Trend Task: Experimenting with Air and Water

NEMP Access Task

Approach:	One to one	Year:	4 & 8
Focus:	Properties of air		
Resources:	Video recording on laptop computer, water bottle, plastic glass, small sample cup, small "post-it" paper, tray, paper towels		

VIDEO SCRIPT:

In this experiment you are going to find out about air.
John will use a glass filled with water and a small beaker. Before he begins the experiment he picks up a small piece of paper and sticks it inside the small beaker.

Now he takes the small beaker and turns it upside down.
He holds it over the water and slowly pushes it in.
He pushes it until the whole beaker is covered with water.

Questions / instructions:

This activity uses the computer.

We are going to do a simple experiment to find out about air and water. First we'll watch a video showing the experiment.

Click the *Expt. with Air and Water* button. The video will start.

Now I'd like you to do the experiment. You will need to 3/4 fill the glass with water.

Give student glass and water bottle. Allow time to fill glass.

Now take the small cup and the piece of paper. Stick the paper to the bottom inside of the small cup.

Give student the sample cup and post-it paper. Assist if necessary.

Now take the small cup. Turn it upside down. Hold the cup over the water so that the rim of the cup touches the surface of the water. Soon I am going to ask you to push the cup into the water so that the whole cup is covered by the water.

	% responses 2003 ('99) year 4	year 8
1. What might happen to the paper when you do this? paper will stay dry	12 (16)	35 (41)
2. Why might that happen?		
Good explanation: air trapped above water stops water reaching paper	6 (8)	22 (29)
vague version of above	5 (11)	14 (20)

YEAR 4: Now I will push the cup down.

Take the cup from the student and push it down under water.

YEAR 8: Now I want you to slowly push the cup down. Take care to keep the cup flat and facing down.

Allow time for the student to do the experiment. Check that cup is kept flat and facing downwards.

YEAR 4 & 8:

	% responses 2003 ('99) year 4	year 8
3. Look at the cup. What do you notice?		
PROMPT: What can you see in the cup? What else?		
beaker not completely filled with water, water only goes part way into beaker, etc.	29 (36)	50 (56)

Slowly lift the cup out of the water. Dry your hands and then take the piece of paper out.

4. Why is the paper still dry?		
Good explanation: air trapped above water stops water reaching paper	13 (20)	36 (47)
vague version of above	28 (26)	35 (33)
5. This experiment tells us something important about air. What does it tell us?		
air takes up space/exerts pressure/ is not easily compressed	4 (7)	9 (7)
Total score: 6–7	3 (4)	16 (18)
4–5	5 (7)	15 (25)
2–3	23 (25)	30 (26)
0–1	69 (64)	39 (31)

Commentary:

Only about one third of year 4 students and half of year 8 students observed carefully enough to see what happened. About 25 percent more year 8 than year 4 students scored 4 or above. There was little change between 1999 and 2003 for year 4 students, but a small decline for year 8 students.