methods • To apply the testing to their toy tests • To ask somebody to use the toy under real conditions • To do some simulations • To summarize the whole assessment• To summarize the whole assessment• Appreciate the collaboration of other people in their testing stage • Realise the need for being observant and collaborative with other people	TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
<ul> <li>Testing methods</li> <li>Objective assessment</li> <li>To understand the testing methods</li> <li>To realise methods</li> <li>To realise what is an objective assessment</li> <li>To realise what is an objective assessment</li> <li>B.COGNITION</li> <li>To test that the toy methods</li> <li>To test that the toy methods</li> <li>To test that the toy methods</li> <li>To apply the testing methods</li> <li>To apply the testing methods</li> <li>To ask somebody to use the toy under real conditions</li> <li>To do some simulations</li> <li>To summarize the</li> </ul>		A.CONTENT		Appreciate the
<ul> <li>To apply the testing methods</li> <li>To test that the toy meets all the specifications</li> <li>To synthesize the obtained assessment</li> <li>To do some simulations</li> <li>To summarize the</li> </ul>	Objective	<ul><li>testing methods</li><li>To realise what is an</li></ul>	<ul> <li>testing, simulating and using</li> <li>Language for learning</li> <li>assessment utterances</li> <li>might/could phrases</li> <li>likes and dislikes</li> <li>Language through learning</li> <li>language that comes out</li> </ul>	<ul><li>people in their testing stage</li><li>Realise the need for being observant and</li></ul>
<ul> <li>To apply the testing methods</li> <li>To test that the toy meets all the specifications</li> <li>To synthesize the obtained assessment</li> <li>To do some simulations</li> <li>To summarize the</li> </ul>	<b>B.COGNITION</b>	<b>B.COGNITION</b>		other people
	<ul><li>methods</li><li>to their toy tests</li><li>To synthesize the obtained</li></ul>	<ul> <li>meets all the specifications</li> <li>To ask somebody to use the toy under real conditions</li> <li>To do some simulations</li> <li>To summarize the</li> </ul>		

#### ASSESSMENT CRITERIA: Pupils should be able to

• Get an objective assessment by setting up some simulations, asking people to use it and test whether the toy meets all the requirements of the Specification

Topic: The Design Process.	LESSON PLAN 12		
Designing and making a toy	TRANSFERABLE SKILLS: Communicative skills: Pupils will able		
<b>Subject:</b> Tecnologia	<ul> <li>To relate observations, explanations and thoughts and to give accounts of evaluation experiences</li> <li>Methodological skills: Pupils will be able</li> </ul>		
Level: 4rt ESO	• To gain, process and assimilate new knowledge as well as seek and make use of guidance		
Timing: 1 sessions	<ul> <li>Personal skills: Pupils will be able</li> <li>To develop and assess individual and collective evaluation with critical thinking</li> </ul>		

Aims:

• To make a thorough evaluation of the toy

TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP
A.CONTENT	A.CONTENT	<ul> <li>Language of learning         <ul> <li>evaluation</li> <li>summary</li> </ul> </li> <li>Language for learning         <ul> <li>questions</li> <li>Language through learning</li> <li>language that comes out when doing tasks</li> </ul> </li> </ul>	• to appreciate the collaboration of other people in their evaluation stage
<ul> <li>suitable evaluation questions</li> <li>summarize the evaluation</li> </ul>	<ul> <li>to understand the evaluation questions</li> <li>to know how to summarize the variability of suggestions</li> </ul>		
<b>B.COGNITION</b>	<b>B.COGNITION</b>		
<ul> <li>to apply evaluation questions</li> <li>to synthesize the information and suggestions obtained</li> </ul>	<ul> <li>to ask themselves and other peers the evaluation questions</li> <li>to write down the summary of the evaluation</li> </ul>		

ASSESSMENT CRITERIA: Pupils should be able to

• To get an evaluation which includes own and others' opinions, suggestions and possible improvements

Topic: The Design Process.	LESSON PLAN 13				
Subject: Tecnologia Level: 4rt ESO Timing:	<ul> <li>TRANSFERABLE SKILLS:</li> <li>Communicative skills: Pupils will able</li> <li>To use the communicative resources to do an oral presentation of the process</li> <li>To interact with the rest of the group in an adequate way</li> <li>Methodological skills: Pupils will be able</li> <li>To communicate information using ICT support</li> <li>To handle effectively an array of resources to transform information in personal knowledge</li> <li>Personal skills: Pupils will be able</li> <li>To be creative and confident in the group activity</li> </ul>				
TEACHING OBJECTIVES	LEARNING OUTCOMES	COMUNICATION	CULTURE/CITIZENSHIP		
<ul> <li>A.CONTENT</li> <li>The design of the power point presentation</li> <li>The oral presentation</li> <li>B.COGNITION</li> <li>to apply specified points to their presentation</li> </ul>	<ul> <li>A.CONTENT</li> <li>To be familiar with power point presentation</li> <li>To learn the most important points to take into account in an oral presentation</li> <li>B.COGNITION</li> <li>To design a power point that includes the whole Design Process</li> </ul>	<ul> <li>Language of learning         <ul> <li>power point</li> <li>oral presentation</li> </ul> </li> <li>Language for learning         <ul> <li>exposition? phrases</li> <li>time words and phrases</li> <li>signals of organisation (firstly, secondly, the result is)</li> </ul> </li> <li>Language through learning         <ul> <li>language that comes out</li> </ul> </li> </ul>	To share own work with the rest of the class		
	To do an oral presentation of their process  RIA: Pupils should be able to poral presentation of their Desi	when doing tasks	nt		