Interim report on the second round of the Delphi study

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Interim report on the first round of the Delphi study

1 Framework and procedure of the first round – participation rate

1.1 First attempt

Group	Subgroups included	Total
Students	School students and university students	53
Teachers	Teachers (primary & secondary) and trainees	74
Teacher Educators	-	21
Scientists	Scientists and science employers	25
Total		**173**

Table 1: Structure of the sample, amount of participants for each group and participation rate after the first attempt

1.2 The questionnaire

The questionnaire contained three questions each of which had two parts. These addressed the following areas:

      1.(a) **reasons** for teaching science

      1.(b) **contexts** for science lessons

      2.(a) preferred **topics** or 'themes' in school science

      2.(b) preferred **methods** for teaching science

      3.(a) **skills** that should be developed in school science

      3.(b) **attitudes** that should be developed in school science

2 Qualitative analysis

2.1 Method

- Formulation of the questions

- Trials and revisions

- Distribution of the questionnaire

- Collection of responses

- Tabulation and analysis of responses

2.2 Results

There were 173 responses from four different groups. In **Table 1** the number of responses from each group is shown.

Students	53
Teachers	74
Teacher educators	21
Scientists	25
Total	**173**

Table 1: Groups and numbers of respondents

3 Quantitative analysis

3.1 Method

- Tabulation of the data

- Use of WinMAX, Excel and Word

- Frequencies and relative frequency of the categories

The data was compiled in a Word document. It was then pre-formatted in preparation for transfer to winMAX for coding of various categories. Pre-formatting ensured that the individual responses were coded by question number and respondent identifier.

The data was also examined in Excel where frequencies of keywords were identified. This process facilitated the construction of a list of codes for use in winMAX. The winMAX software facilitates the allocation of identifiers to qualitative data in order to produce quantitative statistics.

Once the categories were assigned to the responses the coded text was transferred to Excel where totals of all the responses were calculated. The total number of responses in each category, to each question by each group of respondents, was divided by the number of respondents in that group in order to find a percentage response.

3.2 Results

For ease of comparison, in all the tables in this section raw frequencies in each group of respondents have been converted into **percentages** of the number of respondents in that group.

Note: The bars in the graphs in this section are quantised and so small differences in percentages (of <2%) may not be evident. They do however clearly show differences in patterns of responses.

Question 1 concerned the aims and context of science education. It had two parts:

(a) What do you see as the **main reasons** for teaching science subjects in school?

(b) In what **contexts** do you think that science lessons should be taught to pupils in order to encourage them to take an interest in additional science-related educational activities?

Using the set of codes the responses were categorised and sorted by frequency.

From the responses to **Question 1(a)** as shown in Table 3.1, the four main reasons respondents gave for teaching science were:

1. to develop **understanding** of the physical and natural world

2. to learn the **basics** of science

3. as preparation for a **career** in science

4. to develop questioning, **enquiring** mind

Responses to Q.1a: reasons for teaching science	%	of total
to understand the world; how things work; why things are as they are	43	
to learn basics of science	18	
preparation career in science	17	
to develop an enquiring mind, curiosity; to learn to question things	16	
preparation for life	12	
preparation for work; economy	12	
develop and interest in science	12	
learn to think logically, to analyse	11	
preparation for science courses in college	10	
understanding	10	
preparation for technological future	7	
understand the working of the human body/ health	5	
general knowledge	5	
problem solving	4	
to be able to discover new things; to be creative	3	
to learn to apply their learning	3	
learn to observe	3	
understand the place of science in society/the significance of science	3	
develop awareness of global issues	2	
to develop a love of learning; lifelong learning	2	
develop a sense of wonder/appreciation	2	
develop or expand their knowledge	2	
learn practical skills	2	
learn to discuss/communicate	1.2	
to learn to inquire	1.2	
develop intellectually	0.6	
knowledge of historical development of ideas	0.6	
to pass examinations	0.6	

Table 3.1: The main reasons for teaching science in school and the percentage of all 173 respondents who mentioned them.

The last five items in table 3.1 were mentioned only once or twice.