

Attitudes and Motivation

The national monitoring programme recognises the impact of attitudinal and motivational factors on student achievement in individual assessment tasks. Students' attitudes, interests and liking for a subject have a strong bearing on progress and learning outcomes. Students are influenced and shaped by the quality and style of curriculum delivery, the choice of content and the suitability of resources. Other important factors influencing students' achievements are the expectations and support of significant people in their lives, the opportunities and experiences they have in and out of school, and the extent to which they have feelings of personal success and capability.

Science Surveys

The national monitoring science surveys sought information from students about their curriculum preferences and their perceptions of their achievement and potential in science. Students were also asked about their involvement in science related activities within school and beyond. There are numerous research questions that could be asked when investigating student attitudes and engagement. In national monitoring it has been necessary to focus on a few key questions that give an overall impression of how students regard science in relation to themselves.

Each survey was administered in a session which included team and independent tasks, with a teacher reading the survey to year 4 students, and available to help with writing. The surveys included 18 questions that could be responded to by ticking or circling a chosen response. Responses to these

18 questions are summarised in the large tables on the next two pages. Two questions required written responses, which are summarised below.









Students were asked to indicate their first three preferences from a list of six class science activities. Two activities ("doing things like experiments" and "going on field trips") were strong first preferences at both year levels, with year 4 regarding both similarly and year 8 strongly favouring experiments. When the top three preferences were considered, it became clear that "being



shown about science" was the third most valued activity for both year 4 and year 8 students. For year 8 students, "being told about science" was clearly fourth, with "reading about science" and "talking about science" well behind, while for year 4 students all three of these were lowly rated.

One open-ended question was asked. Responses to the question, "What do you like doing most in science in your own time" were coded into three categories. Easily the most popular category was "doing experiments" (49% of year 4 students and 60% of year 8 students). Reading/viewing/listening/writing activities related to science drew about 15% support from year 4 students and 12% support from year 8 students, with very similar support levels for the third category: activities involving applied science or technology, such as making a radio, building creations, or cooking.

YEAR 4 SCIENCE SURVEY RESPONSES 2007 [2003] (1999)

					
1. How much do you like doing science at school?	64 [62] (67)	24 [29] (24)	10 [5] (7)	2 [4] (2)	
	<i>heaps</i>	<i>quite a lot</i>	<i>some</i>	<i>little</i>	
2. How much do you think you learn about science at school?	24 [25] (28)	29 [37] (41)	31 [27] (23)	16 [11] (8)	
	<i>more</i>	<i>about the same</i>	<i>less</i>		
3. Would you like to do more or less science at school?	71 [56] (58)	24 [34] (34)	5 [10] (8)		
	<i>heaps</i>	<i>quite a lot</i>	<i>sometimes</i>	<i>never</i>	
4. How often does your class do really good things in science?	12 [12] (16)	18 [27] (27)	55 [55] (52)	15 [6] (5)	
5. How often do you do these things in science at school?					
a. Field trips/work outside	23 [13] (19)	19 [21] (20)	46 [58] (52)	12 [8] (9)	
b. Visit science activities	14 [8] (10)	11 [12] (12)	40 [52] (54)	35 [28] (24)	
c. Research/projects	30 [23] (24)	28 [37] (31)	29 [32] (36)	13 [8] (9)	
d. Group work	49 [38] (39)	28 [36] (36)	18 [23] (24)	5 [3] (1)	
e. Experiments with everyday things	19 [14] (17)	19 [19] (16)	40 [48] (51)	22 [19] (16)	
f. Experiments with science equipment	17 [16] (15)	19 [16] (20)	37 [44] (44)	27 [24] (21)	
g. Science competitions	13 [8] (8)	8 [6] (7)	21 [29] (31)	58 [57] (54)	
					<i>don't know</i>
6. How good do you think you are at doing science?	35 [27]	46 [43]	9 [12]	3 [4]	7 [15]
7. How good does your teacher think you are at doing science?	26	32	8	2	32
8. How good does your mum, dad or caregiver think you are at doing science?	52	21	6	2	19
	<i>heaps</i>	<i>quite a lot</i>	<i>sometimes</i>	<i>never</i>	
9. How much do you like doing science things in your own time, when you're not at school?	47 [42] (24)	27 [29] (19)	17 [19] (38)	9 [10] (19)	
10. Do you do some really good things in science in your own time — when you're not at school?	22 [17] (15)	20 [22] (21)	42 [43] (45)	16 [18] (19)	
	<i>yes</i>	<i>maybe</i>	<i>no</i>		
11. Do you want to keep learning about science when you grow up?	57 [46] (43)	41 [47] (47)	2 [7] (10)		
12. Do you think you would make a good scientist when you grow up?	27 [24] (28)	49 [58] (52)	24 [18] (20)		

Year 4 students were generally very positive about doing science at school. Almost two thirds chose the highest rating for the first question (about liking to do science at school), and 71% would like to do more science at school. Over half wanted to keep learning about science when they grew up, and about a quarter thought they would make good scientists when they grew up. The year 4 students were less confident that they learned a lot of science at school, with 24% saying that they learned “heaps” and

only 12% saying that their class did really good things in science “heaps”. The proportion of students who felt they had very limited opportunities to learn science has increased over the last eight years: 16% said that they learned “very little” in science at school (compared to 8% in 1999), 15% said they “never” did really good things in science at school (compared to 5% in 1999), and there were increased percentages saying that they “never” did the following things in science at school: experiments with science

equipment, experiments with everyday things, research or projects, and visits to science activities. Indeed, the responses to question 5 suggest that much science in school is bookwork, with practical work, field trips, visits and experiments less common. In a question introduced for the first time in the 2007 survey, it is a concern that 32% of year 4 students marked “don't know” in response to the question, “How good does your teacher think that you are at doing science”.

YEAR 8 SCIENCE SURVEY RESPONSES 2007 [2003] (1999)

	😊	😐	☹️	😞	
1. How much do you like doing science at school?	24 [32] (37)	39 [51] (48)	33 [13] (12)	4 [4] (3))	
	<i>heaps</i>	<i>quite a lot</i>	<i>some</i>	<i>little</i>	
2. How much do you think you learn about science at school?	10 [13] (15)	39 [44] (44)	40 [37] (35)	11 [6] (6)	
	<i>more</i>	<i>about the same</i>	<i>less</i>		
3. Would you like to do more or less science at school?	44 [32] (39)	46 [54] (51)	10 [14] (10)		
	<i>heaps</i>	<i>quite a lot</i>	<i>sometimes</i>	<i>never</i>	
4. How often does your class do really good things in science?	2 [3] (7)	18 [23] (22)	64 [64] (63)	16 [10] (8)	
5. How often do you do these things in science at school?					
a. Field trips/work outside	5 [2] (4)	10 [12] (13)	54 [57] (50)	31 [29] (33)	
b. Visit science activities	2 [2] (3)	8 [9] (9)	52 [55] (53)	38 [34] (35)	
c. Research/projects	16 [18] (21)	46 [43] (40)	33 [35] (36)	5 [4] (3)	
d. Group work	25 [30] (31)	38 [41] (40)	33 [25] (27)	4 [4] (2)	
e. Experiments with everyday things	7 [8] (14)	21 [29] (47)	53 [50] (28)	19 [13] (11)	
f. Experiments with science equipment	10 [9] (14)	22 [25] (25)	42 [50] (43)	26 [16] (18)	
g. Science competitions	4 [4] (4)	12 [12] (10)	42 [50] (56)	42 [34] (30)	
	😊	😐	☹️	😞	<i>don't know</i>
6. How good do you think you are at doing science?	12 [14]	49 [52]	22 [17]	3 [3]	14 [14]
7. How good does your teacher think you are at doing science?	9	35	15	3	38
8. How good does your mum, dad or caregiver think you are at doing science?	19	34	12	2	33
	<i>heaps</i>	<i>quite a lot</i>	<i>sometimes</i>	<i>never</i>	
9. How much do you like doing science things in your own time, when you're not at school?	15 [14] (15)	28 [30] (31)	34 [40] (39)	23 [16] (15)	
10. Do you do some really good things in science in your own time — when you're not at school?	3 [3] (5)	12 [11] (15)	54 [58] (52)	31 [28] (28)	
	<i>yes</i>	<i>maybe</i>	<i>no</i>		
11. Do you want to keep learning about science when you grow up?	34 [31] (33)	57 [58] (59)	9 [11] (8)		
12. Do you think you would make a good scientist when you grow up?	5 [9] (9)	41 [48] (46)	54 [43] (45)		



Compared to year 4 students, year 8 students were less inclined to use the most positive categories. This pattern has been common in national monitoring surveys. Older students can be expected to be more discerning and critical, as well as more realistic about their own abilities. However, trends across time paralleled those already mentioned for year 4 students. Almost half of the year 8 students would like more science at school. The percentage of year 8 students particularly enjoying science at school dropped from 37% to 24% over eight years, while the percentage with a negative view increased from 15% to 37%. Sixteen percent (compared to 8% in 1999) indicated that their class “never” did really good things in science. There were similar increases in the percentages indicating that they “never” did experiments with everyday things or with science equipment. Only 5% indicated that they thought they would be a good scientist when they grew up, while 38% said that they “didn’t know” how good their teacher thought they were at doing science.