PYRAMIDS – A PRAC WORTH DOING

By Ken Greatorex

WARNING! WARNING!

Before wasting your valuable time reading this article, please consult the following checklist.

- *Is this prac suitable for my kids?*
  Only if they are between about eight and fourteen years old and retain some iota of interest in the real, as opposed to virtual world.

- *Will it be noisy?*
  Probably

- *Will it take up more than one session?*
  Yes. In fact it will run over at least three days

- *Will it create a mess?*
  Yes, if you're not careful. Best done in a wet area, with lots of thought beforehand about how you are going to clean up.

- *Will it take much organising?*
  Initially, yes.

- *Will it require much equipment?*
  Very little. You probably already have most of it, and anything you don't have can be purchased in one inexpensive shopping trip.

  Now read on……

One of the great things about being a former Science teacher is that I don't have to keep coming up with the odd miracle to keep the littlies amused and entertained. The other side of this coin is that, along with my battle scars I have a small repertoire of activities that really do grab the imagination of ordinary people.

The Pyramid thing was always one of my favourites because it cost practically nothing, it involved nearly everyone, and it left no-one unsurprised – including me, and I did it many times.
The idea is simple. You make pyramids out of matches, (actually, pinewood craft sticks) then test them to see how strong they are.

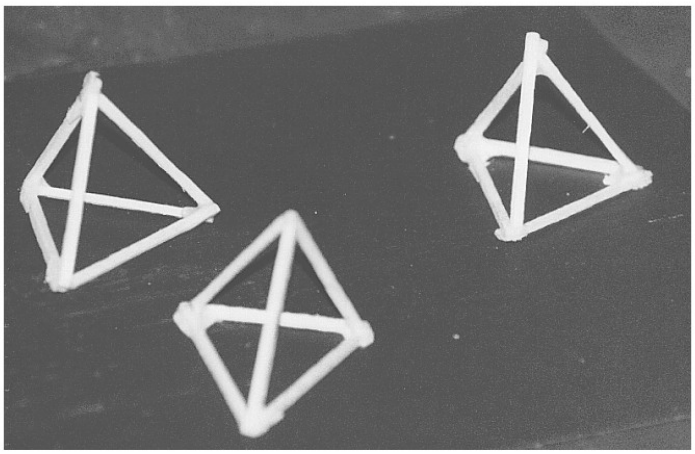
Heuristic Theory of learning suggests that children should be led to the notion that the best pyramids for this exercise will be tetrahedra, or triangular pyramids made with six matches. Thirty years of frustrated practice screams "tell them!" or it might be a while before the activity gets underway.

YOU NEED:

- pinewood craft sticks, which are sold very cheaply in some toy stores and all Craft Shops in bags of a thousand. These are also known as headless matches.

- A “wet area” and lots of newspaper
- PVA glue e.g “Aquadhere”. This can be purchased in small dispensers from craft shops, but is much cheaper in larger quantities from hardware stores.
- Plasticine or playdough
- Weights (books, bricks, 500g masses, etc) It might be the perfect opportunity to ressurect *Encyclopaedia Britannica*.
- A masonite, caneite or fibro cement sheet, about A4 size. If you are a Secondary Science teacher, your heat-proof mats are ideal, but your dissecting boards would also do.

Day 1:
Glue three craft sticks using PVA glue to form an equilateral triangle. You can do this on newspaper to reduce cleaning up. Don’t worry about them sticking to the paper. Make at least three triangles. If you are running a classroom activity, have your participants make LOTS of triangles. Allow at least a day to set.



Three matchstick tetrahedra glued with PVA craft glue

Day 2:
Glue three more sticks to each triangle to make tetrahedrons. (*Tetrahedra?)*.
If you are making a lot of pyramids in one go (as is recommended) you can keep the three sloping sides in place by putting a ball of plasticine or clay in the middle and using it to support them. Don’t let the plasticine get into the corners , or they won’t glue properly.
(At this stage, I’d like to give you some encouragement to make your pyramids neat and precise, but in all honesty I can’t. Ugly, lumpy pyramids seem to work as well as pretty ones.)

Give them a day to cure.

Day 3:
You can now easily remove paper and plasticine without damaging your pyramids.

In theory, the next stage can be performed with as few as three pyramids, as in the photo below . In practice, I would use more. If you were running a classroom competition, for arguments’ sake, you could instruct each group to assemble their nine “best” pyramids in three rows of three on a hard floor or bench top. You can test how strong your pyramids are by supporting a rigid sheet of masonite or a heat-proof mat horizontally on them, then

carefully adding heavy objects in layers until the whole thing collapses. Books are ideal for this purpose, in which case your supporting platform can be the first hard-cover book in the stack. But be prepared to be surprised the first time you do this exercise. (As I said before, I've done it hundreds of times, and I'm still surprised.)

3 pyramids supporting 25 kg of books

The potential here is to have your students work in teams of two or three, with the competition being which team makes the strongest pyramids. If you are going to do that, please establish a proper testing regime so that each team is testing the same number of pyramids in the same way.