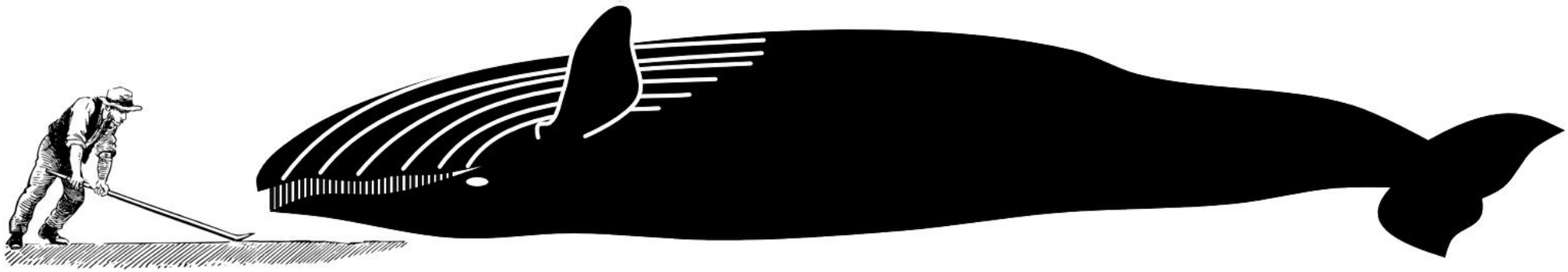
HOW CAN YOU BRING A STRANDED WHALE BACK TO THE SEA?



M. Cruz González / Josep M. Teixidó

GEP 2

LED CLIL-SI

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

PROJECT PLANNING TEMPLATE for CLIL and Content-Rich Environments

Identification of the GEP project:

Title	**How can we help whales?**
Authorship (tandem)	**Mari Cruz González & Josep Teixidó**
School	**Escola Pont de l'Arcada**
Students' CEFR Level (A1, A2...)	**A1**
Grade	**primary 5 & primary 6**
Content area(s)	**Science**
Number of sessions (4, 6 or 9)	**6 sessions**
Teacher(s) involved	**2 teachers: Josep M. Teixidó and Mari Cruz González**
Key words	**forces, machines**

1. OUR PROJECT

Introduction:
We have to work with our students the content block about forces and machines. In order to find a driving question we thought that we need something that our students have to move from one place to another. Then we found news related to stranded whales, and we realized that this was our perfect goal.

Driving question:
HOW CAN YOU BRING A STRANDED WHALE BACK TO THE SEA?

Final product:
A scale model of a machine to move stranded whales from the sand to the sea.

2. GOALS	2. HOW DO YOU KNOW STUDENTS ARE MAKING PROGRESS? (assessment criteria)
1. To exemplify different force types: contact forces, gravity.	- Students can apply concepts of motion and force. - Students can name forces: gravity, magnetism. - Students can match different types of forces with objects / actions.
2. To know simple machines: wheel, pulley, lever, inclined planes, wedge, screw; and how they work.	- Students can name simple machines. - Students can identify simple machines in daily objects and classify them. - Students can explain to their peers how a simple machine works.

3. To design their own compound machine using simple machines.	- Students can add simple machines to build a compound one. - Students can describe the process of building a machine. - Students can explain how their machine works. - Students can make suggestions to improve their mates machines.
4. To show an active attitude when working in groups.	- Students can come to agreements when working in group. - Students can share tasks when working.

3. CURRICULUM CONNECTIONS
SPECIFIC COMPETENCES AND KEY CONTENTS

Subject-matter curriculum		Foreign language curriculum	
Specific Competences	**Key Contents**	**Specific Competences**	**Key Contents**
• Competència 9. Utilitzar materials de manera eficient amb coneixements científics i criteris tecnològics, per resoldre situacions quotidianes . • Competència 10. Dissenyar màquines simples i utilitzar aparells de la vida quotidiana de forma segura i eficient.	- Realització d'un treball d'investigació a partir del plantejament de qüestions i problemes rellevants de l'entorn, mitjançant el treball cooperatiu i a partir de l'experimentació i l'ús de diferents fonts d'informació. - Comunicació de les informacions obtingudes utilitzant diferents llenguatges. - Anàlisi dels efectes d'una força o diferents forces sobre un objecte.	• Competència 1. Obtenir informació bàsica i comprendre textos orals, senzills o adaptats, de la vida quotidiana,dels mitjans de comunicació i de l'àmbit escolar • Competència 2. Planificar i produir textos orals breus i senzills adequats a la situació comunicativa • Competència 3. Emprar estratègies d'interacció oral d'acord amb la situació comunicativa per iniciar, mantenir i acabar el discurs.	- Comprensió d'instruccions de treball i d'actuació a l'aula. - Lectura de textos de tipologia diversa, en suport paper i digital, per copsar el sentit general i extreure'n informació específica. - Identificació del lèxic i d' expressions bàsiques d'un tema específic. - Comprensió global i específica de textos orals de tipologia diversa en diferents suports i formats, i extracció

	Aplicació a l'estudi de màquines simples que s'utilitzen habitualment a l'escola o a casa. - Argumentació oral i escrita de les propostes de solució del treball d'investigació. - Cerca i contrast d'informació en diferents suports (lectura de textos científics, d'imatges, gràfics...). - Valoració de l'impacte del desenvolupament tecnològic en les condicions de vida i en el treball.	• Competència 4. Aplicar estratègies per obtenir informació bàsica i comprendre textos escrits senzills o adaptats de la vida quotidiana, dels mitjans de comunicació i de l'àmbit escolar • Competència 5. Interpretar els trets visuals, discursius i lingüístics bàsics d'un text d'estructura clara per comprendre'l. •Competència6. Utilitzar eines de consulta per accedir a la comprensió de textos. • Competència 7. Planificar textos senzills a partir de la identificació dels elements més rellevants de la situació comunicativa. • Competència 8. Produir textos senzills amb adequació a la situació comunicativa i amb l'ajut de suports. • Competència 9. Revisar el text per millorar-lo en funció de la situació comunicativa amb l'ajut de suports específics.	d'informació per a la realització d'una tasca concreta o com a reforç/ampliació dels coneixements. - Producció de missatges d'intercanvi social a l'aula i relacionats amb contingut temàtic: preguntes, respostes, instruccions de treball… - Exposició oral individual o en grup de temes treballats i utilitzant suports visuals i digitals. - Producció d'un guió escrit per preparar l'exposició oral. - Reconeixement i ús de lèxic, formes i estructures bàsiques pròpies de la llengua estrangera. - Formes verbals adequades al tipus de text: present simple. - Connectors: first, in second place, to conclude, in addition ...

4. 21st CENTURY COMPETENCIES			
Collaboration	x	Information, media and technology	**x**
Communication	x	Leadership & Responsibility	**x**
Critical Thinking and Problem Solving	x	Initiative & Self-direction	**x**
Creativity & Innovation	x	Social & Cross-cultural	**x**

5. KEY COMPETENCES			
Communicative, linguistic and audiovisual competence	X	Digital competence	x
Mathematical competence		Social and civic competence	
Interaction with the physical world competence	X	Learning to learn competence	x
Cultural & artistic competence	x	Personal initiative and entrepreneurship competence	x

6. CONTENT (Knowledge and Skills)

CONTENT-RELATED KNOWLEDGE	CONTENT-RELATED SKILLS
- Machines : load, effort, fulcrum, lever, inclined plane, first class lever, second class lever, third class lever, wheel, axle, pulley,... -Definition of machine. -Identify simple and compound machines in their home and school. -Archimedes theory.	-Make predictions about the movement of the effort and the load in a simple machine. -Grade the difficulty of inventing a machine. -How to cooperate when working is pairs or threes to built a compound machine. -Matching definitions with meanings. -Classify and identify the different simple machines. -Realize the importance of Archimedes theories in physics. -To make predictions and checking (I/We think that the directions of the effort/force/load will… /I/we have checked that …. -Give reasons (Do you think….? Why? Because…) -To explain how it is their machine and how it works: It has/ It can /It is used for… -Extracting the main information from a text.

7. REFERENCES

8. COMMENTS (optional)

9. ACKNOWLEDGEMENTS (optional)

Skills: R: reading , S:speaking, L: listening, W: writing, I: Interaction
Interaction: T-S: teacher-student, S-S: student-student, SG: small groups, WG: whole group, S-Expert, S-World
Assessment: PA: Peer assessment, SA: Self-assessment, TA: Teacher assessment, AT: Assessment tools

10. UNIT OVERVIEW

Session	Activities	Timing	Skills	Interaction	ICT	Assessment
1	MAKING GROUPS	5'	S	SG	-	-
	RUNNING DICTATION	25'	S W	SG WG	-	-
	DEFINITION OF FORCES	35'	R	SG	-	-
	SHARING OPINIONS	20'	S	WG	-	*TA*
	FORCES IN ACTION	10'	I	SG	*Y*	-
2	LET'S START	10'	L W I	SG	-	-

	INVENTIONS AND INVENTORS	10'	L	S-S WG	Y	TA
	SIMPLE MACHINES ALL THE CLASS AROUND	20'	S	WG	-	TA
	MAKING GROUPS	5'	I	SG	-	-
	PREPARE EXPOSITION	55'	R W I	SG	Y	-
3	EXPOSITION PRACTICE	20'	S	SG	-	-
	ORAL EXPOSITIONS	40'	S L	WG	Y	PA
	EXPOSITION ASSESSMENT	20'	S W	SG	-	SA
	SIMPLE MACHINES VIDEO	10'	L	WG	Y	-
4	STRANDED WHALES NEWS	25'	R	-	Y	-
	MAKING PAIRS to DISCUSS	10'	S	S-S	Y	-

	FISHBOWL	20'	S	WG	-	TA
	SAVE A WHALE DRAWING	15'	-	-	-	TA
	COMPLEX MACHINES	5'	L	T-S	-	-
	ANALYZING MACHINES	15'	W	-	-	TA AT
5	FINAL PRODUCT	10'	L	T-S	-	-
	MAKING GROUPS	15'	L	T-S WG	-	-
	DESIGNING THE MACHINE	20'	I	SG	-	-
	BUILDING THE MODEL	45' *	I	SG	-	-
	PREPARE A PRESENTATION		I	SG	Y	TA
6	SHOW UP YOUR MACHINES	45'	S	WG	Y	TA
	ORAL VALUATION		S	WG	-	-
	PROJECTS ASSESSMENT	10'	I	SG	-	PA AT

	PROJECT REVISION	15'	I	SG	-	PA TA
	SELF - ASSESSMENT	10'	R	-	-	SA

11. SESSION PLANNING

SESSION 1: FORCES ALL AROUND

Objectives of the session: To exemplify different force types: gravity, magnetism, electricity.

Content-obligatory language for the session: force, contact forces, non-contact forces, friction, pull, push, gravity, magnetism

	Activities *include : Name and description; Assessment tool (if any); Material (including language support)*					
1.1	MAKING GROUPS. We take a deck of cards and select 18 of them to make groups of 3-4 pupils. give one card to every pupil, they have to regroup according to the number in the card they have received.	5'	S	SG	-	-
1.2	RUNNING DICTATION: we give every group an **EMPTY GRID** (in A3 size) that have to fill with vocabulary of forces (8 words). We hide the 8 vocabulary words all the class around, and groups have to find them and write down. Groups have to follow these rules: 1- a single pupil standing every time; 2 - one word every time, 3 - pupil who reads the word can't write it down, he has to dictate. When all groups have finished, we all together check the completed grids paying attention to the spelling. Once words are clear, we will ask them to find relations between them.	25'	S W	SG WG	-	-
1.3	DEFINITION OF FORCES: teachers give **WRITTEN DEFINITIONS** to every group (print in A3). They have to read definitions and match them with the vocabulary, to fill out the empty table.	30'	R	SG	-	-

1.4	SHARING OPINIONS. All together share the full table. Students have to share their opinions to find the correct links (vocabulary - definitions). On the whiteboard teachers write the structures that pupils have to use: **I THINK THAT …… BECAUSE …** **I AGREE / DISAGREE WITH …** When finally we have found the correct matches, teachers give every student a **COMPLETE GRID** with vocabulary and definitions.	20'	S	WG	-	*TA*
1.5	FORCES IN ACTION: We will ask them to take pictures in groups, performing actions of pull, push, friction, gravity … Then we will show the pictures in the digital whiteboard and every group has to identify the force represented in the photos that their partners took.	10'	I	SG	*Y*	-

	SESSION 2: SIMPLE MACHINES *Objectives of the session*: To know simple machines: wheel, pulley, lever, inclined planes, wedge, screw; and how they work.					
	Content-obligatory language for the session: simple machine, wheel (friction - axel), pulley (change direction, lift, rope), inclined plane (force angle, length), lever (fulcrum or pivot point, stick, 1st class, 2nd class, 3rd class), wedge (sharp wedge), screw (threats, rotation).					
	Activities *include : Name and description; Assessment tool (if any); Material (including language support)*					
2.1	LET'S START We start this session asking them if they know what is an inventor or if they know anyone that has invented something. Maybe they have done it? To introduce machines we are making a DICTOGLOSS. **We make 3 groups of 6 pupils** (according to the month of the year they were born we order them from the oldest to the yourger). Every group receives the **IMAGES** related to the text, and they have to order it, meanwhile the teacher reads the **TEXT**. Groups have rewrite the text they have heard with images help and after that we share with all the class.	10'	L W I	SG	-	-
2.2	INVENTORS AND INVENTIONS After reading the text we give them the **GRID** with inventors and inventions, and we tell them to work in couples and to try to match names, pictures and inventions. In a few minutes we will saw	10'	L	S-S WG	Y	TA

	this **VIDEO** and they have to fill up the QUIZ matching pairs of inventors and inventions. Maybe we can saw the video twice. Finally we check the quiz all together.					
2.3	SIMPLE MACHINES ALL THE CLASS AROUND: we hide **18 PICTURES OF SIMPLE MACHINES** all the class around. Pupils have to find all them and place them in a table in the middle of the classroom. Teachers suggest grouping pictures according to their own criteria. Every pupil can explain their criteria to regroup the pictures, showing similarities and differences. To help them we give some **STRUCTURES TO COMPARE & VOCABULARY** related to machines.	20'	S	WG	-	TA
2.4	MAKING GROUPS: after talking about pictures and their characteristics every pupil has to pick up one. There are 6 types of simple machines and 3 pictures of every kind. Teachers show the **TABLE WITH THE 18 IMAGES OF THE MACHINES CLASSIFIED** in the digital whiteboard, and groups are suddenly done.	5'	I	SG	-	-
2.5	PREPARE EXPOSITION: every group receives a sheet that includes **TEXT AND SOME INSTRUCTIONS**. Using them and the pictures that they also have, they must prepare a mind map with *Popplet* (Ipad App). This mind map has to be used to guide the exposition to explain the simple machine type they have to other groups. At the end of the session every group has to mail the mindmap to teachers.	45'	R W I	SG	Y	-

SESSION 3: SIMPLE MACHINES II

Objectives of the session: To explain simple machines: wheel, pulley, lever, inclined planes, wedge, screw; and how they work.

Content-obligatory language for the session: simple machine, wheel (friction - axel), pulley (change direction, lift, rope), inclined plane (force angle, length), lever (fulcrum or pivot point, stick, 1st class, 2nd class, 3rd class), wedge (sharp wedge), screw (threats, rotation).

	Activities *include : Name and description; Assessment tool (if any); Material (including language support)*					
3.1	EXPOSITION PRACTICE: Teachers return pupils the mindmaps they did last session, they will have some minutes to revise them. They have to practice their oral exposition using their mindmap as a guide.	20'	S	SG	-	-
3.2	ORAL EXPOSITIONS: each group will do the oral exposition about their simple machine projecting their mindmap in the digital whiteboard. The rest of the groups listen to expositions and give feedback and the end. We give pupils a **CONTROL GRID** to give feedback to their partners oral expositions.	40'	S L	WG	Y	PA
3.3	EXPOSITION ASSESSMENT: each group will receive feedback from the rest of the groups and will make a self- assessment, with teachers guidance. The will have to opportunity to make some changes in their mindmap if they think it is necessary.	20'	S W	SG	-	SA
3.4	SIMPLE MACHINES VIDEO: To conclude the session we will watch a video about simple machines: https://www.youtube.com/watch?v=UtfVZtuyuHU	10'	L	WG	Y	-

	SESSION 4: INTRODUCING COMPLEX MACHINES *Objectives of the session*: 1-To discuss about a concrete example where machines can be used. 2- To apply the knowledge of simple machines to give a solution to a problem. 3 - To find simple machines in compound objects.					
	Content-obligatory language for the session: simple machines (lever, pulley, etc …), compound machine, stranded whale, crane, windmill, global warming,					
	Activities *include : Name and description; Assessment tool (if any); Material (including language support)*					
4.1	STRANDED WHALES NEWS: teachers give to students several **LINKS WITH NEWS TO READ** about stranded whales all around the world. Using computers they have to revise these links (or even more if they find other links) and **EXTRACT SOME INFORMATION**.	25'	R	-	Y	-
4.2	MAKING PAIRS to DISCUSS: we use **INSTANT CLASSROOM** to make groups of 2 pupils. Then we give every pair a **LANGUAGE SUPPORT SHEET**, to help them to talk about the news they have read and share their opinions about causes.	10'	S	S-S	Y	-
4.3	FISHBOWL: after talking in pairs, teachers explain pupils the fishbowl dynamics. Using the **LANGUAGE SUPPORT SHEET**, they have to discuss.	20'	S	WG	-	TA
4.4	SAVE A WHALE DRAWING: We ask each student to imagine how they will bring back a stranded whale to the sea, using simple machines. They have to remember all what they have learned	15'	-	-	-	TA

	about simple machines and apply in their drawing. Teacher will pick up the drawings after listening pupils explanation on how their machine works. **SAVE A WHALE WITH SIMPLE MACHINES DRAWING**.					
4.5	COMPLEX MACHINES: teachers will show the drawings in the class and ask pupils if it was easy to bring back the whales to the sea using a simple machine. Then we introduce de explain compound machines: just the sum of several simple machines.	5'	L S	T-S	-	-
4.6	ANALYZING MACHINES: we give pupils a **LIST OF PICTURES OF COMPOUND MACHINES**. They have to fill up the grid individually with the simple machines that they can discover in every compound machine.	15'	W	-	-	TA AT

	SESSION 5: LET'S BUILD A MACHINE *Objectives of the session*: 1- To design a compound machine using simple machines. 2- To elaborate a presentation that shows the process of creating a machine.					
	Content-obligatory language for the session: step by step of their models, simple and compound machines.					
	Activities *include : Name and description; Assessment tool (if any); Material (including language support)*					
5.1	FINAL PRODUCT: we bring to the class 3 whale scale models (toys) and explain pupils that they have to build a compound machine to move the whales back to the sea. They have to design the machine, build it with real materials and document all the process to make a presentation of how the machine works to their mates.	10'	L	T-S	-	-
5.2	MAKING GROUPS: teachers make a raffle to make groups. Write down the names of each pupil, and put them in six different bowls according to the members of the 6 groups of simple machines. Then we pick up one name of every bowl and distribute them in a **CHART DRAW**, to make 3 groups. So, each group will include one specialist of every simple machine.	15'	L	T-S WG	-	-
5.3	DESIGNING THE MACHINE: They must design a compound machine that includes several simple machines. The first step is to create a outline of the machine.	20'	I	SG	-	-

5.4	BUILDING THE MODEL: We carry large numbers of materials in the classroom: rubbers, cardboards, boards, posts, etc. and tools: scissors, cutters, saw, hammer ... *This activity will take more than one session, they will we working in their models and presentations.	45' *	I	SG	-	-
5.5	PREPARE A PRESENTATION: meanwhile they're designing and building the model, they have to take pictures to document all the process. At the end they will have to prepare a presentation with the photos explaining what they did. They will use this **LANGUAGE SUPPORT** to prepare the presentation with **GOOGLE SLIDES**. *This activity will take more than one session, they will we working in their models and presentations.		I	SG	Y	-

	SESSION 6: SHOW UP YOUR MACHINES *Objectives of the session*: To explain to the class the model of a compound machine and the elaboration process.					
	Content-obligatory language for the session: Asking doubts; making suggestions;					
	Activities *include : Name and description; Assessment tool (if any); Material (including language support)*					
6.1	SHOW UP YOUR MACHINES: Every group shows their model to the class, using the presentations that they have prepared.	45'	S	WG	Y	TA
6.2	ORAL EVALUATION: Members of the other groups have to ask questions about projects, using this **LANGUAGE SUPPORT**.		S	WG	-	-
6.3	PROJECTS ASSESSMENT: At the end of every presentation, each group will assess the projects of the other groups. To do it they will use this **ASSESSMENT GRID**.	10'	I	SG	-	PA AT
6.4	PROJECT REVISION: After all presentations are shown, groups will have time to review the assessments that other groups made of their model and presentation. Teachers will review with them to make a final evaluation.	15'	I	SG	-	PA TA
6.5	SELF - ASSESSMENT: To end the unit, every pupil has to auto - assess his own work. They will have to give a **PERSONAL EVALUATION** of the use of english, cooperative work and knowledges.	10'	R	-	-	SA

ACTIVITY 1.2

FORCES VOCABULARY - EMPTY GRID

1 -

2 -

3 -

4 -

5 -

6 -

7 -

8 -

ACTIVITY 1.3 FORCES VOCABULARY - WRITTEN DEFINITIONS

It is any influence that causes a free body to undergo a change in SPEED, a change in DIRECTION, or a change in SHAPE.	It is a force that acts at the POINT of CONTACT between two objects.	It's a force that can move something TOWARDS FROM something / somebody.
The rubbing force of ONE OBJECT AGAINST ANOTHER produces in moving objects go slowly.	It is a force applied to an object by another body that is NOT in DIRECT CONTACT with it.	It's a force that can move something AWAY FROM something / somebody.
It's a force that pulls all objects towards CENTER of EARTH.		Force of attraction or repulsion acting between MAGNETIC MATERIALS like iron.

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1 - FORCE

It is any influence that causes a free body to undergo a change in SPEED, a change in DIRECTION, or a change in SHAPE.

2 - CONTACT FORCES

It is a force that acts at the POINT of CONTACT between two objects.

3 - PULL

It's a force that can move something TOWARDS FROM something / somebody.

4 - PUSH

It's a force that can move something AWAY FROM something / somebody.

5 - FRICTION

The rubbing force of ONE OBJECT AGAINST ANOTHER produces in moving objects go slowly.

6 - NON-CONTACT FORCES

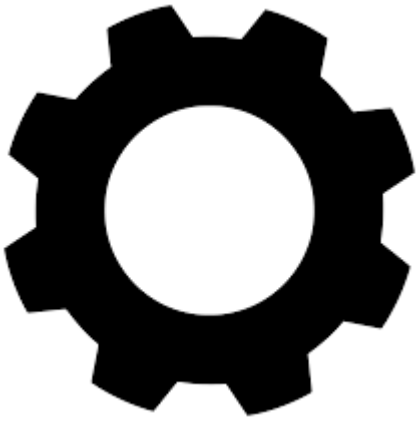
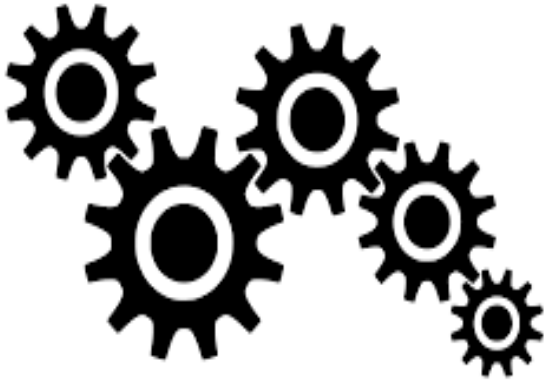
It is a force applied to an object by another body that is NOT in DIRECT CONTACT with it.

7 - GRAVITY

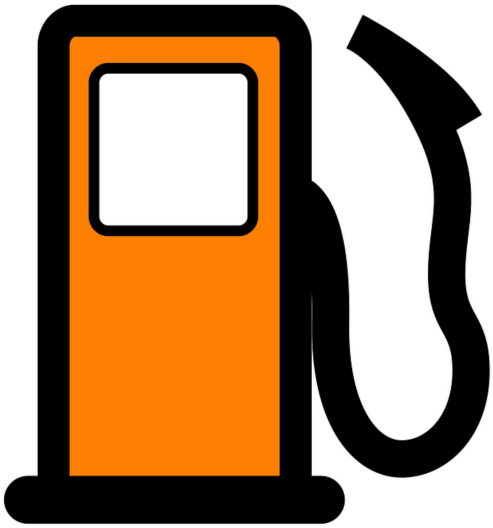
It's a force that pulls all objects towards CENTER of EARTH.

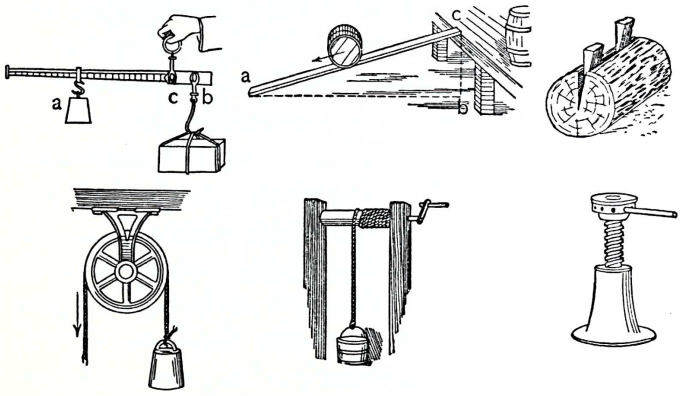
8 - MAGNETISM

Force of attraction or repulsion acting between MAGNETIC MATERIALS like iron.

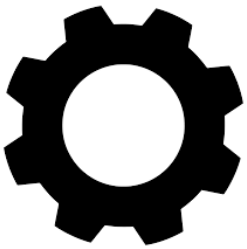
	
	

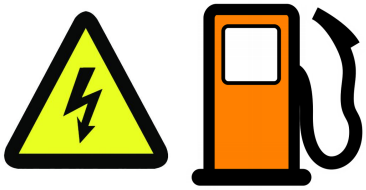
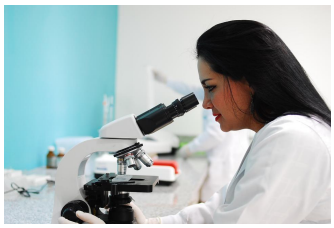
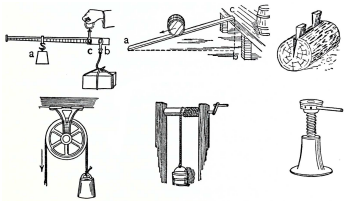
ACTIVITY 2.1 DICTOGLOSS IMAGES



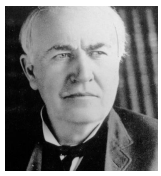
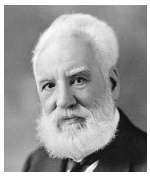
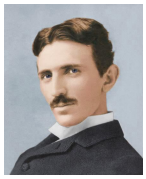


WHAT IS A MACHINE?

Humanity have invented and built machines since ANCIENT TIMES.	
We use machines to modify the action of forces. A machine is an instrument that MULTIPLIES FORCE to make work faster and easier, and help us to save time.	
Simple machines have only ONE OR FEW COMPONENTS.	
Complex machines have SEVERAL COMPONENTS.	
Machines need energy to function. Some machines use HUMAN ENERGY.	

And some use other types of energy, such as ELECTRICITY or FUEL.	
Technology is the art of applying SCIENTIFIC KNOWLEDGE to solve practical problems,	
For example DESIGNING and BUILDING MACHINES.	
We can name some famous inventors in History that have created machines, for example: Archimedes, LEONARDO DA VINCI, James Watt or Nikola Tesla.	

Match these INVENTORS with their INVENTIONS

A	LEONARDO DA VINCI				FIRST COMPUTER
B	NICOLA TESLA				FIRST RADIO
C	THOMAS EDISON				REMOTE CONTROL
D	KARL BENZ				FIRST FLYING MACHINES
E	ALEXANDER GRAHAM BELL				FIRST TELEPHONE
F	WRIGHT BROTHERS				FIRST POWERED AUTOMOBILE
G	GUGLIERMO MARCONI				LIGHT BULB
H	KONRAD ZUSE				FIRST POWERED AIRPLANE

ACTIVITY 2.3 A

18 PICTURES OF SIMPLE MACHINES

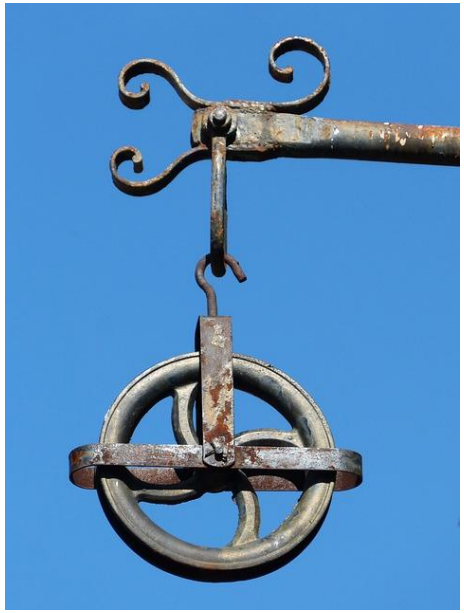
		
		

ACTIVITY 2.3 A

18 PICTURES OF SIMPLE MACHINES

ACTIVITY 2.3 A

18 PICTURES OF SIMPLE MACHINES



WEDGE, NUTCRACKER , TAP , SCREW, FORK, TWEEZERS, ROAD, BRIDGE, SLEDGE, BIG WHEEL , CARRIAGE, PULLEY, SKATEBOARD, BOTTLE , BLOCK , SEESAW

STRUCTURES TO COMPARE ONE BY ONE

I think …….. is SIMILAR to ……. because it has got a ……..
I think……. is DIFFERENT to ……because ……...has got a ……..……..and ……...haven't

STRUCTURES TO COMPARE MORE THAN ONE

I think ……, ……. , ... are SIMILAR BECAUSE THEY HAVE GOT …….
I think ……. , ……. are DIFFERENT BECAUSE THEY HAVEN'T GOT …….

-It has got a RAMP that help to MOVE heavy objects.
-It has got a RIGID BAR that turns on a FIXED POINT.
-It has got a WHEEL and a ROPE that help to LIFT heavy objects.
-It has got a CYLINDRICAL SHAFT that converts ROTATIONAL FORCE into LINEAL FORCE.
-It has got a PIECE OF WOOD OR METAL and it is used to separate two objects.
-It has got a WHEEL that it is used to move objects.

ACTIVITY 2.4

TABLE WITH THE 18 IMAGES OF MACHINES CLASSIFIED IN 6 GROUPS

GROUP 1 WHEEL	GROUP 2 PULLEY	GROUP 3 INCLINED PLANE	GROUP 4 LEVER	GROUP 5 WEDGE	GROUP 6 SCREW
					
					
					

CREATE A MIND MAP WITH popplet

Your group has to create a MINDMAP to explain your mates this simple machine:

WHEEL
The wheel is a simple machine. It consists of a ROUND PART which turns on an AXLE. Wheels are used on the majority of vehicles which move on land. Wheels are useful because they REDUCE FRICTION with the ground. They make it easier to move objects along the ground.

Your MINDMAP must include:

- **DEFINITION** OF THE MACHINE
- **PARTS** OF THE MACHINE
- EXPLANATION **HOW IT WORKS**
- **EXAMPLES**
- **PICTURES**
- **CURIOSITIES**

Once you have finished the MINDMAP you have to prepare the oral exposition to your partners. You can use this sentences:

- *This simple machine is called ....*
- *It has several parts: ……. , ……., ……...*
- *The machine works ……*
- *Some examples of this machine are ……...*

CREATE A MIND MAP WITH popplet

Your group has to create a MINDMAP to explain your mates this simple machine:

PULLEY
The pulley is a kind of wheel. It has two raised edges so a ROPE can RUN AROUND the wheel without falling off. A pulley is used to lift heavy objects. A pulley changes the DIRECTION needed to apply force, making easier to move objects.

Your MINDMAP must include:

- **DEFINITION** OF THE MACHINE
- **PARTS** OF THE MACHINE
- EXPLANATION **HOW IT WORKS**
- **EXAMPLES**
- **PICTURES**
- **CURIOSITIES**

Once you have finished the MINDMAP you have to prepare the oral exposition to your partners. You can use this sentences:

- *This simple machine is called ....*
- *It has several parts: ……. , ……., ……...*
- *The machine works ……*
- *Some examples of this machine are ……...*

CREATE A MIND MAP WITH popplet

Your group has to create a MINDMAP to explain your mates this simple machine:

LEVER
A lever is basically a RIGID BAR that turns on a fixed point called the FULCRUM. A lever uses EFFORT to move and lift objects (RESISTANCE). There are 3 types of levers: *first class* - fulcrum is between the resistance and the effort. *second class* - the resistance is between the fulcrum and the effort. *third class* - the effort is between the fulcrum and the resistance.

Your MINDMAP must include:

- **DEFINITION** OF THE MACHINE
- **PARTS** OF THE MACHINE
- EXPLANATION **HOW IT WORKS**
- **EXAMPLES**
- **PICTURES**
- **CURIOSITIES**

Once you have finished the MINDMAP you have to prepare the oral exposition to your partners. You can use this sentences:

- *This simple machine is called ....*
- *It has several parts: ……. , ……., ……...*
- *The machine works ……*
- *Some examples of this machine are ……...*

CREATE A MIND MAP WITH popplet

Your group has to create a MINDMAP to explain your mates this simple machine:

INCLINED PLANE
An inclined plane is a ramp. It makes it easier to move heavy objects. It requires LESS FORCE than i f you raise an object vertically. The smaller the ANGLE between the plane and the ground, the smaller the force required, but the longer the distance.

Your MINDMAP must include:

- **DEFINITION** OF THE MACHINE
- **PARTS** OF THE MACHINE
- EXPLANATION **HOW IT WORKS**
- **EXAMPLES**
- **PICTURES**
- **CURIOSITIES**

Once you have finished the MINDMAP you have to prepare the oral exposition to your partners. You can use this sentences:

- *This simple machine is called ....*
- *It has several parts: ……. , ……., ……...*
- *The machine works ……*
- *Some examples of this machine are ……...*

CREATE A MIND MAP WITH popplet

Your group has to create a MINDMAP to explain your mates this simple machine:

WEDGE
A wedge is made of TWO INCLINED PLANES. It's a piece of wood, metal, etc. having one THICK end and tapering to a THIN edge. Wedges are used between two objects or parts of an object to secure or separate them.

Your MINDMAP must include:

- **DEFINITION** OF THE MACHINE
- **PARTS** OF THE MACHINE
- EXPLANATION **HOW IT WORKS**
- **EXAMPLES**
- **PICTURES**
- **CURIOSITIES**

Once you have finished the MINDMAP you have to prepare the oral exposition to your partners. You can use this sentences:

- *This simple machine is called ....*
- *It has several parts: ……. , ……., ……..*
- *The machine works ……*
- *Some examples of this machine are ……..*

CREATE A MIND MAP WITH popplet

Your group has to create a MINDMAP to explain your mates this simple machine:

SCREW
A screw is a mechanism that converts ROTATIONAL force to a LINEAR force. The most common form consists of a CYLINDRICAL SHAFT with helical grooves called THREADS around the outside.

Your MINDMAP must include:

- **DEFINITION** OF THE MACHINE
- **PARTS** OF THE MACHINE
- EXPLANATION **HOW IT WORKS**
- **EXAMPLES**
- **PICTURES**
- **CURIOSITIES**

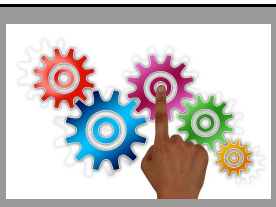
Once you have finished the MINDMAP you have to prepare the oral exposition to your partners. You can use this sentences:

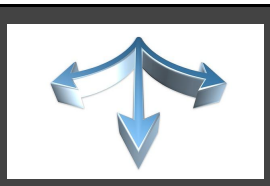
- *This simple machine is called ....*
- *It has several parts: ……. , ……., ……..*
- *The machine works ……*
- *Some examples of this machine are ……..*

ACTIVITY 3.2 CONTROL GRID

SIMPLE MACHINES
PEER ASSESSMENT Group Members ……

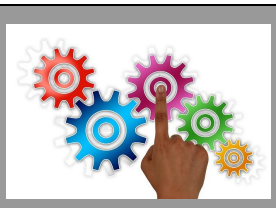
 **MACHINE**	Mention the **NAME**	Mention the **NAME** and **SOME PARTS**	Mention the **NAME** and **ALL the PARTS**

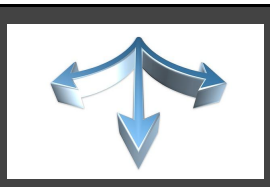
 **HOW IT WORKS**	**DON'T EXPLAIN** how it works	Explanation with **WORDS**	Explanation with **WORDS** and **IMAGES**

 **EXAMPLES**	**NO EXAMPLES** are given	Give **1 EXAMPLE**	Give **2 or + EXAMPLES**

SIMPLE MACHINES
PEER ASSESSMENT Group Members ……

 **MACHINE**	Mention the **NAME**	Mention the **NAME** and **SOME PARTS**	Mention the **NAME** and **ALL the PARTS**

 **HOW IT WORKS**	**DON'T EXPLAIN** how it works	Explanation with **WORDS**	Explanation with **WORDS** and **IMAGES**

 **EXAMPLES**	**NO EXAMPLES** are given	Give **1 EXAMPLE**	Give **2 or + EXAMPLES**

https://www.stuff.co.nz/national/108314195/whale-stranded-at-port-waikato-beach

https://www.efe.com/efe/espana/gente/muere-la-cria-de-ballena-varada-tras-11-horas-hidratacion-e-intentos-salir-al-mar/10007-2923141

https://elpais.com/elpais/2018/02/09/mundo_animal/1518210627_181583.html

https://www.abc.es/sociedad/abci-muere-ballena-habia-aparecido-varada-playa-sopela-201902031438_video.html

https://www.ultimahora.es/noticias/part-forana/2019/01/27/1053693/ballena-aparece-muerta-cala-millor.html

https://www.bbc.com/news/world-asia-46339763

https://www.itv.com/news/2018-11-27/stranded-whales-returned-to-sea-by-new-zealand-volunteers/

https://www.abc.net.au/news/2018-10-02/stranded-whale-returns-to-sea-after-two-day-operation/10327802

STRANDED WHALES AROUND THE WORLD

DATE	WHERE?	HOW MANY WHALES?	DIED or RESCUED

WHY DO WHALES STRAND?

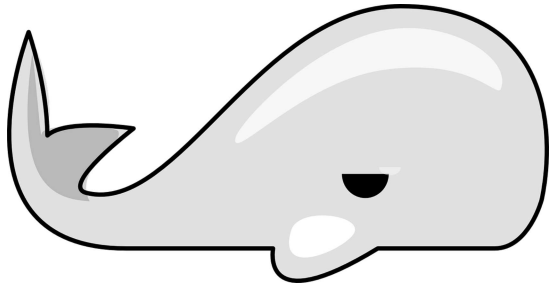
Discuss with your partner which are the causes that explain that whales are stranded on beaches around the world.

NATURAL PROBLEMS	- They are exhausted and go to rest. - They are old. - They are sick. - They are injured. - They do not find food.
HUMAN ACTION	- Ocean currents have changed because of global warming. - Disorientation caused by the sonars of the boats. - Fishermen take all their food.
RISING LEVELS OF POLLUTION	- Plastic islands in the Oceans. - Fuel of container ships pollutes sea water. - Microplastics in the sea contaminate their food. - Nuclear waste cause mutations.

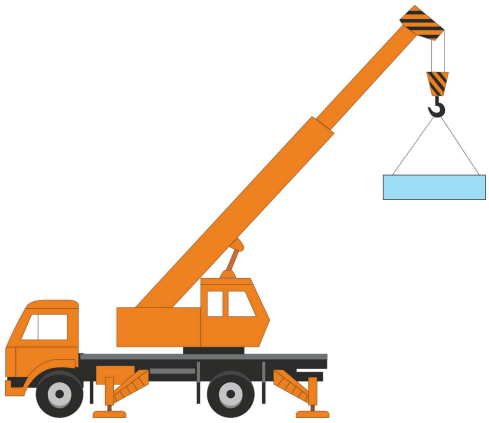
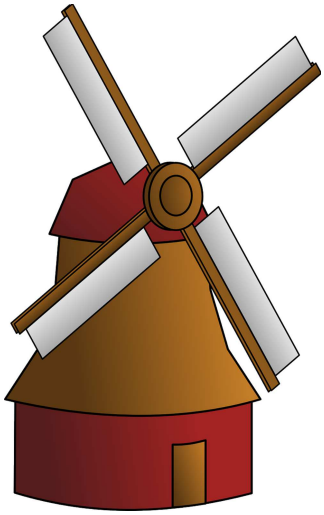
Use this expressions to guide your discussion and prepare for FISHBOWL:

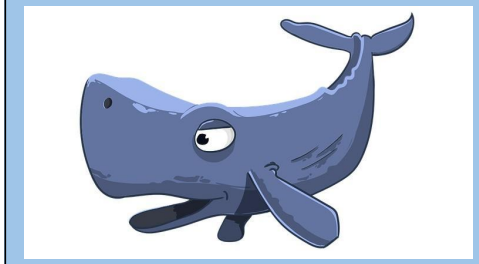
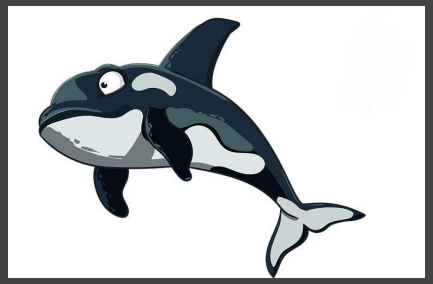
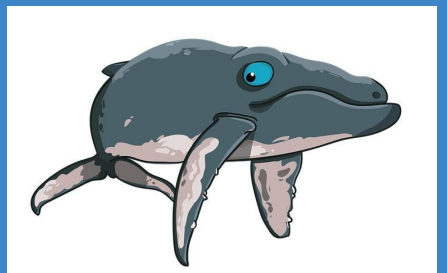
EXPRESSING OPINION	*AGREEING*	*DISAGREEING*
In my view …	I totally agree.	I disagree.
In my opinion …	I'm with you there.	I'm sorry I don't agree there.
I'm pretty sure that …	I agree with you.	I don't think so.

EXPLAINING	*EXPRESSING DOUBTS*	*FINISHING*
For that reason …	It depends …	That's all I have to say.
I would like to add …	I have my doubts …	Here we finish the talk.
	I'm not sure ...	



ACTIVITY 4.6 LIST OF PICTURES OF COMPOUND MACHINES

COMPOUND MACHINE	SIMPLE MACHINES
	. . . .
	. . . .
	. . . .

		GROUP 1 CACHALOT	GROUP 2 KILLER WHALE	GROUP 3 RORQUAL
				
SPECIALISTS	WHEEL			
	PULLEY			
	INCLINED PLANE			
	LEVER			
	WEDGE			
	SCREW			

ORAL EXPOSITION GUIDE

Group presentation

Hello we are …..... , …..... and ….....

This is our MACHINE.

Materials used

The materials we used to build our machine are :

…….
……..
……..
…….
…….
…….

Step by step

First (1st) we ……..

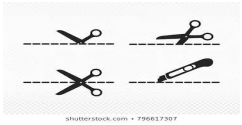
Second (2nd) we…….

Third (3rd) ……...

Fourth (4th) ……...

Last (in the end).....

We cut
We put
We add
We stick



We combinate two different simple machines

Practice of the machine

This is how it works our machine.

First of all …..... and this is how our machine can move the STRANDED WHALE.

SHOW UP YOUR MACHINES

Pay attention to your partners exposition and take advantage to ask some questions:

ASKING DOUBTS
I have a question on that …
Can you explain this point …
I don't understand …
I have something to say at this point ...
That's fine, but the problem is ...

MAKING SUGGESTIONS
I have something to say …
Have you considered .... ?
I suggest that ...
Wouldn't it be a good idea if ...
How about …?

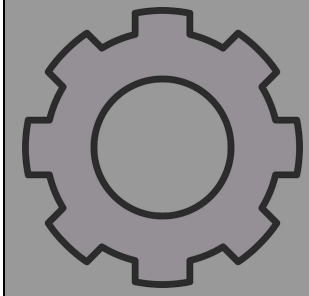
SHOW UP YOUR MACHINES

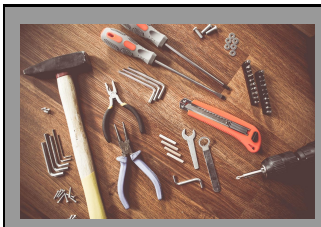
Pay attention to your partners exposition and take advantage to ask some qüestions:

ASKING DOUBTS
I have a question on that …
Can you explain this point …
I don't understand …
I have something to say at this point ...
That's fine, but the problem is ...

MAKING SUGGESTIONS
I have something to say …
Have you considered .... ?
I suggest that ...
Wouldn't it be a good idea if ...
How about …?

GROUP NAME: .....

 DESIGN	SIMPLE MACHINES THAT INCLUDES	YES	NO
	LEVER		
	PULLEY		
	WHEEL		
	INCLINED PLANE		
	WEDGE		
	SCREW		

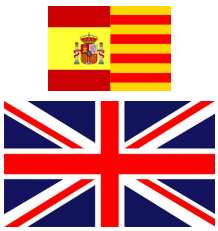
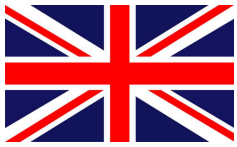
 MODEL		YES	NO
	DO YOU LIKE THE DESIGN?		
	WOULD IT WORK?		
	IS IT RESISTANT?		

 PRESENTATION		YES	NO
	DOES IT INCLUDE TEXT?		
	IS TEXT HELPFUL?		
	DOES IT INCLUDE IMAGES?		
	ARE IMAGES CLEAR?		

IDEAS TO IMPROVE THE PROJECT

ACTIVITY 6.5 SELF - ASSESMENT

NAME ..... DATE .....

USE OF ENGLISH				
				
I never use english	I use some english WORDS	I use english structures with TEACHERS	I use english with TEACHERS and CLASSMATES	I only speak in english

GROUP WORKING	
I share tasks with my teammates.	
I make agreements.	
I work hard.	

CONTENTS ABOUT MACHINES	Yes	No
I KNOW different types of forces.		
I can IDENTIFY simple machines in daily objects.		
I can NAME simple machines.		
CONTACT FORCES list:		
NON-CONTACT FORCES list:		
Simple MACHINES list:		