Names : Clement and Anat - Physics Science Tool - Moment of force / torque moment

1. TOPIC/ TITLE

Project title - Science kit for schools
SDGx Goal(s) related to this project : Quality Education
Topics addressed in this project: physics education - Moment of force / torque moment
Explain the motivation and reasons you selected this project: enable children to deduce and understand a structured scientific concept following direct experimentation.

2. Project Description

Provide a general summary of your project - design an open source science kit that will allow the children to experiment the scientific phenomenon of balancing objects in relation to their mutual distance and mass. Moment of force / torque moment.
briefly describe your project goals, and what are the objectives: Enable children to freely experiment with balancing the weight of different objects in relation to their position (distance from one another, distance from the center of the object and their weight) and later on transfer their knowledge into scientific formulas. Also, we want to ensure to maintain the low cost of the kit and the accessibility of its components.
What will you specifically be learning? To use tools like laser cutter; To build a documentation of a project; to use some physical formulas and overgo a design process from idea to manufacturing.
What research or learning will you need to accomplish your goals? We must search to find similar projects with similar goals. Research physical laws concerning balancing and gravity force.
What will your project end result be? A kit of tools to experiment the physicals laws involved in balance and gravity. So, you will have objects and manual to explain how to use them.

3. Specific Learning Goals and Essential Questions

What new learning do you expect or hope to acquire through the completion of this project?
To use tools like laser cutter; To build a documentation of a project; to use some physical formulas and overgo a design process from idea to manufacturing.
Describe how you will determine whether your project was a success.
We will produce the kit and have children play with it and test if it helps them understand the physical laws involved.
We can also test it on adult, at the CRI, to do a first experiment, and have feedbacks.
What skills, knowledge and prior experience do you already possess that will help you with this project:

- A small experience in scientific mediation (Clément)
- I have a design background which helps me examine and develop the end product - I have also used laser cutting before for my projects. (Anat)

4. Project Plan

List and summarize major project tasks to complete your project:

- Clear identify the physical law(s) we target
- Design the object(s).
- Create them.
- Write a manual for the teacher describing how to use the science kit.

What is your estimated timeline to complete each task?
By the next FabLab lesson we will have the computer drawings for the laser cutter and will be ready to produce and begin experimentation. Also we will begin to write the manual.
Who is responsible for each task?
These task are sequential. So both of us will participate in each task.
How much time (in hours) do you estimate you will spend on this project?
24 hours

5. Resources

What resources will you need to complete the project? Some wooden plank, something to be use as mass than can be adjusted, a laser cutter.

How will resources be acquired? We will ask nicely to the fablab ^^

Estimate expenses.

What is the total cost of the project?

6. Potential Risks & Challenges

Describe the risks and challenges you believe you might encounter while doing your project:

The challenges will be to design a practical, long lasting, easy to assemble and operate mobile with which to experiment the balance between several forces that apply to the object, in particular weight.

Will the force applied on an object will make it spin/ or not