

Winter 4-16-2023

## Nail Steam Activity

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**Nail STEAM Challenge**  
**Submitted by: Natalie Wilson**

Name of activity: Nail STEAM Challenge

Age/Grade range:

STEM discipline(s): Physics

What topic does this activity relate to? Center of gravity

**Pre-activity / Pre-work (what students should know or prepare before doing engaging in this activity; what teachers need to prepare before leading the activity):**

Students should have a basic understanding of the center of gravity of a body before this activity

What should the students learn by the end of this activity?

The concept of the center of gravity

Tools/supplies needed (indicate quantity and if it needs to be bought + price range):

12 nails per group

Total price (indicate per class or per student):

[https://www.amazon.com/Coceca-Hardware-Assortment-200pcs-Galvanized/dp/B07PNZFF7H/ref=sr\\_1\\_1?dchild=1&keywords=nails&qid=1590178790&sr=8-1](https://www.amazon.com/Coceca-Hardware-Assortment-200pcs-Galvanized/dp/B07PNZFF7H/ref=sr_1_1?dchild=1&keywords=nails&qid=1590178790&sr=8-1)

\$8 for 200 nails, \$0.48 per group

Step-by-step instructions on how to conduct the activity (attach link if found online and make note of modifications for your class here): (Include e.g., size of groups, images of materials or people doing the activity that might help the reader lead the activity, helpful supporting materials)

<https://www.stevespanglerscience.com/lab/experiments/balancing-nail-puzzle/>

1. Have the students break up into small groups and give each group 12 nails
2. Instruct them to balance 11 of the nails on one nail
3. Allow them to struggle with the way to position the nails, encouraging the team to collaborate
4. If they do not come to a solution, show them the proper formation given in the link and allow them to attempt to replicate it

### **During activity:**

Number of students present:

20

What modifications had to be made to the lesson plans and why (if any)?

Provide feedback: teacher observations, specific student feedback, work products:

After some time the students became impatient and frustrated because they could not solve the problem.

### **Post-activity (reflection):**

What aspects of the activity worked well?

The students collaborated well together

What can be improved on?

Give the students better hints to guide them instead of letting them become discouraged

What suggestions do you have to adjust the lesson for different purposes or populations?

Have an older group of students with a better grasp on physics and more patience in order to have it work the best

If money was spent on tools/supplies, in your opinion, was the investment worth it?

Yes, the activity was a great introduction to the science club meetings for that year

Provide thoughts on alternative materials, steps or other modifications that might be worthwhile for others to consider.