

Developing teacher notes for Archimedes Principle Learning unit: recycling interactional data.

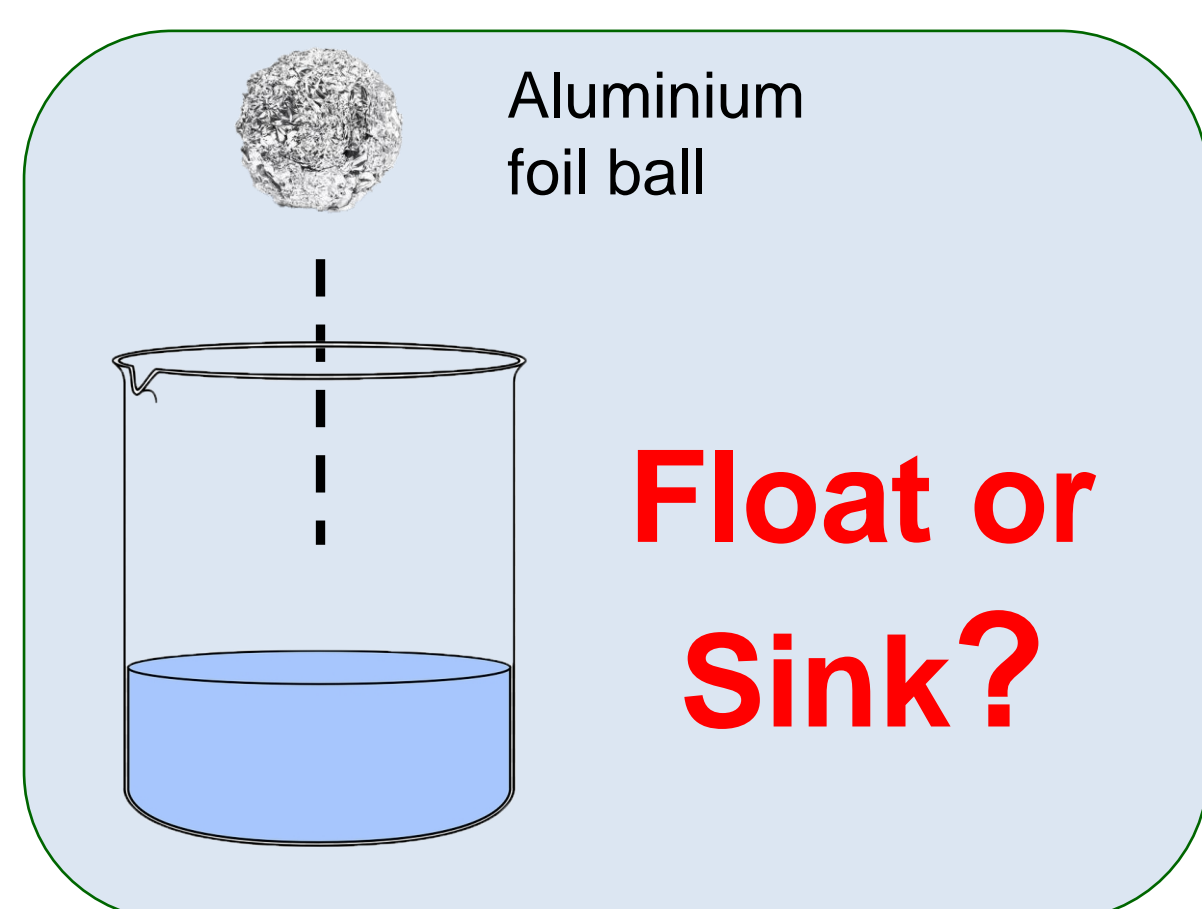
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Vigyan Pratibha (Learning Units and teachers workshop)

Vigyan Pratibha Learning Units are educational content developed to discuss Science and Mathematics concepts in an engaged way with interested students. The Learning Units (LUs) also involves rich pedagogical discussions of science and mathematics learning and teaching. In its teacher version. These units are improvised/reviewed based on feedback from fellow teachers, experts in the field and researchers. Teachers workshop is one such place for seeking feedback on various learning units.

Vigyan Pratibha Teacher workshops are camps at HBCSE and/or partner institutes where teachers from various schools participate in training and development activities in mathematics and science and discuss pedagogic strategies. Such teacher camps have been useful for much needed feedback from the active teaching community in case of enhancing the Learning Units. The work presented in this poster is one such example where we have closely observed teacher interactions about the Archimedes Principle learning unit at one such workshop and used the interactional analysis to develop teacher notes content for this LU. It is an exemplar practice that can be used for similar note-making exercises.

Predict Exercise



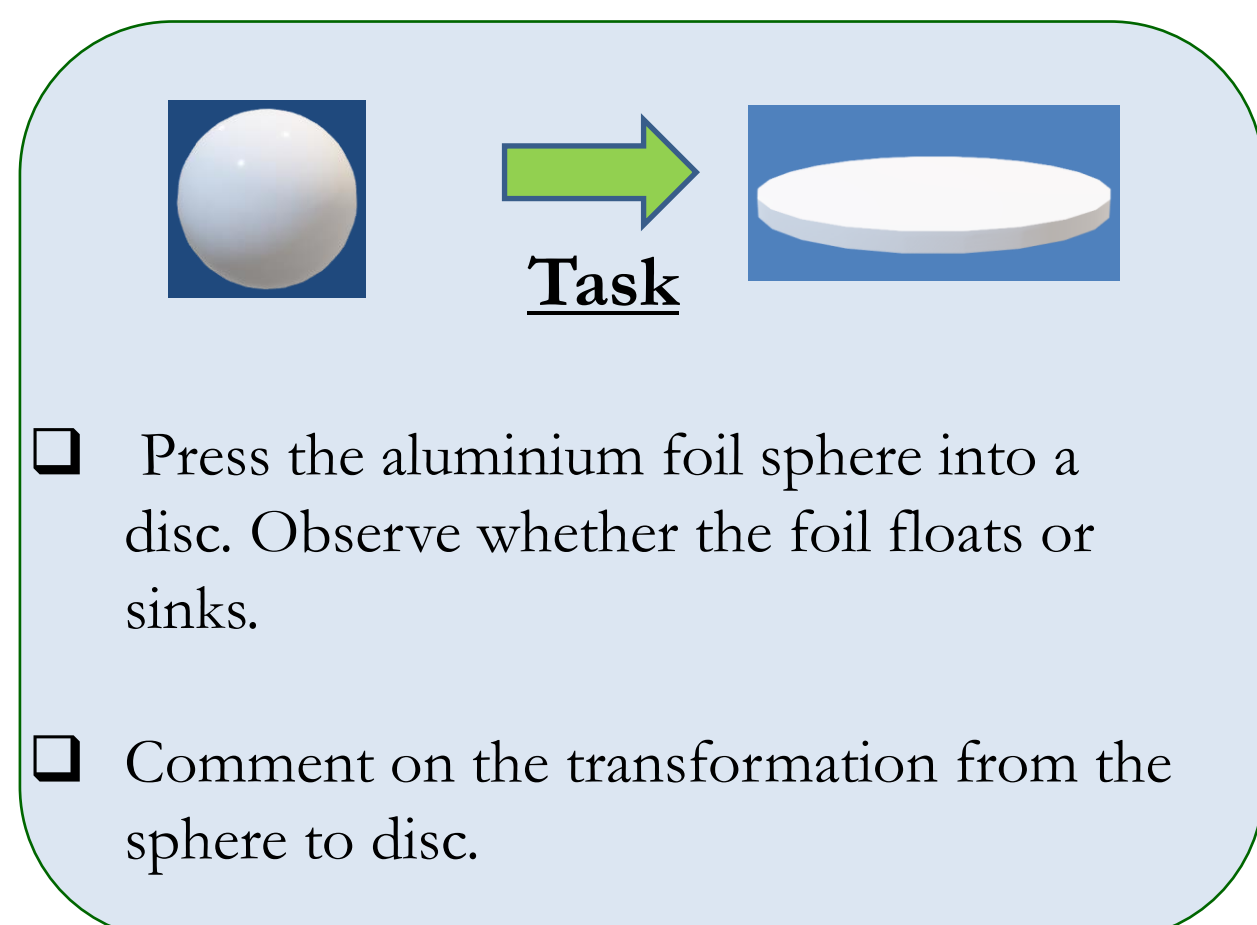
“Will it sink or float?” discussion at workshop

“*Lighter will float and heavier will sink*” was a common response (*and misconception*) narrated by students & some teachers. So, it is important to address this idea through discussions. A probe to discuss and verify students’ beliefs about buoyancy is needed.

Addition to Teacher notes

Contrasting aluminium foil ball with a lighter object (stone/sand particle). A counterexample can help to question their prior belief about *lighter will float!*

Variables and Constants



Excerpt of teacher interactions

Facilitator: What is the difference here? First it[ball] was floating now why it[disc] has sunk?

Teacher1: Weight is same!

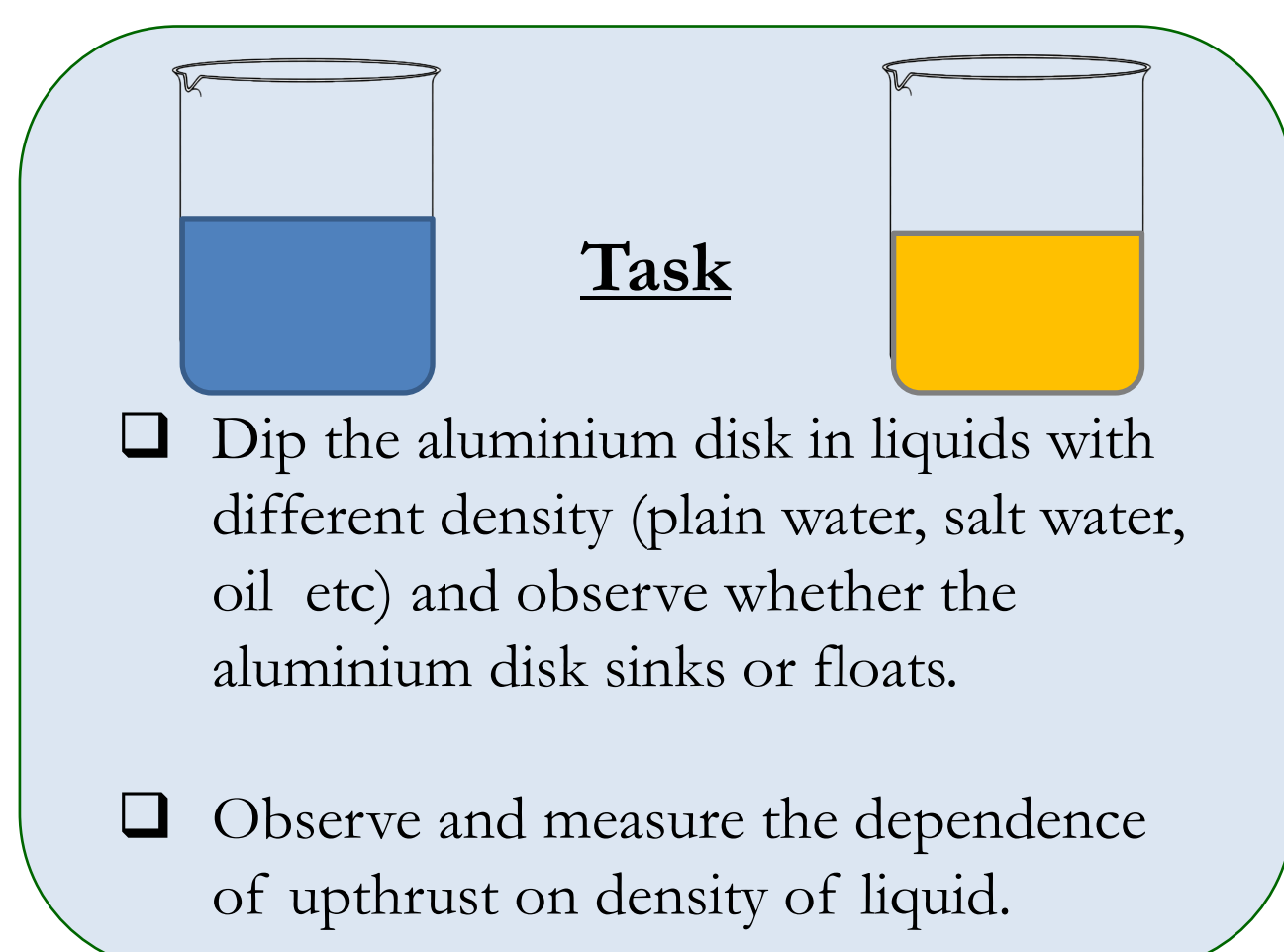
Facilitator: Then what difference has come. If you compare it to the ball(aluminium)?

Teacher2: Volume has changed

The idea of variables in a experiment

- ❑ The task required changing of one variable while keeping the others constant and studying the affect on the quantity measured.(mass was kept fixed, volume was varied).
- ❑ A note on “how experimentally the dependence of a quantity on certain parameters is studied” was included in the teachers notes.

The Challenges



The experiment

In initial experimentation, visible(clearly identifiable) affect of density change were not quickly observed by teachers. Teachers hence continued trials with a)increasing salt concentration b) changing volume of the disc till they could satisfactorily observe effect of density on upthrust as theoretically expected. Theses trials provided a range of settings(conditions) where the effect was clearly observed.

Description for optimum conditions to observe the effects of density changes

A note about optimum a) concentration of the liquid b) the volume of the liquid c) volume of the disc to satisfactorily observe effect of density on upthrust was added.