

GRAVITY



ZIP LINE

Unit Name: **Forces**
Subject: **SCIENCE**

A NEED TO KNOW

PUSH AND PULL
FORCES



MAGNETISM



GRAVITY AND
WEIGHT



UPTHRUST

We want to teach/learn this force in our world:

observe and identify gravity *in our daily life*

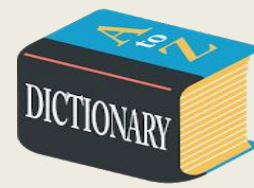
EXECUTIVE FUNCTION SKILLS



ORGANIZATION



CALP



PUSH AND PULL FORCES

apply / touch / move / stop
speed up / slow down
opposite / **balanced / unbalanced**

MAGNETISM

attract / repel / towards /
magnetic field
natural / **man-made**

GRAVITY AND WEIGHT

on the ground / **float away**
go up & down / **towards** the centre
big **masses** / stronger / pull

UPTHRUST

float / sink
Push / rubber / metal
volume / mass / prediction

AVANCE ORGANIZER



A DRIVING QUESTION

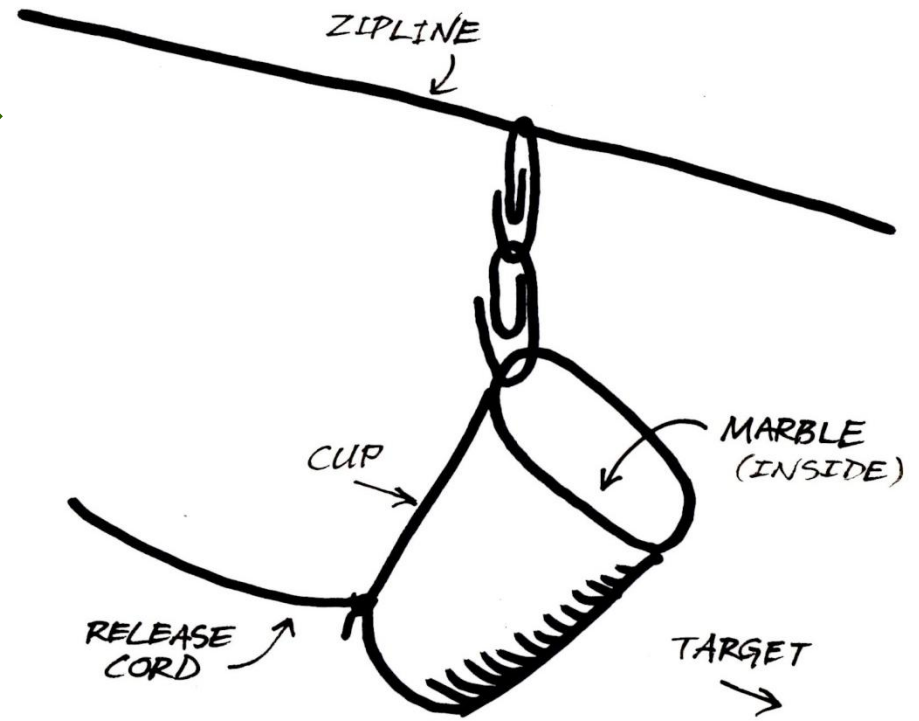


AAARG!

If the Earth
is round,
why don't
penguins
float off into
space?



INTO PROJECT: EXAMPLERS



HOTS

ANALISE things we usually employ that depend on gravity.

Inquiry: What things do we use that wouldn't work without gravity?

BRAINSTORM more examples.

EVALUATE a Zip line.

Inquiry: What elements does it need to work?

CREATE / Make a zip line:

prepare one in a way that you can transport a little ball/ thing from one point from another. (the materials are given in class: cardboard, fishing line, a clip, drinking straws...) [Groups of 3 students]

PRESENT the zip line to the other groups, explaining how they did it and how it works.

GET FEEDBACK.

PRODUCT

PRACTICAL USES FOR A ZIP LINE APART FROM FUN

*Is there any way we can use
it at school to make
something easier?*



TASK-BASED LEARNING



1 – **PRESENTATION.** *What a zip line is. Zip lines they know.*

BRAINSTORM.

Show models & the materials they will have to build one in class.

Collect them in advance (teacher and students can start bringing things)

CALP & PICS.



CREATE A PROPOSAL FOR USE OF A ZIP LINE in real life – NOT JUST FOR FUN.
DECIDE FOR WHAT AND WHERE?



2 – **PRACTISE:** *Create the devise.*

*A **zip line**: prepare one in a way that you can transport a little ball/
thing from one point from another.*



3 – **PERFORMANCE:** *students will present their zip line to other kids
using the **CALP & PICS**.*



4 – **FEEDBACK:** *Checklist.*

Materials employed. Appearance. How well does it work. Time. ...

REASON



**ENCOURAGE
DIVERGENT THINKING:
FIGURE OUT HOW CAN WE USE A
ZIP LINE FOR USEFUL PURPOSES,
NOT JUST FOR FUN.**

REAL WORLD connection



Try a real
ZIP WIRE



Parque Aventura

Reservar Parque Aventura

BENCHMARK & CHECKLIST

*1 – **After the Brainstorm** – They have at least three good examples of real world things (inventions, devices...) that work thanks to gravity.*

*2 – **Created PROPOSAL FOR USE OF A ZIP LINE in real life** – They decided at least one practical use for a zip line. They make a draft explain how and where to place it, and what we could use it for.*

*2 – **Created a zip line** – Make something go down, so you can verify that it works and you can transport a little ball/thing from one point from another.*

*3 – **PRESENTATION** – Show the zip line to the others groups **and explain how they did it:** the steps, a change they had to do to improve it. Then explain **the main reasons because it works** and things go down it, using the main vocabulary of the unit.*



RUBRIC

	20	19-16	15-13	12-10	9-0
Creativity	<i>Demonstrates a high level of curiosity and offers a unique perspective on topic. Final product is distinct from other projects</i>	<i>Demonstrates a solid level of curiosity and offers a unique perspective on the topic. Final product is distinct from other projects.</i>	<i>Demonstrates some curiosity and offers a different perspective on topic. Final product is similar to other projects.</i>	<i>Demonstrates marginal curiosity and offers a similar perspective on topic. Final product is similar to other projects.</i>	
Organization	<i>Created a well-developed action plan, kept deadlines throughout process. Independently able to figure out what needed to be done and in what order.</i>	<i>Created a well-developed action plan, finished deadlines throughout process. Able to figure out what needed to be done and in what order with some help.</i>	<i>Created action plan and completed deadlines by presentation. Able to figure out what needed to be done and in what order with a lot of help.</i>	<i>Had help creating action plan and rushed to meet deadlines. Figured out what needed to be done and in what order with a lot of help.</i>	
Productivity	<i>Showed a very strong and efficient use of time and resources</i>	<i>Showed efficient use of time and resources</i>	<i>Not always prepared and wasted time.</i>	<i>Rarely prepared and consistently wasted time.</i>	
Grit/Hustle	<i>Demonstrated ability to overcome obstacles and distractions. Never let setbacks get in way of accomplishing goals.</i>	<i>Demonstrated ability to overcome most obstacles and distractions. Rarely let setbacks get in way of accomplishing goals.</i>	<i>Demonstrated ability to overcome some obstacles and distractions. Sometimes let setbacks get in way of accomplishing goals.</i>	<i>Had difficulty overcoming most obstacles and distractions. Allowed setbacks to get in way of accomplishing goals.</i>	
Presentation	<i>Showed strong passion and sense of purpose. Conveyed both successes and failures to entire class including what s/he learned.</i>	<i>Showed passion and sense of purpose. Conveyed both successes and failures to class.</i>	<i>Showed sense of purpose. Conveyed both successes and failure to class.</i>	<i>Purpose was unclear. Failed to convey successes and failure to class.</i>	

I like this one for my project because I think it covers nearly all the areas I want to focus on: it pays attention to **creativity**, **organization** and **presentation**.

Perhaps I'll leave out the "Grift" block this time and **include something related with social abilities** and how the students interact throughout the cooperative tasks.

TEACHING SEQUENCE

1st session: Advance organizer to get their previous knowledge - “Invisible chair”
– revising and introducing new vocabulary.

2nd session: Teaching “Gravity”. Because of it ...
INTRO, EXEMPLARS (chestnut falling / water running down of tap /...) – **HOTS**
A COLLECTION OF SITUATIONS: *show/ collect examples of real life where*
*we depend on gravity. Cooperative learning **ROUND ROBIN** CHECK POINT*

3rd session: **CREATE A PROPOSAL FOR USING A ZIP LINE IN REAL LIFE – NOT JUST FOR FUN.**
DECIDE FOR WHAT AND WHERE?
*Cooperative learning **SHOWDOWN.***
Choose **the best idea in the group.** *CHECK POINT*

4th – 5th session: Design, try and improve a Zip line.
*Cooperative learning **THINK PAIR SHARE** GET FEEDBACK. CHECK POINT*

6th- session: “Mass”. Size and gravity...

Task – **GALILEO EXPERIMENT** using the zip line. *GET FEEDBACK.*
Feather-stone-light ball

Hypothesis / Test it / Record results / Procedure / Analyze data & draw conclusions

7th – 8th session: PRESENTATION OF THE PROPOSAL. *GET FEEDBACK. CHECK POINT*

