

A Boiling Experiment

We had a craft class yesterday.

The children had brought colourful card sheets. Some said that they were going to make a paper tray while others said that they were going to make a small paper vessel.

Just then Simran asked me, "What shall I make for you with this paper?" The other students also wanted to make something for me.

"All of you together make a paper vessel which is slightly bigger than a matchbox. But remember you must not use

gum/paste. You must fold the paper tightly and use paper clips instead of gum.

"Sure", they said.

Yet Rohan raised his hand and asked, "What will happen if we use gum?" There was silence in the class.

"Then ...maybe the paper will catch fire...!" The children did not allow me to complete my sentence. Their voices full of fear/wonder/ amazement / curiosity.. ..

they said, "Whaaaat? Fire...? ooieeee!"

"Yes, all of us are going to do some magic together. Let's heat some water. That is why we need a small paper vessel." Now the children's curiosity was kindled.

By afternoon this news had spread all over the school.

"What? Boil water in a paper vessel? Ha! They must be burning paper to boil water. You might have heard it wrong."

This was the hot topic everywhere. By evening more than half the students had made paper vessels.

The principal said, "We will perform this magic for all the children."

By the next day the children's' curiosity knew no bounds. They gathered in the school's hall.

I said to them, "I will not do any experiment. I will not heat water in a paper vessel either. Sorry!"

The children were very disappointed. Some let out a sigh.

Others raised their eyebrows. The children in my class were completely dejected. But Palavi raised her hand and asked, "Then who will do this experiment?"

I answered with a very straight face, "You children!"

The children screamed with joy, "Yahoo!"

We made groups of four each. Each one had a square vessel of thick paper that they had prepared yesterday. Each group was given a matchbox. Since the experiment was to be done together, a specific method was decided upon.

- First, the experiment had to be observed carefully.
- After the experiment was over, everyone should carefully write down their observations in a notebook.
- The observations should be read out and each one should write down the points that they felt were important.
- Questions should be asked about the observed experiment.
- Questions which are complementary and parallel to the experiment should be asked.

We lit a candle and placed it on the table. We filled water in the paper vessel. We held the vessel over the flame.

We took care to ensure that the flame reached only the base.

And in just a short while the water actually started boiling.

The children went berserk with joy.

At that moment I could read the question in the eyes of the children, "How did the water boil without the paper burning?" The answer is really very simple.

The paper does not burn because all the heat that the paper gets is used up for heating the water.

We all know that water boils at a temperature of 100° .

But for paper to burn/catch fire much more heat is required. And that is why the water inside a paper vessel boils without the paper getting burnt.

The children asked fantastic questions:

- Is it possible to make tea in this manner?
- Can we boil milk?
- If we take a bigger paper vessel, would it be possible to fry potato chips in it?

While doing the experiment in groups the children were bubbling over with joy long before the water started boiling!

The children labelled this experiment as the 'boiling experiment'.

I think you will be able to answer all the questions raised by the children but only if you do this 'boiling experiment' yourself!

And if you do it with other children...!"

I'm waiting for your boiling letters.

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