

Attitudes to Primary Science: Notes for Teachers Using the Scales

Introduction

- 1.1** When administering these attitude scales, announce at the start that you have some questions about school and science that you want the pupils to fill in. That they will be helping the school, which will be helping other schools in Leicester, to find out how to improve the learning and teaching of science.

 - 1.2** Point out that this is not a "test" of what they know, but of **how they feel**, so there is no "correct" answer to be found. Stress that pupils do not have to spend long working out "answers", but should **quickly, just give their first, natural response** each time.
 - 1.3** Stress to pupils that their own, truthful answers are so valuable. They should not bother themselves with what their friends have marked, or talk with them while answering.
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Cover Page and Instructions

- 2.1 The pupil's name is needed on the cover page because the questionnaires are to be administered twice in a "before and after" format. The idea is to monitor **changes in attitudes**. To ensure confidentiality, you might want to put the questionnaire in to the return envelope, marked with a class identifier, immediately after the pupils have finished.
- 2.2 The questionnaires are designed for **self-completion by the pupils** without teacher intervention, with the pupil's feeling being expressed with a **tick mark**.

For the senior primary pupils of years 4, 5 and 6 there should be no problem with a general, class administration, but for comparison purposes, the same questionnaire items are being used with the earlier years of 1 to 3 as well.

With the younger pupils, it will be necessary to read the item out. In return, the pupils might well, busily, **colour in the smiley face** for their answer. These young pupils quickly decide on their answer to an item, but then take great pleasure in creating a perfectly coloured face. Although this extends the time for completion, the pupils remain better motivated to the other items, and so the validity of the questionnaire is maintained.

- 2.3 For the youngest pupils, the teacher or classroom assistant might take four to six pupils at a time and **explain the meaning of the items**. Reading the item itself will, unfortunately, not work well, because the language has been pitched at the level of the self-completing older pupils. If the teacher has some items of scientific equipment available to refer to, this makes mention of "experiment" and "finding out" more concrete and understandable.

With the youngest of pupils, the teacher might want to split the questionnaire into its natural sections and administer each, separately over one day and the next.

*First attitude scale: **Being in school***

- 3.1 Completion times in the pilot trials were found to be:

Year 6	40 to 60 seconds
Year 4	30 to 70 seconds
Year 2	6 minutes

- 3.2 The youngest pupils might be slow to start as they try out their pens and colours!

Check that felt tip pens do not have ink which penetrates to the sheet underneath.

Time for completion in a group activity is governed by the slowest member.

*Second attitude scale: **Science experiments***

- 4.1 Completion times in the pilot trials were found to be:

Year 6	30 seconds
Year 4	30 seconds
Year 2	7 minutes

- 4.2 A display of some familiar science apparatus is very helpful for young pupils.

This is essential for the understanding of item 8.

If a pupil is puzzled, then "not sure" is the answer.

*Third attitude scale: **What I really think of science***

- 5.1 This scale requires the pupils to choose one of only three faces. This is because the conceptual demand is greater.

- 5.2 Completion times in the pilot trials were found to be:

Year 6	75 to 120 seconds (4-point scale)
Year 4	60 to 150 seconds

(3-point scale)

Year 2 10 minutes (3-point scale)

- 5.3 Take questions from pupils who cannot read some of the words. For example, some pupils in year 3 and above will not be able to read "scientist" or know what it means. The young pupils will, of course, be helped by the teacher presenting the items directly.
- 5.4 The two questions in the boxes at the end are restricted to Years 4 to 6. Answers extracted from items 1 to 20 are acceptable, as these will draw attention to particularly strong viewpoints.

Completion times in the pilot trials were found to be:

Year 6 up to 60 seconds

Year 4 up to 120 seconds

Conclusion

- 6.1 Total completion times in the pilot trials were found to be:
- Year 6 4 to 5 minutes
Year 4 4 to 6 minutes
Year 2 23 minutes
- 6.2 Average scores for your class will be returned to you within a few weeks of providing the initial data. After an interval, which might be six months, repeating the administration will allow changes in pupils' attitudes to be explored.
- 6.3 There is no reason why one or more of the scales could be used by the class teacher to monitor pupil changes for themselves, year on year. This is valuable in-school based evaluation, which enhances the professional reputation of the school and its staff. The first scale "Being in school" is particularly recommended for your own use.
- 6.4 As an active participant in this research project, you will be provided with sufficient feedback to compare your pupils in terms of attitudes with those in the City of Leicester at large.