The 2000 technology assessments included eight assessment tasks relating to technological knowledge and understanding.

Seven of the eight tasks were identical for year 4 and year 8 students and the eighth had only minor modifications from year 8 to year 4. One is a trend task (fully described with data for both 1996 and 2000), four are released tasks (fully described with data for 2000 only), and three are link tasks (to be used again in 2004, so only partially described here).

The task details and results for the trend task are presented in the first section, followed by the task details and results for the four released tasks. The third section contains some task information and the results for the three link tasks.

Comparing results for year 4 and year 8 students

Averaged across 58 task components completed by both years, 14 percent more year 8 than year 4 students or teams produced correct or strong responses. This indicates that, on average, students have made useful progress between year 4 and year 8 in the skills and understandings assessed by the tasks.

Trend results: comparing 1996 and 2000 results

One trend task involving a total of seven components was administered to students in both the 1996 and 2000 assessments.

For year 4 students, results were very similar in 2000 to 1996, with the change from 1996 to 2000 averaging 0 percent across the seven components. For year 8 students, however, there was a marked improvement from 1996 to 2000. On average across the seven components, 12 percent more year 8 students succeeded in 2000 than in 1996. Small declines on two components involving conceptual design were more than compensated for by large gains on components involving analysis and description of materials and processes. Because only one trend task was available, this gain for year 8 students should be interpreted cautiously.

Trend task — Puppet Make-Up

Approach: One to one *Level:* Year 4 and year 8

Focus: Investigating and describing how a hand puppet has been designed and assembled.

Resources: Parrot hand puppet.

Questions/instructions:

Here is a puppet that someone has made.
Have a good look at it to see how it has been made.

Give the puppet to the student. Encourage them to have a good look at it and how it has been made, without suggesting any clues.

Now I would like you to explain to me how somebody went about making this.
Try to describe all of the things they would do — starting from before they actually began to make the puppet — then the things they did as they were making it.

	% responses 2000 ('96) year 4	2000 ('96) year 8
mentioned conceiving idea/mental image	13 (23)	26 (35)
mentioned developing or finding appropriate pattern	13 (16)	33 (37)
Selection of materials		
mentioned required materials:		
7 or more	19 (10)	36 (13)
4–6	65 (70)	54 (57)
1–3	15 (19)	9 (27)
did not mention materials	1 (1)	1 (2)
discussed important characteristics of materials; other than colour	13 (10)	28 (8)

	% responses 2000 ('96) year 4	2000 ('96) year 8
Preparing components to fit design *cutting, shaping, painting*		
detailed description: all steps	0 (0)	3 (2)
some steps	9 (4)	23 (7)
some basic detail	25 (24)	35 (34)
vague outline	45 (52)	33 (45)
other	21 (20)	6 (12)
Joining components		
detailed full description	0 (0)	4 (1)
covered some steps, omitted others	11 (10)	30 (11)
some basic detail	28 (20)	39 (39)
vague outline	49 (58)	25 (45)
other	12 (12)	2 (4)
mentioned hinging for mouth mechanism	8 (14)	18 (4)
Total score: 11–15	1 (1)	11 (1)
8–10	12 (9)	33 (17)
5–7	41 (46)	39 (47)
0–4	46 (44)	17 (35)

Commentary:

About 30 percent more year 8 than year 4 students performed quite well on this task. Year 4 students performed similarly in 1996 and 2000, but about 25 percent more year 8 students performed quite well in 2000 than in 1996.

Buzzer

Approach: One to one *Level:* Year 4 and year 8

Focus: Using an electrical circuit for a particular purpose.

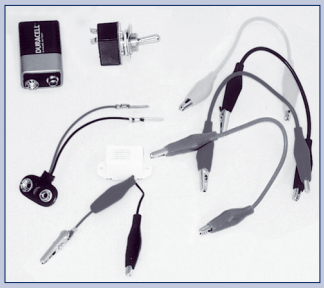
Resources: Floor plan of house, red pencil, battery, 4 wires with crocodile clips, switch, buzzer.

Questions/instructions:

Imagine that someone in your family is sick in bed. They feel too sick to call out when they want something. You decide to make it possible for them to call you when they want something by using an electrical buzzer.

Here is some equipment for making a buzzer that works.

Show equipment and name each component as you lay it out on the table.



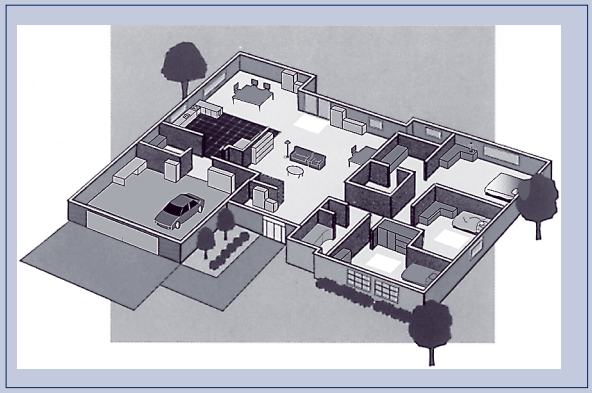
1. Before you have a go with this equipment, try to describe to me how you would connect the equipment together to make the buzzer go.

Student explains.

2. Now you can have a go at making the buzzer go. You will need to use all of the pieces of wire. If you get stuck I can help you.

Allow time.

		% responses y4	% responses y8
	made buzzer sound	98	93
Help needed:	none	10	34
	some clues	39	33
	detailed verbal instructions	12	6
	hands-on help	39	27



Show student house plan.

Here is a plan of the house where the family lives. This is the sick person's bedroom [room with person in bed], and here is the living room where most of the family will be.

3. Think about how you would set up the buzzer so that it would help the sick person in this house. Draw your ideas on this house plan, and show the main parts of the system you would make. As you are drawing, tell me what you are doing and why.

Give plan and red pencil to student.
Prompt for explanation if necessary.

		% responses y4	% responses y8
Features of plan	switch in bedroom	84	94
	switch accessible to person in bed	77	90
	buzzer in place to be heard	63	87
	battery or identifiable power source in circuit	55	62
	wire(s) running from switch/battery to buzzer	81	90
	two wires shown *(to complete circuit)*	27	28
Total score:	9–10	8	28
	7–8	38	41
	5–6	35	22
	3–4	12	8
	0–2	7	1

Commentary:

About 20 percent more year 8 than year 4 students performed very well on this task. The importance of a power source and (particularly) a two wire circuit was often not recognised in the plans drawn.

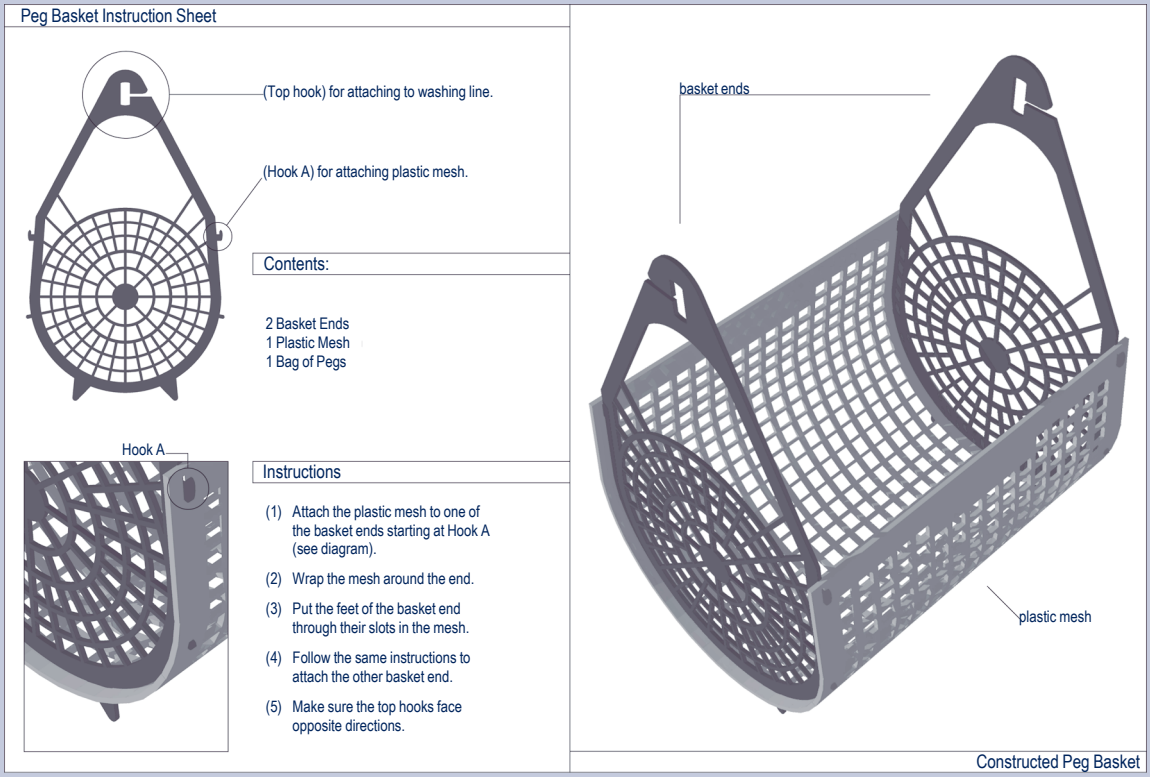
Peg Basket

Approach: Independent

Level: Year 4 and year 8

Focus: Explaining design features of a plastic peg basket.

Resources: Plan, peg basket kitset, pegs.



Questions/instructions:

Make up the peg basket so that it looks like the plan.
Ask the teacher if you need help.

Think about why the basket has been designed like this.

Write answers to the questions.

Why has plastic mesh with holes been used?	% responses y4	y8
mesh lets rain/water air through	31	64
plastic doesn't rust	2	3
plastic is flexable	4	7
Why do the top hooks go opposite ways?		
less likely that basket will fall off line	40	61
Why does the basket have legs?		
can sit well on ground or table	88	95
Why is it brightly coloured?		
attractive, highly visible	73	87

Why isn't the basket made up before it is sold in the shop?	% responses y4	y8
package takes less space/packaging	32	60
reduce labour/ manufacturing costs	4	7
reduce shipping costs	0	4
less damage in transit	11	16
Why is the basket rounded?		
easier to assemble	4	14
easier to use	9	19
looks attractive	1	5
fewer corners to damage clothes	0	3
Total score: more than 6	1	6
5–6	12	47
3–4	51	38
0–2	36	9

Commentary:

About 40 percent more year 8 than year 4 students performed well on this task.

Taking Care

Approach: Station

Level: Year 4 and year 8

Focus: Safety rules when using equipment.

Resources: 3 pictures.

Questions/instructions:

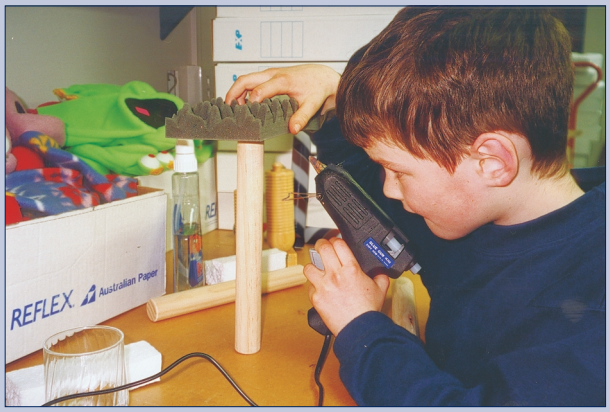
Look at each picture. Think about safety rules.

Picture 1.
This person is going to use a craft knife.

1. How can people make sure they don't get hurt when using a craft knife?	% responses y4	y8
keep body parts clear of knife	64	75
other valid response	22	56

Picture 2. This person is going to boil an egg.

2. How can people make sure they don't get hurt when boiling an egg?	% responses y4	y8
pot handle away from edge of stove	29	59
other valid response	49	70



Picture 3.
This person is going to use a hot glue gun.

3. How can people make sure they don't get hurt when using a hot glue gun?	% responses y4	y8
keep body away from hot nozzle/glue	58	68
other valid response	21	60
mentioned adult help or supervision for any of these situations.	30	19

Commentary:

About 15 percent more year 8 than year 4 students identified the major point for each picture.
About 30 percent more year 8 than year 4 identified other valid points.

Sports Day

Approach: Station *Level:* Year 4 and year 8

Focus: Appropriate choice of communications media for different tasks.

Resources: Program on laptop computer.

Questions/instructions:

Students were asked to choose one or more communications options as the most appropriate choices for each communication need. Students made their choices by clicking labelled buttons on the computer screen.

Here some different ways for getting in touch with people and for getting things done: telephone, post, newspaper, radio, cellphone, fax, email, internet, courier, newsletter and hui.

A very big school in large town is going to have a sports day with another school. There are lots of peole to contact and things to do. Each time you see something that has to be done click on the most suitable way or ways of doing it.

You can click on more than one way if different ways are suitable.

	% responses y4	y8
1. Decide with a teacher from the other school when to hold the sports. telephone, cellphone, fax, email	35	63
2. Make a booking for the sports ground. telephone, cellphone, post, fax, email	37	60
3. Let all of the students and their families know about the sports day. newsletter, hui	29	43
4. Send a copy of the sports programme to the other school. It is two pages long and has a drawing of the sports ground. post, fax	22	40
5. You need to get the box of sports certificates today from a shop in another town. courier	14	50
6. You want to talk to your friend tonight about the sports day. telephone, cellphone, email, internet *(chat)*	70	82
7. You want everyone in the town to know that the sports day is on. newspaper, hui, radio	52	54
8. If it is wet on the sports day, you will need to let everyone know that it will not be on. radio	21	34
9. You want to find information about world records made by sports people in different countries. internet	39	64
10. At the end of the sports day, you want to send the results to the newspaper so that they can print them the next morning. fax, email, courier	24	40
11. Send a cheque to pay for using the sports ground. post	41	52
Total score: 9–11	3	20
7–8	16	25
5–6	22	22
3–4	25	17
0–2	34	16

Commentary:

About 25 percent more year 8 than year 4 students revealed good understanding of communications.

Link tasks 1–3

LINK TASK 1

Approach: One to one
Level: Year 4 and year 8
Focus: How a piece of equipment works and reasons for its design features.
Resources: Item of equipment.

Total score:	% responses y4	y8
more than 12	1	12
10–12	15	45
7–9	53	34
4–6	26	8
0–3	5	1

Commentary:

About 40 percent more year 8 than year 4 students scored well on this task.

LINK TASK 2

Approach: One to one
Level: Year 4 and year 8
Focus: Reasons for design features.
Resources: Photograph of equipment.

Total score:	% responses y4	y8
6	0	0
5	0	3
4	1	8
3	10	25
2	30	41
1	47	19
0	12	4

Commentary:

About 25 percent more year 8 than year 4 students scored quite well on this task.

LINK TASK 3

Approach: Station
Level: Year 8
Focus: Diagramming a process.
Resources: Video on a laptop computer.

Total score:	% responses y8
20–23	9
15–19	39
10–14	32
5–9	11
0–4	9