THE TRANSITION BETWEEN KEY STAGE 2 AND KEY STAGE 3

A Report for the Northern Ireland Council for Curriculum, Examinations and Assessment

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EXECUTIVE SUMMARY

The Nature of the Investigation

- During this project, principals and teachers in 18 primary schools and teachers and pupils in 12 post-primary schools in Northern Ireland were interviewed about aspects of the English, mathematics and science curriculum during the period of transition between Key Stage 2 (KS2) and Key Stage 3 (KS3). The research revealed a wide diversity of opinion and experience and the main body of the report gives extended details of the findings. The final section points to some important issues which arise from the study and which merit attention in the context of helping to improve pupils' learning experiences during the period of transition from primary to secondary education.

Research Themes

- The three main themes of the research were:

  (a) **curriculum continuity and progression:** the extent to which the pupils' KS3 programme resumes close to where the pupils' KS2 programme ended, without significant gaps in content, undue repetition of primary school work or too abrupt changes in the teaching and learning approaches.

  (b) **transfer of information** on pupils between primary and post-primary schools. The CCEA asked that the interview schedule should include a question on Records of Achievement for primary schools.

  (c) **liaison on curricular matters** between post-primary schools and their contributory primary schools.

Sample of Schools

- Eight clusters of schools were visited, each cluster containing between one and three post-primary schools and two or three primary schools. Three of the clusters were in areas of Northern Ireland that are non-selective at age 11+ and five were in selective areas. Focusing the research on clusters of schools in the same area made more meaningful the evidence on curriculum liaison and the provision of information on transferring pupils.

Table 1. The Eight Clusters of Schools

		SELECTIVE AREAS		
Cluster	**Secondary**	**Grammar**	**Primary**	**Location**
A	1	1	3	Greater Belfast
B	1	1	2	Rural District
C	1	0	2	Commuter town
D	1	0	2	Greater Belfast
E	1	2	3	Greater Belfast
		NON-SELECTIVE AREAS		

Cluster	Junior High	11-18 Comprehensive	Primary	Location
F	1	0	2	Medium-sized town
G	1	0	2	Medium-sized town
H	0	1	2	Small town

- The post-primary schools comprised four grammar, five secondary high, two junior high and one 11-18 comprehensive school. Although individual clusters contained schools with either Catholic or Protestant affiliations, the full sample was planned to give good representation to both traditions and also to such variables as coeducational *versus* single-sex schooling, school size, urban and rural locations and catchment areas with varying degrees of prosperity and disadvantage.

- The primary and post-primary schools also varied in the number of schools to which they sent or from which they received pupils. Six of the 18 primary schools, of which five were in non-selective areas, sent all but a few of their children to a single post-primary but elsewhere parents opted for a wider range of post-primary schools.

Respondents

- In the primary sector, 17 principals (the eighteenth being absent through illness) and 46 other teachers gave evidence. The 46 teachers were either subject co-ordinators or teachers with a current or recent P7 class. In a small rural school the principal was the sole informant but elsewhere between two and six members of staff were interviewed.

- In the twelve post-primary schools there was a total of 79 focused teacher interviews with heads of departments and Year 8 teachers of mathematics, science, and English and with teachers who had pastoral or senior management responsibilities, most of the last group being curriculum co-ordinators. Where possible, more than one teacher perspective on each subject was obtained in each school. There were also 46 interviews with groups of between four and six Year 8 pupils. Half the pupil groups were interviewed only about science, the subject on which they had most to say, and half about both English and mathematics.

The Timing of the Survey

- The interviews took place between early December 1994 and early May 1995. The primary schools were visited shortly after they had received from CCEA the *Proposals for Revised Subject Requirements*, which appreciably reduced the compulsory content of the curriculum in mathematics and science at Key Stage 2.

Information on Transferring Pupils

Information Currently Sent to Post-primary Schools

- In 1995, little detailed information on pupil progress and achievements was reaching the post-primary sector and even less was reaching the class teachers.

- In selective areas the Transfer Report was generally regarded as an unreliable guide to pupil attainments. Most post-primary schools preferred to assess pupils themselves through early coursework or standardised tests.

- Only in one selective area, where all three post-primaries in the cluster received folders or record cards from some of their contributory schools, was there evidence of information other than that on the Transfer Report being sent on from the primary schools. The medical and other background information in the folders was reported to be more useful than the academic information.

- In the non-selective schools, streaming in Year 8 was mainly on the basis of ratings from the primary schools. One school in the sample asked for ratings on the three core subjects. The other two non-selective schools asked for only an overall rating (A-E) on each pupil, although changes were expected.

- All five secondary high schools, two non-selective schools and one grammar school reported obtaining valuable information on entrants during face-to-face discussions with the P7 teachers. These discussions usually took place during visits to the primary schools in the June before transfer by teachers with liaison responsibilities.

- Many primary school informants were concerned about the apparent lack of interest shown by the post-primary schools in information on transferring pupils. They suspected that the Transfer Reports were underused and that any pupil folders they sent often lay unread..

Records on Transferring Pupils: What Information Would be Most Useful?

- Half the post-primary teachers seemed to accept the idea of records of achievement (RoAs) from primary schools as a source of information on their entrants' academic attainments, although sometimes with provisos. Another quarter wanted information on incoming pupils but rejected RoAs for this purpose. One in eight of the post-primary teachers did not want more information on their entrants, while the remaining eighth were ambivalent. Among the most frequently mentioned objections to RoAs were that they are too bland, too long, too complicated and potentially misleading because of the insistence on only positively worded statements.

- Inter-departmental differences were observed. The mathematics teachers were the keenest to receive quantitative data on entrants' attainments, though not necessarily on a RoA. The English teachers were the most interested in the possibility of brief verbal statements on pupils' strengths and weaknesses, while the science teachers were less concerned about assessments of the entrants' previous work than in learning what topics had been covered in primary school.

- In neither the primary nor the post-primary sectors was there any clear consensus regarding the best form in which to convey information on the academic achievements of transferring pupils. There were advocates and opponents of holistic levels for each core subject, for levels on individual attainment targets, ATs and for verbal statements on pupils' competencies. A number of informants regarded the attainment levels of the Northern Ireland Curriculum as too broad to be useful and some teachers in both sectors preferred the idea of reading ages or other scores on traditional standardised tests.

- When asked about the design and lay-out for primary RoAs, the over-riding demand from teachers in both sectors was for conciseness, with many informants stressing that over-long RoAs would simply lie unread.

Contents of a Possible Record of Achievement

- At the time of the interviews, few primary school teachers had direct experience of records of achievement, as opposed to their present records on pupil progress through the NI curriculum. Accordingly, apart from the need for succinctness, no very clear models for a possible RoA emerged from the primary school interviews.

- From the post-primary teachers' replies, two possible models of a primary school record of achievement emerged. The first was no longer than a typical one-page home report to parents and would simply contain grades or levels and brief teacher comment.

- The second model, which would lead to a 6-8 page document, would include a page on each core subject with both quantitative measures of pupil attainments and teacher comment, briefer information on achievements in other subjects (with mention of any sporting, musical or artistic talents), a page for medical and other background information and perhaps two pages for a pupil statement written towards the end of P7.

Curriculum Continuity: Primary School Perspectives

The Demands of the KS2 Curriculum

- In virtually every primary school in the sample, whether in a selective or non-selective area, there were complaints about the overcrowded nature of the (then) Northern Ireland Key Stage 2 programmes of study (PoS). In all except a few schools, where ability levels were above average, the programmes of study were also considered to be too demanding for the majority of pupils. Both complaints were most often voiced about science and least often about the English PoS, which was generally thought to be appropriate for the age group.

- The **science** PoS had required more radical changes than the other two subjects, where the main changes had often been in documentation rather than in classroom practice. It was also the subject for which teachers felt the greatest continuing need for inservice support, including help with the content as well as with the pedagogy. Some of the 18 schools had been better positioned than others for the introduction of the science PoS, since they already had staff who were trained in or enthusiastic about the subject. In five schools there were informants who still did not fully accept science as a core subject and in a few of the schools the subject was not yet fully established.

- In **English** Talking and Listening was the AT which had most often required development and in some schools the scope of writing activities had to be widened.

- The changes recommended in the *Key Stage 2: Proposals for Revised Subject Requirements* (CCEA, 1995) were welcomed by most primary school informants as likely to lead to lead to more 'realistic' programmes of study for pupils in P5-P7.

Effects of the New Style Transfer Tests

- The survey took place during the second year in which the Transfer tests were based on the Key Stage 2 programmes of study in English, mathematics and science. The twelve participating primary schools which were located in selective areas varied greatly both in the percentage of pupils entered for the tests – from 35% to over 90% – and in the proportion gaining the top grade – from none to over half the age group.

- In all except two of the schools in selective areas it was openly admitted that the new Transfer tests had a distorting effect on the curriculum. Teachers felt under pressure to cover up to level 5 of the programmes of study in the core subjects by October of P7, if not by the end of P6. In consequence, little time might be given to subjects other than English, mathematics and science. Within the core subjects, there was an often admitted neglect of the process-based ATs (Talking and Listening, Processes in Mathematics and Exploring and Investigating in Science), of the content-based science AT not being tested that year and of imaginative forms of writing in English.

- A number of informants also admitted teaching difficult topics in mathematics and science earlier and faster than considerations of sound learning would lead them to do. Factual knowledge or a superficial grasp of skills could be given precedence over sound understanding and not all children could cope well with the pace of delivery.

- The high levels of vocabulary and of comprehension skills demanded in the Transfer test were commented upon by several teachers from disadvantaged, working-class or isolated rural areas. The inclusion of inferential comprehension questions caused particular difficulties to pupils who had not read widely. Pupils could also be handicapped because of their backgrounds not only in the English sections of the test but also in the mathematics and science sections, where they might fail to understand questions for which they knew sufficient mathematics or science to answer.

- No one, however, recommended a return to the former verbal reasoning tests. Certain curricular benefits had been observed. More attention was now given to aspects of mathematics other than Number, pupils' skills of comprehension had improved and the inclusion of science in the new tests ensured that it was taught in all primary schools.

- Although many informants spoke of giving attention in the remaining months of P7 to subjects that had been neglected in the run-up to the tests, another important task was often to go over 'properly', topics that had been rushed through during Transfer preparation and to attempt to put pupils' understanding on a sounder basis.

Planning and Continuity within the Primary School

- The overcrowded nature of the Northern Ireland curriculum had made schools in non-selective as well as selective areas review and streamline their programmes. Two major benefits were acknowledged. First, the new programmes were better planned and so more likely to show continuity and progression within primary schools than had previous programmes. Secondly, teachers had had to work together and so had gained a better overview of the whole primary curriculum.

Coverage of the KS2 Programmes of Study

- Although few primary school informants were prepared to admit outright that there were areas of the curriculum which they tended to omit or even to skimp, there were various indications that the programmes of study were not always fully covered:

    - teachers might find the PoS simply too overcrowded to complete;
    - parts of the PoS might be perceived as too difficult for the informant's pupils and it might be judged sensible not to proceed on an AT much beyond level 4 or even level 3;
    - topics might be taught in haste without understanding or mastery;
    - topics which teachers did not feel 'comfortable' with, e.g. algebra, poetry or the Materials AT, might be omitted or glossed over.

- Two particularly vulnerable aspects of the core subjects appeared to be mathematical ATs other than Number and Measures and the three process-based ATs.

The Process-based Attainment Targets

- There had often been problems in implementing Talking and Listening, Processes in Mathematics and Exploring and Investigating in Science. They could have a lower perceived status than the other ATs, partly because there were no plans for their external assessment. Some teachers had difficulty in accommodating their teaching style to open-ended classroom situations. Pupils who had not been exposed to process-based work throughout primary school might not respond well at first, leading teachers to feel that such methods were time-wasting. Assessment of these ATs caused difficulties. In Exploring and Investigating in Science there were also practical problems of time-consuming preparation and a lack of specialist facilities.

Difficulties Experienced and Estimates of Levels at the End of KS2

- In most schools it was thought that 'average' pupils would have attained, or have almost attained, level 4 in **mathematics** by the end of P7 and only in one school was level 3 considered a better estimate of a 'typical' pupil. However, in six schools, five of them in Belfast, it was reckoned that the level 4 benchmark for **English** would not be reached by the average pupil by the end of primary education. Teachers tended to be more hesitant about estimating levels in **science**; in eleven schools the 'typical' pupil was believed to have achieved at least level 4 but in four other schools to be at not more than a bare level 3, if that. There were, however, a number of caveats surrounding the teachers' estimates of levels and in two primary schools the 'average' pupil was reported to be on level 5 in all three subjects by the time of interview.

- For both mathematics and science, primary school teachers who judged their pupils' levels on the process-based AT to be lower than their levels on the other ATs outnumbered those who judged them to be the same. No teacher thought pupil levels were higher on Processes in Mathematics or Exploring and Investigating in Science than on the other ATs in these subjects. However, just as many primary teachers thought that levels on Talking and Listening were similar to those on the other English ATs as thought them lower, while two primary teachers said their pupils could express themselves better orally than in writing.

- Within **English**, P7 pupils were said to have most difficulty with the Writing AT and in particular with planning and sequencing. A number of **mathematical** topics were identified

by the primary school teachers as hard for the pupils including fractions, percentages, long division, area and the more abstract parts of algebra. In **science**, P7 pupils often found difficulty with the planning and, especially, the reporting of investigations.

Overlap with the Post-primary Curriculum

- In all eight clusters concern was expressed about the extent to which material 'covered' in the upper primary school was being repeated in post-primary schools, causing discontinuity and lack of progression at the stage of transition. In some cases the repetition seemed unduly protracted, affecting the whole first year and, in extreme cases, much of Key Stage 3. Even some grammar schools were reported to spend considerable time repeating work at level 3.

- There were, however, some indications that children transferring to post-primary schools in Northern Ireland might sometimes have only a tenuous grasp of material 'covered' in class. If that were so, then considerable revision might be necessary.

Curriculum Continuity: The Post-primary School Perspective

Post Primary Teachers: Is Year 8 a Follow-through or Fresh Start?

- Most of the mathematics and science teachers and most of those with pastoral or general curriculum responsibilities saw Year 8 as more of a fresh start than a continuation from primary school. Most teachers in these groups also saw the differences between pupils' learning experiences in Year 8 and in the upper primary school as outweighing the similarities. In the opinion of the **mathematics** teachers and of those with pastoral or curriculum responsibilities the chief differences which pupils experienced on transition arose from (a) the fragmented nature of the post-primary curriculum, with separate subjects taught by different teachers in different rooms for strictly bounded periods of time and (b) the more restricted range of ability within post-primary classes, which resulted in more whole-class teaching. The **science** teachers put more emphasis on subject-related than general differences, contrasting the practically-based work on sophisticated laboratory apparatus in the post-primary school with more didactic and rote-learning approaches in ordinary primary classrooms, which at best might be illustrated with simple experiments using improvised equipment.

- The majority of the teachers of **English**, however, saw Year 8 as both a fresh start and a continuation of Year 7 and pointed to both similarities and differences in the teaching of the subject in the two sectors. English was seen as a follow-through insofar as it entailed building on basic literacy skills taught in primary school. The difference most often identified by teachers was a greater focus on literature in the post-primary sector.

- The term "a fresh start" was used by the post-primary teachers in a number of senses:

    - as a motivating approach, trying to make the subject seem like new;
    - as a setting off on the school scheme at a pre-determined level of attainment;
    - as a starting afresh, taking no prior knowledge for granted;
    - as a fresh opportunity or a clean slate;
    - as an indication of the lack of prejudice and pre-judgement with which new pupils were welcomed.

Year 8 Pupils' Main Impressions of Similarities and Differences

- When asked if **mathematics** in Year 8 was mainly the same or mainly different from what it had been in the upper primary school, most Year 8 groups emphasised various differences in content, methodology, standards or classroom atmosphere, although five of the 23 groups found mathematics essentially the same as in primary school. A common response was that Year 8 mathematics had begun with familiar work but gone on to include something new or more advanced.

- When asked if **science** in their new schools was mainly the same or mainly different from their previous experience, only one grammar school group described Year 8 science as essentially recapitulation and development of topics studied in the primary school. As their teachers predicted, most pupils were impressed by the laboratories, the equipment and the greater amount of experimental work in their new schools. Without prompting, a third of the pupil groups contrasted this with essentially rote learning approaches in their primary schools.

- In eight of the 23 pupil groups **English** was thought to be very similar to what it had been in primary school. Resemblance was most likely to be observed where the post-primary school was seen to concentrate on the technical matters of spelling, grammar and punctuation and on comprehension. These were aspects of English which, as virtually every group indicated, received much attention in the upper primary school.

- In the other 15 groups, KS3 English was seen to differ from the subject in primary school in the following ways:

    - there was a greater variety of activities in English in the post-primary school
    - there was more reading and study of literature
    - longer and more frequent pieces of writing were required
    - work was more advanced and higher standards were expected.

Estimated Levels of Entrants

- In the three schools in non-selective areas teachers reported that the 'average' pupil was ready to work at level 4 in both English and mathematics, while many in the top classes were on level 5. science levels were thought to be somewhat lower. In the secondary high schools the 'average' level in all three subjects was usually given as 3 or '3 to 4'. In each of the four grammar schools the 'typical' entrant was said to be on level 5 in mathematics. There was considerable variation in the estimates of the levels in English and science of the average grammar school entrant (from 6+ to 4 and from 5 to 3 respectively) but informants in several schools explained that they did not yet usually think in terms of the levels.

- Initial levels on Processes in Mathematics and on Exploring and Investigating in Science were usually considered to be lower, and never higher, than on the other ATs in mathematics and science. This was attributed either to neglect of these process-based ATs by primary schools (in both selective and non-selective areas) or to pupils' poor writing skills when recording investigations. By contrast, only two post-primary English teachers, both in non-selective areas, thought that their entrants' levels on Talking and Listening were below those

for the other English ATs and seven teachers, mainly in secondary high schools, thought they would be above the others.

Familiarity with and Readiness for the KS3 Course

- Most of the mathematics and science teachers found that in any class of entrants there were likely to be marked differences in the work with which the pupils arriving from different contributory primary schools were familiar and competent. The pupil evidence confirmed such variations, especially as regards their science backgrounds. Within groups, pupils quite often disagreed about whether they had previously done any physical science or personally carried out experiments.

- In eleven of the twelve schools at least one **science** teacher acknowledged that pupils were now arriving with an appreciable science background. Entrants' knowledge of science was seen as increasing steadily over the previous three or four years as the Northern Ireland curriculum became established.

- In **mathematics** pupils tended to be more familiar with topics other than Number than they had been before the NI programmes of study. On the other hand some teachers, especially in grammar schools, regretted that there were certain numerical operations which entrants could no longer do.

- The **English** teachers found, as was confirmed by the pupil evidence, that their entrants' previous experiences of literature varied both in the amount they had read and in whether they had experience of serious follow-up work and analysis.

Main Pupil Difficulties Perceived by Post-primary Teachers

- More than two-thirds of the **English** teachers were seriously concerned about the writing capabilities of some or most of their entrants. Many Year 8 pupils, including some in at least three of the four grammar schools, had great difficulty in producing a piece of sustained writing of any length.

- The **mathematics** teachers identified Number, Algebra and Processes as the ATs with which Year 8 pupils most frequently had difficulties. Fractions and decimals were the aspects of Number which caused pupils most problems. Difficulties with investigation could be either at the planning or the recording stage. Algebra was considered particularly hard and some teachers doubted the suitability of the topic at the KS2 stage.

- Most of the **science** teachers found that the basic skills of writing and mathematics, especially the former, gave their Year 8 pupils greater difficulty than did any part of science itself. As in mathematics, poor language skills were holding some pupils back.

Effects of the New Style Transfer Tests

- Many teachers, especially of **English,** could see no effects of Transfer test on the knowledge and understanding of their most recent entrants. In all five secondary high schools, however, **mathematics** teachers were concerned that during Transfer preparation pupils had been rushed through difficult topics that they had not understood, leaving many confused and lacking in confidence. A number of **science** teachers found that pupils might mistake the

superficial knowledge of a topic which they had gained during Transfer preparation for an understanding adequate for KS3 and fail to appreciate that they had still much to learn.

- The fears of the mathematics teachers were corroborated in three of the five secondary high schools where pupils volunteered – there being no specific question on the matter – that they had not understood certain mathematical topics in primary school because of the speed of coverage.

Deciding Where to Start the Year 8 Curriculum

- None of the twelve post-primary schools, according to the curriculum co-ordinators, had a whole-school policy on where to start teaching a new Year 8. Decisions were usually believed to be taken at departmental level.

- Two main ways of beginning the Year 8 course in **English** were described. Some schools had a special introductory unit, with a title such as 'Early Days at School X'. These units had pastoral as well as academic functions, aiming to introduce the pupils to each other as well as to the types and standards of work expected. The second main approach was to begin in the same style as the rest of the KS3 programme, with the first of a series of units based on literature, usually a modern or a fairly modern novel; themes in the novel would be further explored through other literature and oral work. In all twelve schools the entrants' capacities in English were assessed during the first half-term through performance in class activities and early written assignments.

- Some **mathematics** teachers saw the first task in Year 8 as the consolidation of number work. In over half the schools, however, the first priority was seen as fostering positive attitudes. While this was sometimes attempted by beginning with familiar material which would not alarm the pupils, other schools preferred to use the stimulus of a new topic which pupils were unlikely to have met before or to give a data-handling assignment with a visible end product for public display.

- In eleven of the schools the Year 8 **science** course began by teaching practical skills and rules for laboratory safety. This might be done either in a small separate unit or linked to a larger unit on measurement or chemistry. In most schools the whole year group, with the possible exception of any remedial class, appeared to set off from the same level, even where Year 8 was streamed or banded.

The Year 8 Curriculum in Three Subjects

- Two models emerged for the Year 8 **mathematics** curriculum. In the first, teachers endeavoured to maintain progress fairly evenly across the attainment targets, typically by including at least one topic from each attainment target each term. In the second model, Number was given far more time than any other AT in Year 8.

- With the exception of one grammar school which taught the three sciences separately from Year 8, the post-primary schools divided their Year 8 **science** courses into units on different topics, each lasting from a few weeks to half a term. All schools appeared to aim to secure a balance from the different ATs by the end of the year, although they might concentrate on the physical sciences during the winter months

- In the majority of the schools an important part of the Year 8 **English** course was a series of units, each focusing on a twentieth century novel or other piece of literature and including shorter texts on themes found in the main text. The proportion of time allocated to such thematic work, however, varied and some English teachers described their Year 8 programme more in terms of a balance of the attainment targets and, within literature, of a balance of the main genres. All Year 8 courses included some formal study of language but the schools differed in whether this was closely related to literature or treated separately.

Attention Given to Processes in Mathematics

- There was a wide range of attitudes to Processes in Mathematics by post-primary teachers and in the amount of time given to that AT. They could be seen as one of the best aspects of the new curriculum or as of limited value to able pupils. There was no simple relationship between the type of school and attitudes to Processes in Mathematics.

- The pupil interviews corroborated the evidence from primary and post-primary teachers that the Processes in Mathematics AT had not always received much attention. Only in seven pupil groups from four schools was reference made to anything that might be regarded as an investigation and three of these cases were doubtful. Only in four of the 23 groups did a prompt on 'talking in mathematics classes' lead to any mention of serious classroom discussion of mathematical topics or problems. Ten groups said that they did very little or no writing in mathematics apart from writing down answers and showing their working.

- Although there was overwhelming agreement among the primary teachers that 'practical work' or 'investigations' were the aspects of mathematics which pupils liked best and although 'investigations' emerged as a joint favourite (along with data handing) in the post-primary teachers' nominations, when the Year 8 pupils themselves were asked for their preferences in mathematics, there were only four mentions of investigations, of which one was negative. This may have happened because of a paucity of experience.

Attention Given to Exploring and Investigations in Science

- Although all Year 8 science courses had a basis in practical work, in four schools doubts were expressed about the value of investigations, as opposed to straightforward practical work, for pupils of that age. In all types of school pupils were seen to need a good deal of help with the planning and recording of investigations. Unsurprisingly, the less able pupil needed the most help and some teachers had devised ways of reducing the amount of actual writing required of them.

- In 19 groups pupils said that they carried out more experiments in their new schools or, in some cases, that they were doing practical work for the first time. In half the groups at least one pupil claimed to have done no practical work in science in primary school. Pupil evidence also suggested that in some primary schools, both in selective and non-selective areas, 'practical work' had usually been by teacher demonstration.

- The pupils confirmed their teachers' belief that they enjoyed the practical work and investigations, although writing up experiments was usually seen as, at best, a chore. What had most often seized the pupils' attention as new and different were the Bunsen burners and the excitement of lighting them for the first time. There were also many appreciative

comments about the well-equipped laboratories in post-primary schools and the excitement of working with chemicals.

- When asked to compare the writing they had done during science lessons in primary school with what they did in their new schools, the most common response was that they had now to write more detailed and better structured reports on their experiments. In some classrooms in both sectors, however, the pupils had simply copied accounts of the experiments from the chalkboard or overhead projector.

Attention Given to Talking and Listening in English

- Although one teacher confessed to having done little group discussion with his Year 8 class so far, the Talking and Listening AT seemed to be more fully accepted as valuable by the English teachers than were the process-based ATs in mathematics and science.

- Most of the pupil groups indicated that more attention was given to systematic Talking and Listening activities and that there was a greater variety of such activities in their post-primary than in their primary schools.

- Pupils and teachers were agreed that Talking and Listening activities were generally popular, although shy pupils might need encouragement.

Pupil Evidence on the Extent of Overlap between KS2 and KS3

- In the course of the interviews, repetition or revision of primary school work in **mathematics** was mentioned by 18 of the 23 pupil groups, representing all twelve participating post-primary schools but only in three groups (1GS, 2SH) did pupils appear to describe an undue amount of repetition or pupil boredom. The majority (12) of the groups who mentioned beginning with revision of primary school mathematics spoke of topics being taken to more advanced levels than in primary school, although in a few cases the amount of progression may have been rather limited.

- New mathematical topics met by some pupils in Year 8 included doing investigations for the first time, data handling, algebra, standard form, long division and the multiplication and division of fractions.

- Only about a third of the **science** groups spoke of studying topics which they had already covered in primary school, and none indicated that they had spent all their time in Year 8 to date in revision of familiar topics without significant progression. It was, however, on the novelty of working in laboratories and on the greater amount of experimental work, rather than on the content of their science lessons, that the Year 8 pupils tended to focus in their answers.

- Although some pupils had been given novels which they had already read in primary school, only one group actually said that most of Year 8 **English** was revision of primary school work. Most pupils spoke instead of the greater range of Talking and Listening assignments and of follow-up activities on class novels in the post-primary school or of the more mature standards of written work now expected of them.

Overlap between KS2 and KS3: Teacher Perspectives

- In all three subjects, teachers often faced the situation where some, and occasionally all, of the class had already 'done' a topic on the Year 8 syllabus. Particularly in science, a number of teachers were developing techniques of introducing a new topic by quizzing the pupils on what they already knew and adapting the early lessons accordingly. However, as soon as material was reached which was unfamiliar to an appreciable proportion of the class, the usual procedure was to teach it to the whole class, although a few teachers described strategies they used to try to prevent boredom in pupils who arrived with a sound basic understanding of a topic.

- Nine **English** teachers, each from a different post-primary school, raised the issue of possible overlap in the books, and especially the class novels, studied in primary and post-primary school. They varied, however, in whether they saw the matter as a non-problem, believing that they were likely to teach books in a different and more detailed way than in primary school, or whether they tried to eliminate any books from their syllabus which entrants were likely to have studied before.

Differentiation in Year 8

- In the secondary high and non-selective schools streaming or banding was the main means of coping with the range of pupil ability. In three of the secondary high schools additional staffing was time-tabled for lower-ability classes in certain subjects, a practice which those with experience of it thoroughly recommended. In the grammar schools, where there was no streaming in Year 8, any differentiation was left to the individual department or teacher.

- Although differentiation within science classes was sometimes thought impossible to organise, about half the teachers in all three subject groups either attempted it or hoped to introduce it. Extension activities for abler pupils and spending extra time with the weakest were strategies used in all three subjects. In English differentiation by outcome was thought sufficient in many circumstances and the next most frequent form was devising a choice of tasks, which might be at different levels of difficulty, as follow-up work to the study of a common text.

How Traumatic Was Transition?

- Almost all the pupils in the interview groups had settled happily into their new schools. Although there were some complaints, for example about the weight of books to be carried around, many pupils welcomed being taught by subject specialists and pointed out that even the minority of 'boring' teachers had to be endured for only a few periods each week.

- As in previous research studies, most pupils found science lessons in well-equipped laboratories with real Bunsen burners to be exciting. In the present study a third of the groups also expressed appreciation of the better library facilities in their new schools.

- Most post-primary teachers were found to be helpful and, especially in English, they were often described as more helpful than teachers in primary school. At the same time, pupils might find they were expected to be more independent and not to trouble teachers unnecessarily.

- All three subjects were said by a majority of the pupil groups to be at least slightly harder in Year 8 than in primary school and in each case only a few groups said they were easier. However, for none of the subjects did more than at most two groups seem to be experiencing any real difficulty. During the interviews it became apparent that in pupil terminology 'harder' tended to mean 'more advanced' rather than unduly difficult and to be doing 'harder work' was often a matter of pride rather than complaint.

Curriculum Liaison

Cross-Phase Liaison to Date

- Only a minority of the informants had been actively engaged in cross-phase curriculum liaison. In non-selective areas, meetings to agree primary-secondary 'boundaries' for subjects had had limited success, although schools in one area had agreed how to avoid repetition of class novels.

- In selective areas, curriculum liaison activities to date had usually taken the form of small-scale temporary initiatives, typically involving only one primary school and one subject department in a post-primary school.

- Of the three core subjects, there had been the least curriculum liaison in mathematics. In science several post-primary schools had helped local primary schools by lending equipment or explaining the content of the ATs. In English, a number of liaison activities had their origins in inservice courses, especially in one local education board area.

Obstacles to Curriculum Liaison

- The four main obstacles to curriculum liaison which informants had encountered were shortage of time, lack of interest or commitment among teachers, the large number of primary schools from which most post-primary schools received pupils and, in areas where the choice of schools was widest, the large number of second-level schools to which primary schools might send pupils.

Hopes for Future Curriculum Liaison

- Not all informants thought that more cross-phase curriculum liaison would be useful but those who did wanted there to be face-to-face meetings of those who actually plan and teach the subjects in P6/P7 and Y8 as well as meetings of principals. A number of informants also wanted to observe and perhaps do a little teaching in neighbouring schools in the other sector.

- There were also suggestions that the role of the education and library boards in planning and supporting curriculum liaison should be explored.

- Primary school informants hoped that better liaison could reduce the amount of unnecessary repetition of primary school work in the KS3 years and help them to prepare their pupils better for secondary education. For the post-primary teachers the main goal of curriculum liaison was a better understanding of what primary schools do.

Final Matters for Further Consideration

Issues raised by the research which merit further attention include the following:

- The apparent lack of attention given to the process-based attainment targets in both mathematics and science at KS2 and to Processes in Mathematics at KS3 also.
- Pupils' understanding of the mathematics and science they are taught at KS2.
- Standards of Writing at the end of KS2.
- The most useful form for conveying information to post-primary schools on pupils' performance at KS2.
- Appropriate use of primary school records of achievement by second-level schools.
- Differentiation in Year 8.
- How to encourage curriculum liaison in areas of open enrolment.

SECTION 1: INTRODUCTION, AIMS AND METHODS.

1.1 Introduction

There has been a long-standing concern about the need for curriculum continuity between the stages of schooling, and in particular between the primary and post-primary phases. The Hadow Report of 1931 expressed the view that education from the age of five to the end of the secondary stage should be "a coherent whole", with no sharp divisions. One of the main tasks assigned to the Plowden Committee was to examine the "transition to secondary education" and Paragraph 446 of the Plowden Report (1967) points to many children experiencing unnecessary repetition of primary school work in their early secondary years. Concerns about the frequent lack of continuity and coherence in particular subjects were expressed in the Bullock Report (1975), *A Language for Life*, and the Cockcroft Report (1982), *Mathematics Counts.* Other official publications of the late 1970s and early 1980s are usefully summarised by Derricott (1985).

Since diversity of curricular programmes among contributory primary schools had been a common explanation of difficulties in providing a coherent follow-on to the primary course, it was hoped that the coming of a common (or national) curriculum, setting out detailed programmes of study, would greatly ameliorate the problem. The 1987 consultation document for England and Wales stated:

> "A national curriculum ..... will also help children's progression within and between primary and secondary education and will help to secure the continuity and coherence which is all too often lacking in what they are taught" (DES and WO, 1987).

Difficulties in providing curriculum continuity at the primary-secondary interface, however, continue – hence the present study.

1.2 The Brief for the Investigation

The research aims, as set out in the original invitation to tender were very general:

> to identify the nature and extent of problems arising in relation to curriculum continuity, progression, differentiation and overlap arising from the transition from Key Stage 2 to Key Stage 3 in the English, mathematics and science curriculum; and to make recommendations about the action necessary to improve the transition of pupils between key stages with regard to these subjects.

The brief also indicated that the research was likely to be based on semi-structured interviews with key members of staff in a number of primary and post-primary schools.

1.3 Developing the Research Strategy

From discussions with CCEA personnel and a review of the literature – in particular the studies of Stillman and Maychell (1984) and Weston *et al.* (1992) – three main themes emerged:

a) Curriculum continuity: the extent to which in practice the KS3 programme resumes close to where the KS2 programme ended, without significant gaps in content, undue repetition of primary school work or too abrupt changes in the teaching and learning approaches.

b) Transfer of information on pupils between primary and post-primary schools. The CCEA asked that the interview schedule should include a question on records of achievement for primary schools.

c) Liaison on curricular matters between post-primary schools and their contributory primary schools.

These three themes form the basis of Sections 2-5 of the report.

The basis of the original research design was to conduct interviews in clusters of neighbouring schools in a number of contrasting areas of Northern Ireland; each cluster would contain perhaps two post-primary and two or three of their contributory primary schools. Interviews would be held in primary schools with principals, co-ordinators of the three subjects and Year 7 teachers and in post-primary schools with an appropriate member of the senior management team, heads of subject departments, Year 8 teachers and also with groups of Year 8 pupils. An important concern in the design was to ensure a satisfactory level of 'triangulation' or internal verification of the data. Where possible, more than one teacher perspective on each subject would be obtained in each school. The inclusion of pupil interviews would provide a perspective on the received as well as on the intended curriculum. Focusing the research on clusters of schools in the same area would make more meaningful the evidence on curriculum liaison and the provision of information on transferring pupils.

The original project proposal suggested taking five grammar schools, seven or eight other secondary schools and some 12-14 primary schools, the largest feasible sample that the project funding allowed. While it cannot be claimed that a sample of this size could be representational of schools in Northern Ireland, it could reasonably be hoped that the sample would be illustrative of the most common and important situations.

Ideally, issues raised in the primary or the post-primary schools concerning the other sector would have been taken up and discussed in the other sector. The time-scale of the project, however, allowed for only one round of interviews.

The academic year of the field-work, 1994-95, was the first year in which post-primary schools had received pupils who had sat the new form of Transfer Tests, based on the programmes of study in English, mathematics and science. For the primary schools it was the second year of the new tests. Although the abandonment of verbal reasoning tests for Transfer purposes had been generally welcomed by the schools, it was thought important to find out the perceived effects of the new tests on the curriculum. The inclusion of at least one cluster of schools in a non-selective area would here serve as a 'control'; any problems attributed elsewhere to the new tests should be much less or non-existent in non-selective areas.

1.4 The Participating Schools

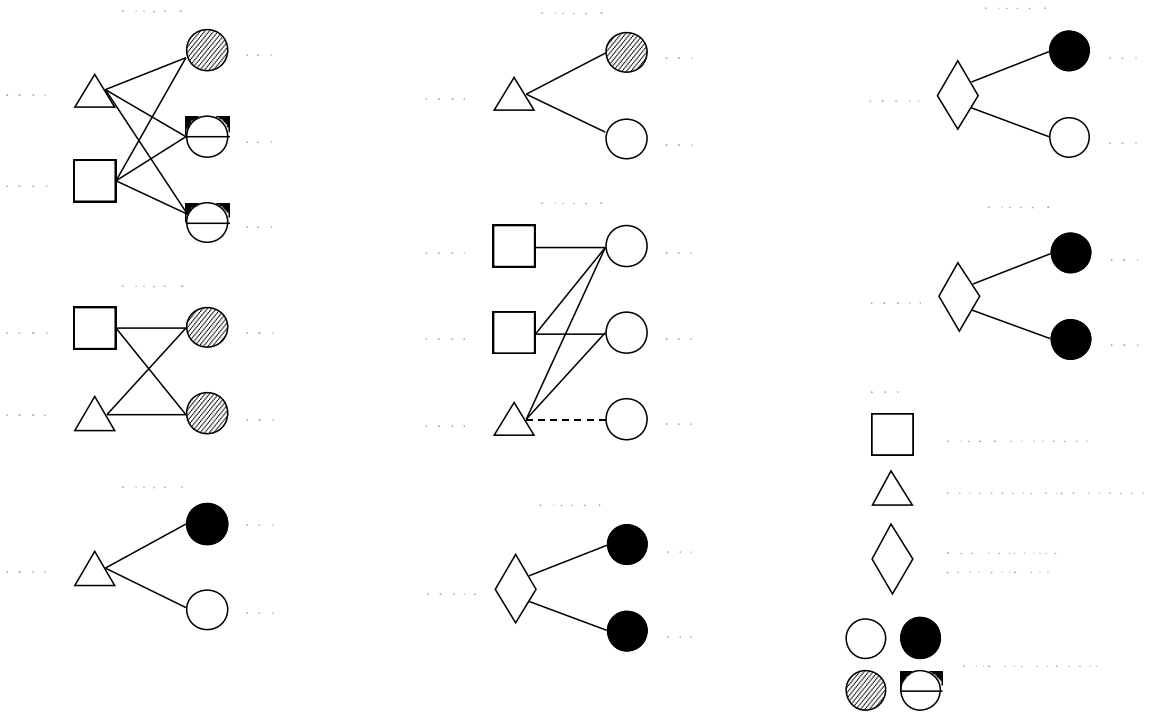
The initial plan had been to take evidence in five 'clusters' of schools, with each cluster containing at least two post-primary schools and two or three contributory primary schools. Four of the clusters would include at least one grammar and one secondary high school, while the fifth cluster would be situated in an area where the transfer to secondary education was not based on selection by ability. Because Northern Ireland has essentially parallel systems of Catholic and other schools, in which only a small minority of pupils cross the religious divide at age 11, it was decided that each individual cluster should contain schools with either Catholic or Protestant affiliations but that both traditions would be well represented in the full sample. The clusters were also planned to provide representation of such other Northern Ireland school and community variables as coeducational *versus* single-sex education, urban and rural locations and catchment areas with varying levels of prosperity and disadvantage.

The initial sampling design had, however, to be modified when over a third of the post-primary schools approached declined to take part. Besides the more familiar explanations of a school being over-committed to other research initiatives or having an imminent general inspection, it seemed that some schools were unattracted by the research topic. Unless the heads of all three departments (English, mathematics and science) were willing to answer questions on their curriculum planning, access to the school was unlikely to be granted. If, when a school refused to participate, there was another post-primary school of the same type close enough to attract pupils from the same contributory schools, the second post-primary would be approached, sometimes successfully. On two occasions when a secondary high school was interested but the neighbouring grammar school was not, it was decided to proceed with just the high school and two feeder primaries. When the research moved into the next phase, four primary schools declined to take part but in each case another school in the area could be substituted.

The final sample is best described as containing eight rather than the originally envisaged five clusters. This change was only partly the result of refusals to participate. The two non-selective schools originally chosen (both of whom were agreeable to take part) were found to be sited far enough apart to have non-overlapping groups of main contributory schools and were therefore been treated as the nuclei of separate clusters. Since both these schools were in the Craigavon area and had delayed selection at age 14, it was decided to include, in addition, an 11-18 comprehensive school in another town together with two of its main contributory schools.

The Eight Clusters of Schools

The eight school groups are described verbally below and diagrammatic in Figure 1.



Interpreting Figure 1

- Each shape represents a different type of school. Non-selective post-primary schools are represented by rhombuses, grammar schools by squares, secondary high schools by triangles and primary schools by circles.
- The type or absence of shading in the circles describes the strength of the links between the primary and post-primary schools in each cluster. Fully shaded circles indicate primary schools from which nearly all leavers transferred to the post-primary school. Circles with diagonal lines indicate primary schools from which the great majority of pupils of the appropriate sex and/or attainment level (e.g. boys with high Transfer grades) transferred to the post-primary school. Open circles depict primary schools from which only some of the eligible pupils went to the post-primary school(s) in the cluster.
- The two circles with half shading in Group A represent schools from which pupils tended to go to one grammar school but opted for different secondary high schools.
- The one dotted line connecting a primary and post-primary school (in Group E) indicates a more tenuous connection involving only one or two children per year.

Cluster A comprised a secondary high (SHA1), a grammar (SGA2 and three primary schools (PA1, PA2 and PA3), all situated in the Greater Belfast area. For those parents applying for a grammar school place from any of the three primaries, School SGA2 was the usual choice, although in recent years relatively few pupils from Schools PA2 and PA3 had gone to grammar school. Although the secondary high school regarded all three primaries as important contributory schools, it enrolled a much higher proportion of the leavers from School PA1 than from the other two schools. The principals of Schools PA2 and PA3 each named a (different) alternative high school attended by a substantial proportion of their pupils.

Cluster B was made up of a grammar (SGB3), a secondary high school (SHB4) and two primary schools. The post-primaries were both single-sex schools situated in a town with a rural hinterland but the primary schools were coeducational. The larger primary school (PB1) was on a housing estate within the town's boundaries, while the other (PB2) was a four-teacher rural

school. The post-primary schools in Cluster B were the obvious destinations for children of the appropriate gender and ability levels leaving the two primary schools.

In **Cluster C** there was a secondary high school (SHC5) and two primary schools in a town within easy commuting distance of Belfast. The vast majority of pupils from one primary school (PC1) enrolled at School SHC5 – most of the exceptions being the small group of children who were admitted to the local grammar school – but leavers from School PC2 attended a greater variety of post-primary schools, including another secondary high school in the town.

Cluster D was made up of a single-sex secondary high school (SHD6) and two regularly contributing coeducational primary schools (PD1 and PD2) in the Greater Belfast area. Although about two-thirds of the P7 pupils in School PD1 scored high grades in the Transfer tests, School SHD6 was the most popular choice for those pupils of the appropriate gender who did not find a grammar school place. From School PD2, which was more centrally sited, some pupils went to an alternative secondary high school.

The schools in **Cluster E** – two grammar school (SGE7 and SGE8), one secondary high school (SHE9) and three primary schools (PE1, PE2 and PE3) – were all situated within part of the Greater Belfast conurbation, where the effects of open enrolment were evident. None of the three post-primary schools regarded themselves as neighbourhood schools; as the vice-principal of the secondary high school explained: "We don't have any primary schools we can call our own". Instead all three schools welcomed a proportion of the leavers from a large number of primary schools spread over a wide geographical area and in each case including both urban and rural schools. Conversely, all three primary schools in the group could list a number of both grammar and secondary schools to which they regularly sent children. The largest of the primary schools (PE1) sent sizeable numbers of pupils to all three post-primaries in the cluster, as well as to other schools, but for School PE2 the main grammar school was very much SGE8 rather than SGE7. Although PE3 was located near School SHE9, most of its leavers went to grammar schools nearer the centre of Belfast or to a neighbouring secondary high school. School PE3 therefore proved to be less inside one of the chosen clusters than any other school in the study.

The remaining three clusters, sited in non-selective areas of Northern Ireland, each comprised one post-primary and two feeder primary schools. In **Cluster F** and **Cluster G,** the post-primary schools (SNF10 and SNG11) were junior high schools, while in **Cluster H** it was an 11-18 comprehensive (SNH12). In clusters F and H the primary schools (PF1, PF2, PH1 and PH2) sent virtually all their pupils to the secondary school in the study. In Cluster G, the junior high school was the first choice for nearly all pupils from a primary school in the same town (PG1) and for the largest group from a primary school in a nearby village (PG2); however, a number of parents with children at PG2 preferred to send them to schools in selective areas for their post-primary education. By contrast, only three pupils from school PG1 had been entered for the Transfer test the previous year.

The sample of post-primary schools therefore contains four grammar, five secondary high, two junior high and one comprehensive school. There were three boys', three girls' and six coeducational schools. As planned, the sample included schools in Belfast and in towns of various sizes, although several even of the Belfast schools enrolled some of their pupils from rural areas. The post-primary schools varied too in the extent to which they had to compete for pupils. The primary schools in the sample ranged in size from 80 to 900 pupils and their settings included inner-city, suburban, urban, and rural locations.

The primary and post-primary schools also varied in the number of schools to which they either sent or from which they received pupils. Five of the primary schools sent all but a few of their children to a single post-primary but one primary school was an important contributor to more than a dozen second-level schools. The post-primary schools most commonly reported having about four main feeder schools and another 10-12 from which they regularly received smaller groups of pupils. However, one of the more 'rural' schools, situated in a district where the primary schools had been reorganised, received the vast majority of its pupils from only three primary schools, while at the other extreme the liaison teacher of one secondary high school had a visiting list of 42 schools and one of the grammar schools would frequently enrol pupils from about 50 primary schools, including many small rural schools. As was frequently stressed in the interviews, having a large number of contributory schools, greatly increases the problems of curriculum continuity and curricular liaison. The difficulties are further increased if the primary schools are scattered over a wide area or are contributing to several other schools.

1.5 Interviewing the Informants

Informants in Post-primary Schools

In the twelve post-primary schools the aim was to interview (a) a representative of senior management with curriculum responsibility, (b) someone with an overall pastoral responsibility for the transition stage, such as the Year 8 tutor or a liaison teacher, (c) the head of department and another Year 8 teacher in each of the three subject areas of English, mathematics and science and (d) four groups of Year 8 pupils. In the event there were 46 pupil group interviews (since in one school there were two rather than four) and 79 focused teacher interviews as well as three more informal interviews with principals. Of the 77 teacher interviews, 19 were with teachers of English, 21 with teachers of mathematics, 22 with teachers of science and 17 with teachers who had senior management or pastoral responsibilities. Further evidence on pastoral matters was given by three of the teachers of English, who were also Year 8 tutors, and a scientist who was also a liaison teacher. In each of the twelve schools there was an interview with at least one, and usually two, representatives of the three subject departments, and with a member of the senior management team. There was an additional interview in one secondary high school with a third science teacher, who had carried out research in seven local primary schools, including the two in the study, on reactions to the new curriculum.

The Year 8 pupils, were interviewed in groups of between four and six, but most commonly in groups of five. The pupils were asked in what respects they found learning the three core subjects to be similar to and in which respects different from their experiences in primary school. They were also asked about favourite and disliked aspects of the subjects, the relative difficulty level of the subject in primary and post-primary school and whether anyone had told them what the subject would be like in their new school. It was evident when piloting the pupil schedule that the children had most to say about science and that it was impractical to try to cover all three subjects in one group interview. Accordingly, half the pupil interviews dealt with English and mathematics and the other half with science. One advantage of having two pupil interviews rather than just one on each subject in each school was to counterbalance the possible effects of an exceptionally popular or, alternatively, a disliked teacher, if the pupils in a group all came from the same class. In schools where Year 8 was streamed or banded, it was suggested that one group for each subject should come from near the top of the ability range and the other two groups from further down. It was also requested that each group should contain children from different primary schools.

Informants in Primary Schools

In preliminary correspondence with the primary schools it was indicated that the researchers hoped to meet staff – perhaps subject co-ordinators or P7 teachers – who could among them discuss the three curriculum subjects and that they would also welcome an overview from the principal. The letter was suitably modified for the smaller schools. Because of the variety of primary school contexts, the choice of actual informants was left to the principal.

In all, seventeen primary principals (the eighteenth being absent through illness) and 46 other primary teachers gave evidence. Fourteen of the principals did indeed present the kind of overview that had been suggested, with approximately equal attention to the three subjects but one, whose mathematics co-ordinator was absent that day, deliberately and usefully slanted many answers towards mathematics and another was the main spokesperson in the school for English. Unexpected developments in the remaining school resulted in the principal having time to give only background information before passing the researcher on to the subject co-ordinators. The 46 other primary teachers included nine co-ordinators of mathematics, nine of English and twelve of science, thirteen P7 teachers, two P6 teachers (one of whom had a special interest in English) and a vice-principal whose evidence regarding mathematics and science complemented the principal's interest in English. Since – with the exception of two informants who were teaching and supporting science full-time – most of the subject co-ordinators had responsibility for a class, some of them wished to speak a little about the other two subjects and, indeed, a science co-ordinator gave some of the most interesting insights into upper primary English teaching. Six KS1 teachers were included, since they were either the only co-ordinator of a particular core subject in the school or the only one available on the day of the visit; in four of these cases there were a few questions on the schedule which they were not in a position to answer. In the smallest school, the principal who taught a composite P6/P7 class was, by agreement, the only informant. In four other primary schools the principal involved only one other teacher but elsewhere between two and five other teachers participated.

The Timing of the Survey

Visits to eleven of the post-primary schools took place between early December 1994 and late February 1995, with the twelfth being visited early in April 1995. It was thought important to meet the Year 8 pupils at a time when they had become quite familiar with their new schools but could still remember their primary school days. It was also expected that by the end of the first term the Key Stage 3 programme would be well under way.

The eighteen primary schools were visited between late March and early May 1995, the first visits taking place only a few weeks after schools and pupils had learned the results of the Transfer tests. The fact that principals and P7 teachers had recently been completing the Transfer Report forms and interviewing parents may have had some influence on their answers but there is probably no time in the primary school year that is totally unaffected by the Transfer Procedure. A fortunate consequence of the timing of the primary school visits was that the schools had just received from CCEA the *Proposals for Revised Subject Requirements*, which appreciably reduced the compulsory content of the curriculum in mathematics and science at Key Stage 2, although few of the teachers had had time to study these in detail.

A Word of Caution on the Findings

For a number of reasons the picture that emerges in this report may err on the side of optimism. Firstly, the relatively high non-participation rate suggests that, in at least some cases, the issues raised by the research were not ones they particularly wished to be investigated and that the schools which took part may therefore have given these matters more attention than most. Secondly, as the only practicable means of getting samples of pupils from different primary schools without additional preliminary visits, the schools selected the pupil informants and they would have been unlikely to include any very alienated or disruptive pupils, although some were certainly critical of aspects of their new schools. Thirdly, where there was a choice of assistant teachers, we may have been introduced to the ones most interested in the issues being researched or the ones doing the most exciting Year 8 work. Despite these caveats, a very wide range of opinions was expressed.

SECTION 2: INFORMATION ON TRANSFERRING PUPILS

The first part of Section 2 reports on the types of information on Year 8 entrants currently sent by the eighteen primary schools and received by the twelve post-primary schools. The second part reports on the kinds of information which the post-primary schools would like to have in future, as the Northern Ireland curriculum becomes increasingly well established. Since records of achievement (RoA) are at present being developed for primary schools, informants were invited to advise on what form these might most usefully take. The final part reports on how the 18 primary schools thought RoAs might develop.

2.1: Information Currently Sent to Post-primary Schools

Selective Areas

In selective areas of Northern Ireland the one-page Transfer Report was automatically sent with each application to a post-primary school for admission, regardless of whether the child had taken the Transfer tests, and it was retained in the school if the child was accepted. At the time of the survey the Transfer Report asked for ratings of each child on various aspects of English, mathematics and science and for a descriptive assessment of attainment and so would appear to have offered relevant information on the core subjects at the transition stage. However, it was repeatedly and heavily criticised on two main grounds: firstly that, a Transfer Report could be unduly flattering if written in support of a borderline candidate for either a grammar or a popular high school and, secondly, that there was no standardisation of grades between schools, so that an 'above average' at one primary school might be equivalent to an 'average' or even a 'below average' at another.[1] As one grammar school vice-principal pointed out, it would be more useful to know what children could actually do than that they were 'average' in a particular school. While the Transfer Reports might play a minor part in selection, in three of the grammar schools – the fourth being equally unenthusiastic – the point was made that the Transfer Reports were not helpful as predictors of future performance, since pupils were being compared against perceived population norms (*"They are big fish in a primary school pond but only little or middling sized fish here"*). Although in several of the post-primary schools the information on medical, pastoral or behavioural matters in the Transfer Reports was reported to be useful and although the senior staff in one secondary high school had learned how to 'interpret' the ratings and comments of their main contributors, no one seemed prepared to take the academic assessments (other than the Transfer Grade itself) at face value.

Only in Cluster E was there evidence of any other information being sent on from the primary schools rather than sought by a post-primary. All three post-primaries in that cluster received folders or record cards from some of their contributory schools, the folders typically including medical information, copies of home reports, test marks and samples of work. Two of the primary schools in the cluster reported sending all P7 pupils' folders on to their post-primary schools, the exception being School PE3, the school with the weakest links to the rest of the cluster. The three post-primary schools appeared to find the medical and other background information in the folders more useful than the academic information; in particular, two informants confessed that levels on reading schemes or scores on standardised tests with which they were unfamiliar were meaningless to them. In turn, the staff at both Schools PE1 and PE2 suspected that their folders were little read in most post-primary schools, unless a pupil later presented problems, although there were signs that one secondary high school in the district

[1]Such criticisms are not new. See, for example, McKibben and Sutherland (1992)

(School SHE9) was appreciative of the records it received. Three other primary principals, each in a different cluster, said that they had offered to send pupil folders to post-primary schools but the latter had not been interested and three further principals volunteered they had information which could easily be made available to post-primary schools if requested.

All five secondary high schools sent a vice-principal or liaison teacher round the contributory primary schools, once it was fairly certain which pupils would be coming. As well as meeting the pupils coming to their school – and these meetings might be a preliminary to a visit to the secondary school – the post-primary teachers would discuss their future entrants with the P7 teacher. Information gathered in this way on pupils' achievements was an important factor in two of the schools for assigning pupils to classes and elsewhere it was used in borderline cases to supplement test data. Only one of the grammar schools reported learning about its intake through discussion with their P7 teachers and this was usually done when teachers accompanied their P7 children to the school on one of two June afternoons. Since several primary schools visited on the same afternoon such information may have been less full and systematic than that gathered on visits to primary schools but it was felt by the liaison teacher in the grammar school to be sufficient.

Four of the secondary high schools used standardised tests of English and mathematics to help them to group their entrants into classes. In two cases this was done in June and in two cases after the pupils arrived in September. In the fifth secondary high school, standardised mathematics tests were administered at the beginning and end of Year 8 to measure progress and an NFER reading test was given to identify children who might at some stage need special help but these were not used in the actual banding process.

None of the grammar schools grouped their Year 8 pupils by perceived ability, though all five secondary high schools did to a greater or lesser extent. In one secondary high school pupils were systematically banded only for mathematics, in two schools they were in broad ability bands for all subjects and in the remaining two they were in streamed classes. In three of the secondary high schools the standardised test scores carried the greatest weight in grouping the Year 8 pupils, although the Transfer Reports and the oral information gathered from the primary schools would be taken into consideration. In a fourth school where the Transfer Report was regarded as "pure fiction", streaming was reported to be on the basis of standardised tests and oral information together. The fifth school, the one which had learned how to 'interpret' the Transfer Reports from their regular contributory schools, used a combination of Transfer Reports and oral evidence.

Non-Selective Areas

All three non-selective schools streamed pupils before entry using information from the primary schools, although adjustments might be made if necessary after the first term. In the Craigavon area, a record card, previously used for this purpose by the junior high schools, had been discontinued some years before the survey. Within Group F, School SNF10, a large junior high (JH) school, currently asked its primary schools only to rank pupils in order of ability and to give each a grade from 1 to 5, with a 5 signalling special educational needs. For some years there had been an additional request to suggest the most appropriate stream for each pupils but this had recently been withdrawn. No indication was given about the basis on which the grades and rankings were to be made. Teachers in all three subject departments in School SNF10 wanted more information than was currently reaching the school. One of the primary principals interviewed was also particularly unhappy with the existing situation since – paralleling the

frequent criticisms of the Transfer Report – he believed that schools' grades and rankings were affected by the catchment area and other variables, so that a 2 in one school might be the equivalent of a 1 or a 3 elsewhere. This worked to the disadvantage of a school, such as his, which had many able pupils. However, following the arrival of a new principal at School SNF10, primary-secondary liaison, including the transfer of information on P7 pupils, was one of the key areas identified for review and changes were expected.

School SNG11, the other junior high school, had designed a card which asked, in addition to administrative details, for information on the entrants' abilities in English, mathematics and science.[2] Abilities were assessed by teacher recommendation rather than by any kind of standardised instrument. As in several of the schools in selective areas, however, considerable weight was also given to information gleaned from the P7 teachers on school visits by the JH liaison teacher, when each transferring child's abilities were discussed in turn. The liaison teacher found most P7 teachers to be "pretty shrewd" in suggesting into which classes their children should be put.

The comprehensive school in Cluster H, like one of the junior high schools, asked feeder schools to grade pupils on a 5-point scale, A-E. The grades were supplemented by information gleaned by the liaison teacher on half-day visits to the primary schools. A combination of grades and oral information was used to stream the pupils on entry, although the placements were reviewed after a term. The principal of one primary school was happy with the situation but the second primary school principal in the cluster, while stressing that his school enjoyed generally good relationships with the high school, believed that fuller and more systematic evidence should be sent and was disappointed that the high school was not interested in receiving their pupil progress record books. The member of the senior management team interviewed in School SNH12 was, however, looking forward to a time when end-of-Key Stage 2 assessments would be available.

Evaluation of the Present Situation

In both selective and non-selective areas one of the most valued forms of information on entering pupils was found to be that given in the face-to-face meetings with P7 teachers. As was remarked by more than one post-primary informant, once a relationship of trust had been built up, the P7 teachers were prepared to say more than they would commit to writing. In one school where the visits were made either by the vice-principal or the head of pastoral care, the former explained:

> "It is very informal, but informative. The teachers would say things like, 'That's a very good child' or 'Very bright but needs a lot of pushing' or 'Not a lot of parental support'. They would give us an insight into the whole child. This kind of information would not go further than the principal. It would not be shared but we would just be alerted, for example that that child is quiet and doesn't have any friends, or whatever. And sometimes children who would be marked as having a behaviour problem don't turn out like that at all."

With the exception of one primary principal, who thought the liaison teachers asked only superficial questions, the primary schools in the sample all appreciated these face-to-face discussions as well as the opportunity for their leavers to meet a representative of their new

[2]It was observed that 1994 had been the first year in which all contributory schools had been able or felt sufficiently confident to include information on Science. Previously, only some of the schools had done so.

school. A more common complaint was that grammar schools did not make a similar effort. Indeed, one principal in the cluster from which the above quotation was taken was concerned that none of the other post-primaries sent anyone to his school, leaving many P7 pupils highly apprehensive about transition.

As for the other forms of pupil assessment by primary schools, the grades and rankings by primary schools in non-selective areas were usually found to be reasonably (sometimes very) accurate, but some primary principals found them frustratingly reductionist and the two non-selective schools with the most simplistic systems were hoping to make changes. The Transfer Report was generally regarded as an unreliable guide to pupil attainments and the post-primary schools seemed to prefer to assess incoming pupils themselves, either formally through standardised tests or less formally through early coursework. Many primary school informants suspected that little use was made of their written assessments of pupils' academic achievements, whether in the Transfer Reports or – where this was applicable – in folders of work.

Few of the post-primary teachers interviewed, apart from those with a pastoral role or in the senior management team, normally saw even such information on entrants as did reach the school. As the last quotation suggests, information gathered on visits to the primary school was regarded as confidential. It might not go beyond the principal and senior pastoral staff, it might be given to the Year 8 form teachers (who might, however, be told only what it was thought advisable for them to know about members of their own class) but in none of the schools was it given to the other Year 8 subject teachers, who might not even know of its existence. In one grammar school the Transfer Report forms were strictly confidential to members of the team who decided on admissions but elsewhere they were usually available to any teacher on request or already in the pupils' files. The subject teachers interviewed, however, had rarely consulted the Transfer Report forms, unless a pupil presented problems, and on such occasions had not always found them helpful or illuminating.

In short, in 1995, little detailed information on pupil progress and achievements was reaching the post-primary sector and even less was reaching the class teachers.[3]

2.2: What Information on Entrants Did Post-primary Teachers Want?

Replies to questions on additional information wanted on incoming pupils and the potential usefulness of primary school records of achievement (RoAs)[4] are best considered together since answers overlapped. Most replies from the post-primary sector could be placed in one of five categories, as shown below:

(A) The teacher appeared to welcome or was at least prepared to accept the prospect of receiving records of achievement from primary schools as a source of information on pupils' academic attainments.

[3]An evaluation of the Scottish 5-14 Development Programme (Harlen, 1995) also found individual records on pupils to be an underused resource.

[4]The question on RoAs focused on what information the teacher would find useful rather than on all that an RoA from a primary school should contain. This may at least partly explain why only a minority of the replies made any explicit mention of such characteristic features of RoAs as the inclusion of information on the child's extra-curricular achievements and contributions from the children themselves.

(B) The teacher accepted the idea of primary school records of achievement as a source of information on pupils' academic attainments but with some provisos, for example "provided they are not too bland" or if they allowed for weaknesses as well as strengths to be indicated.

(C) The teacher wanted more information on entrants' academic achievements than was currently received but not in the form of records of achievement.

(D) The teacher was ambivalent or doubtful about receiving further information from the primary schools on the achievements of incoming pupils.

(E) The teacher preferred not to be given information on the pupil's abilities and achievements, apart from knowing that, as at present, most pupils had been reasonably accurately selected or streamed on the basis of a general or composite measure of ability or achievement.

Just half the 79 post-primary teachers seemed prepared to accept records of achievement from the primary school as a source of information on their entrants' academic attainment, although eight of these 40 teachers would do so only with a proviso. Another quarter certainly wanted information on incoming pupils but rejected RoAs for this purpose. Among the objections most often mentioned were that RoAs were too bland, that they were too long and complicated and that they could be misleading because of the insistence on only positively worded statements. The remaining quarter of the post-primary teachers was divided between the eleven (coded D), who expressed various doubts and uncertainties about the necessity for and value of such information or its possible side effects on pupils, and the nine (coded E) who said that they would prefer not to be given prior information about their pupils' previous performance. Eight of the nine teachers in this latter group believed strongly that post-primary education should be a fresh start and they did not wish to meet their new pupils with pre-conceptions; the ninth suspected some primary school teachers would be unable to rate pupils accurately in the subject and wished to avoid possible legal tribunals. Six teachers who were not interested in receiving a detailed analysis of their pupils' academic achievements through RoAs nevertheless appreciated RoAs for their personal and pastoral information or as a valuable learning experience for the pupils.

> "A personal statement from the child I think is very useful in that in that it gives some guidance as to how they see their education... an insight into how the children perceive where they are. Sometimes they have a higher expectation of what they are capable of doing but often they don't, very often they would undervalue" (Head of English in a secondary high school).

Table 2.1 Post-primary teachers' views[5] on receiving information on entrants' attainments

		Informant's Department				
		Admin/ Pastoral	Maths	English	Science	TOTAL
(A)	Information on academic achievements	11	9	6	6	32

[5]A few informants who did not wish to receive information on academic achievements in RoAs, but who would welcome the personal, social or extra-curricular information, or who saw the completion and management of RoAs as a valuable experience for pupils are indicated in brackets.

	acceptable in RoAs					
(B)	Information on academic achievements *acceptable in RoAs with provisos*	2	1	4	1	8
(C)	Information on academic achievements *wanted but not in RoAs*	2	7	4 (1)	6	19 (1)
(D)	Ambivalent about information on academic achievements	2 (1)	2 (1)	1 (1)	6 (1)	11 (4)
(E)	Does not want information on academic achievements	1	1	4 (1)	3	9 (1)
	Number of teachers	18	20	19	22	79

Although with numbers as small as those in Table 2.1, caution is needed in making comparisons between the replies of teachers from different subject areas, the balance of opinion regarding the desirability of additional information on entrants and of records of achievement in particular appeared to vary among the four subject groups. There seemed to be differences also in the emphases given by teachers of English, mathematics and science and the administrative/pastoral staff to a question on what they particularly hoped to find in the records of achievement from primary schools.

Some inter-school differences were also observed. While the introduction of records of achievement appeared to have been mishandled in one grammar school, alienating most o he staff from the very idea of RoAs, in one secondary high school in particular all the teachers were strongly in favour of RoAs and several spoke warmly of the beneficial formative effects which they had seen records of achievement having on their own pupils' development and self-esteem; they would be happy to see these benefits extended to primary school children.

The Views on RoAs of Teachers with Different Subject and Pastoral Responsibilities

The group of **senior management and pastoral staff** was the one which was most welcoming of primary school RoAs. Two-thirds of them were at least potentially willing to see them as a useful record of pupils' previous educational histories. Positive comments included these from two vice-principals:

> "They certainly should be a help. Oh, there's no question about that."

> "I think when you use the term Record of Achievement, it bears upon everything that I have said. It's the absence of such a record that is making us less effective."

One answer from the vice-principal of a secondary high school was coded D in Table 2.1 only because of the speaker's fears that, while selection at 11+ remained, anything that stressed levels of performance in P7 might only reinforce a child's feelings of failure in the Transfer tests. Otherwise, this vice-principal was an enthusiastic supporter of RoAs because of their formative value.

Four of the group of senior managers and pastoral staff had more negative attitudes towards the idea of records of achievement from primary schools. One year tutor[6] discounted assessment

[6]The terms 'year tutor' or 'head of year' are here used to denote a teacher with pastoral responsibilities for a whole year group. A 'form teacher' is one with responsibility for one class.

data in RoAs because of the need for pupil agreement. A second year tutor felt that a document seen by parents and the local education board would be too guarded in comparison with information passing directly from teacher to teacher. A vice-principal doubted if all the information in the RoAs arriving at a large school could be digested and the principal of a school where Year 8 pupils had nearly two hours a week of 'form time' said that they preferred to get to know their new pupils that way than to rely on possibly dated information from the primary school.

Of the sixteen senior management and pastoral staff who indicated what they most wanted to see in primary school RoAs, eleven included a measure of pupil achievement. However, there was no consensus as to whether the assessments should be at the level of the subject, the attainment target, the level descriptors, or in a different form altogether and several of the informants were undecided:

> "Well I suppose we would love to know exactly what level that they were at in the different ATs. But I don't think that is going to come to pass very quickly, but it might..... And it certainly would be very interesting for us because it would mean then we would have a starting point " (Vice-principal of a high school).
>
> "Well maths age and reading age. I think that's more useful for us than the levels because they're too broad" (Liaison teacher in the same school).
>
> "I don't think levels of achievement are in any way a useful discriminator for us, either at subject or AT level. A level notionally represents two years' work. A significant proportion of the pupils who transfer in here will be at the same level, by definition. Levels are broad instruments. I would like access to the kind of coded information on which levels are based. And I would like a comment, however brief, from the primary teacher, on English, maths and science, if not on all subjects" (Vice-principal of a grammar school).

The two next most frequent requests from this group, mentioned by respectively eight and six of the senior management and pastoral staff, were for information on the course content covered in the primary school and on the pupils' hobbies and interests. Three of the group thought it important that RoAs should indicate any background factors, whether medical or social, that might affect learning.

Two distinctive features in the replies from the **mathematics** teachers were (i) their concern with assessment and (ii) the clear rejection, usually without further explanation, by a third of them of records of achievement as a suitable means of conveying such data. Half the mathematics teachers appeared, however, to be prepared to accept the basic idea of primary school records, a proportion similar to that in the whole post-primary sample. All nineteen mathematics teachers who described the contents of a useful record from a primary school (not necessarily a RoA) wanted information on the entrants' mathematical attainments but they held different opinions on the best way of reporting these. The largest group, of eight teachers, would prefer to have the level on each AT but three others thought that an overall level for the subject would be sufficient, while three more spoke generally of "levels". One head of department in Cluster E mentioned only portfolios of primary school work; the second teacher in that school also wanted these, but as a supplement to the levels reached on each attainment target. Two further teachers referred only to scores on standardised mathematics tests and the two teachers, from the same grammar school, wanted only specific information on the children's grasp of basic arithmetical operations.

While one of the last-mentioned pair suggested as the criterion of mastery "what pupils can do 90% of the time six months after it is taught", the other said:

> "I'm quite serious about this: all we would want to know is how good they are at the basic arithmetical operations and we could take it from there. I would like the teacher's written comments. Not tick boxes, not at all, but specific comments." *(Interviewer: "Such as?")* "Can they add two digit numbers, can they add 3 digit numbers, can they add simple fractions, can they deal with mixed fractions?"

Six of the post-primary mathematics teachers stated that they wanted the assessments based on standardised or Province-wide tests rather than on the judgement of the class teacher and only two suggested that there was a place for teacher comment. Only three of the mathematics teachers wanted information on the course content covered by the child although four would be interested in personality or background factors that might affect learning:

> "The other thing would be the keenness and motivation of the pupils.. Have they been working hard? Do they always do their homeworks? Do they have personal problems, difficult family circumstances? Knowing that sort of thing would help us to 'pinpoint' problems much sooner." (Mathematics teacher, non-selective school)

Although only six of the 19 teachers of **English** appeared to have accepted fully the idea of primary school records of achievement as a main information source on incoming pupils, four more (coded B) might be prepared to do so if RoAs were able to signal such matters as reading difficulties or even a lack of application. As one of these said, "You can be positive in a properly critical way". Four other teachers (coded C), however, expressed in different words the fear that, because they will be open documents, primary school records of achievement are in danger of being too bland, too flattering and insufficiently honest and rigorous to be of use to post-primary schools; one of these also described RoAs as "unwieldy". Another four English teachers did not wish to prejudge their pupils before meeting them, while a fifth was uncertain whether such advance knowledge was beneficial. These last five teachers were all in school here the first main activity in the Year 8 programme was an 'Early Days' or 'All about Me' unit, in which one important aim was to get to know the pupils and through which their levels on the three Attainment targets could easily be ascertained through their early course work.

Of the thirteen English teachers who envisaged receiving usable assessments of their incoming pupils from the primary schools, four wanted attainment target levels, one wanted an overall subject level, three spoke generally of "levels", four (two of whom also wanted levels on the NI curriculum) would look for scores on standardised reading tests, while the remaining three would prefer short verbal descriptions, in one case based on the level descriptors:

> "I think it would be very useful if we got a few lines on each child from the descriptors, instead of just saying level 5.... that they are able to write and express themselves with enthusiasm and use a range of vocabulary. It would give a bit more information about their ability, what they are actually achieving, using the CCEA descriptors." (Head of English, non-selective school).

A teacher in the secondary school in Cluster E hoped that "estimated levels" would be illustrated by portfolios of work. The English teachers put rather more emphasis than the other subject specialists on teacher comment. Ten of them wished to alerted to pupils' special needs or to

their strengths and weaknesses or to have a brief verbal account of what pupils had attained: in eight cases these comments would be additional to a score or level.

Seven English teachers wanted information on the content of the primary school courses which the children had followed. In particular, they wanted to know the books studied in the upper primary years in an attempt to avoid one common form of overlap. Five English teachers thought it would be useful to have details of the children's extra-curricular interests and hobbies, while four hoped to be given information on their backgrounds:

> "I wouldn't maybe be aware that some fellow's deaf in one ear or has poor eyesight. I would also like to see some indication as to parental control and support." (English teacher, secondary high school).

> "It would be lovely if they came here with a bank of achievements that we can refer to. It could be curriculum-wise, extra-curriculum-wise, what they do in their spare time.... And any certificates they had got." (Head of English in another secondary high school).

Only a third of the **science** teachers (the lowest proportion of any of the subject groups) believed that records of achievement from primary schools could tell them much that was useful about their new pupils' attainments in the subject. It also seemed – though too much weight should not be attached to differences based on small numbers – that some of the criticisms of RoAs heard in science departments were rather different, or different in their frequency, from those heard elsewhere. Eight science teachers (a higher proportion than elsewhere) said that RoAs from the primary school would be too long or too complicated and so unlikely to be read thoroughly by post-primary teachers; three of them also feared the RoAs would also make unreasonable demands on the primary school teachers. Five science teachers thought that the RoAs would be at best of limited usefulness because they had a set syllabus to teach on which it was necessary to have a common starting point for all, regardless of any pupils who were further ahead or behind:

> "In theory, they're ideal, in practice not. Because of the number of primary schools associated with us you'll always get one child who hasn't seen something. It means you have to teach it to all. So therefore you've got to start again and treat them as knowing nothing. That's what we do with the primary transferring to secondary."[7] (Head of Science, secondary high school)

> "I doubt if it would be very helpful because in science you choose a topic and there is a starting point for it and sometimes that starting point may be at level 2 and sometimes it might be at level 4." (Head of Science, non-selective school)

Answers such as the above reject the need for continuity and the idea of differentiation. Other reasons given by science teachers for not accepting – or not fully accepting – the idea of RoAs from primary schools included their likely blandness (two teachers), doubts about whether primary science could be meaningfully assessed (the HOD and teacher in the same high school) and a wish not to pre-judge pupils entering the school (three teachers):

> "If you're told that a child isn't good at something ... I'm not sure that's a good thing. I think it's better to let them have a fresh start. I think maybe I'd just like to treat them all

[7]This attitude could be contrasted with that of a Head of Mathematics who wanted to know the levels on each AT because, "Some children, for instance, mightn't have a grasp of algebra. So obviously, if these children were in one class I could concentrate on algebra and start at a lower level and build it up."

in the same way. It usually doesn't take very long to spot the children who have a flair." (Head of Science, non-selective school)

Only eleven of the 22 science teachers expressed any interest in receiving assessments of their entrants' previous work in the subject, whether or not on an RoA, and the only five of these who indicated the form this information should take held different views. One teacher wanted the levels on all ATs, a second teacher was interested only in the level on AT1, Exploring and Investigating in Science, while a third wanted an assessment on AT1 and then a general assessment on the four knowledge-based ATs. The remaining two teachers wanted more detailed accounts of the children's competencies than could be given by levels alone. Samples of work, rather than grades or levels, were requested by the head of department and teacher in the rural grammar school, with the teacher expressing a preference for 'typical' rather than 'best' work.

Because of the problems caused by pupils arriving from different contributory schools with varied KS2 experiences, it was unsurprising that most science teachers who wanted any information at all from primary schools wanted details of which topics had been covered in the upper primary years. Though few science teachers had further priorities for inclusion in RoAs, two hoped to learn of their pupils' hobbies and extra-curricular interests, one would welcome information on the children's backgrounds from a pastoral viewpoint, while the head of department in a secondary high school was one of the few post-primary teachers in the study to stress the importance of hearing the child's own viewpoint:

> "I would like to see a statement from the child on what their feelings are towards science... Their feelings in a number of aspects, their likes and dislikes within the subject and also then how they feel they are progressing in science... I wouldn't be overly concerned if they came here and thought that their skull bone was in the bottom of their leg, because you can put that right. It's the attitudes, if they've been wrongly established, they are difficult to undo and maybe they can't be undone."

Views on the Length and Form of Primary School Records of Achievement

Those post-primary teachers who were at least reasonably accepting of the idea of receiving records of achievement from primary schools– whether for academic of pastoral information – were asked their opinions on the length and form such RoAs might take.

The over-riding request was for conciseness, with many informants stressing that over-long RoAs would simply lie unread:

> "Keep it to a minimum. It must be manageable" (Head of Science in a grammar school).

> "I think they should keep it as brief as possible because RoAs have a habit of growing" (Vice-principal of a secondary high school).

Only two of the replies lacked an implicit or explicit upper limit to the preferred length[8], though three other teachers were torn between a wish to have detailed information available and a realisation that long RoAs would be largely unread in the post-primary schools or make heavy demands on primary school teachers. Two other informants – a grammar school liaison teacher

[8] These were "The more information the better" and "Just to build up as good a picture as possible".

and a science teacher in a secondary high school – recommended having a short summary report, which might be backed by more detailed evidence.

As was evident from the previous section, there were varied views about the best way of reporting attainments and the optimum amount of teacher comment. Some teachers rejected the 10-level scale, arguing that, with each level representing two years' work by an average child, the steps were too broad to be helpful. Teachers who accepted the scale disagreed on whether it was best to have an overall level for each subject, a level for each AT or (more rarely) a report couched in terms of level descriptors, although there was rather more support – especially among mathematics teachers – for recording in terms of AT levels than in any other way. Such uncertainty is not surprising, since post-primary schools do not yet normally get this kind of information on entrants.

Among the more occasional suggestions, two informants from secondary high schools more than 50 miles apart thought the computerised CLASS system could simplify record-keeping, especially through the use of comment banks. A form teacher in a grammar school, who preferred to assess her entrants' attainments through their early course work, nevertheless appreciated that RoAs could be useful preliminary reading for their Induction Day, provided that they included a recent photograph. The two mathematics teachers interviewed in one secondary high school thought their system of linking RoAs to 'Merit Awards' or certificates for doing particular things they thought important (such as cross-checking work with and without a calculator) could be adapted for primary schools.

From the post-primary teachers' replies, two possible models of a primary school record of achievement emerged. The first was, frankly, no longer than a typical home report to parents and would simply contain grades or levels, possibly just on the three core subjects, with perhaps brief comments from the teacher. This might be considered as a 'Minimum' model.

The second or 'Maximum' model, which is presented more tentatively as about the most detailed form of RoA likely to be tolerated by more than a few enthusiasts, is based on a collation of ideas that recurred in the replies, although no single teacher described the full model. Since by that stage of the interview, time was often pressing, it was rarely possible to explore the informant's ideas further.

Contents of a Possible Record of Achievement for Transfer from Primary to Post-primary School *(based on responses by post-primary informants)*

- Up to an A4 page on each of the core subjects, to include whatever quantitative measures are decided (say, AT levels), and teacher comment. For mathematics, the comments would include descriptions of competencies, particularly those of pupils on the borderline between levels. For English, comments based on the level descriptors could helpfully indicate any uneven development among the various aspects of an AT, especially 'Writing'. A note of the novels and other books studied in English and an indication of the topics covered in science and to what depth would be appreciated in many post-primary schools.[9]

- Briefer information on courses and achievements in the other primary school subjects, although any artistic, musical or athletic talents should be highlighted.

[9]However, where a primary school sends a number of pupils to the same post-primary, a more economical way of conveying information on course content might be preferred to writing it out on each child's RoA.

- One page for medical and other background information.

- Two pages for a pupil statement at the end of P7 on extra-curricular achievements, hobbies, ambitions, attitudes to subjects and to education generally. Several informants pointed to the value for pupils of having to select, to "weed out" and generally update their statements. Alternatively, scope could be allowed for relevant pupil comment on the pages dealing with individual subjects.

In total this would lead to a 6-8 page document, depending on the layout, although every page need not be completely filled. An 8-page document would allow a handwritten rather than a closely typed response. There might in addition be an attractive cover page and a separate one-page summary. A modified version, with perhaps half a page for each of the three core subjects would be another possibility. Where post-primary schools expressed an interest, samples of pupil work might also be sent.

2.3: Records on Transferring Pupils: Primary School Perspectives

Primary school informants were asked what they thought was important to include in a record of achievement for P7 children, what form and length such records should be and how such RoAs might be of use to post-primary schools. It was soon apparent, however, that – in contrast to the post-primary informants who had all some knowledge of records of achievement, even if they were not necessarily aware of their intended use in the primary sector – many of the primary school informants could think only in terms of the records they were currently keeping on pupils' progress through the Northern Ireland curriculum or of the reports sent home to parents. Indeed, the only primary school informants who spoke of first-hand experience of RoAs were a KS1 science co-ordinator in Cluster C and three teachers who had worked either in England or in secondary schools. In one primary school in a disadvantaged area, senior staff members were already working on a pupil record form for P7 pupils as part of the Raising School Standards initiative, although the preliminary draft version at the time of the survey focused too much on negative attributes to be regarded as a prototype RoA. In three further primary schools, one of which had asked for local education board support for the following year, RoAs for the upper primary years had a high place in the development plan or were already being seriously discussed but were not yet being written. Some other informants indicated that they were hoping for guidance from post-primary schools or elsewhere on what information they should include.

The post-primary informants' responses to the questions on records of achievement were, therefore, mainly speculative rather than based on experience. Also shaping their replies were doubts, which were voiced in over two-thirds of the primary schools, that the second-level schools were unlikely to pay much heed to the RoAs since they currently ignored most of the Transfer Reports or that, with few exceptions, they were little interested in receiving pupil folders from the primary schools. Evidence in sections 2.1 and 2.2 indicates that in many cases these doubts were not without foundation. Understandably, primary school teachers were reluctant to devote much time and effort to RoAs which might remain largely unread. A second deterrent to the development of RoAs, mentioned in three of the clusters in selective areas, was the perception that the Transfer Grade was the only information about a child that mattered to post-primary schools and that therefore records of achievement – and also any end-of-Key Stage 2 testing – would be of no real significance:

> "You feel that everything is over-ridden by the Transfer test ... and is going to be tainted by that" (P7 teacher in a selective area).
>
> "What is the point of Assessment Units if there is a Transfer test?" (Mathematics co-ordinator in another selective area).

Doubts such as these and uncertainties about how RoAs might complement other forms of information sent to second-level schools made it difficult for many primary school teachers to envisage how RoAs would be of most use in second-level schools. The main suggestions by those who ventured an answer were that RoAs might help with streaming, give the second-level schools a more complete picture of their entrants, enable post-primary teachers to get to know their new pupils faster and better or, by showing what the pupils had successfully done, assist with continuity and progression. Ideally, as a few teachers pointed out, children's programmes could then be planned on an individual or small group basis, taking the pupils on from exactly where the primary schools left off, but, even where that amount of differentiation was not thought feasible, a knowledge of the pupils' previous achievements could help to prevent the choice of too elementary a starting point for whole-class teaching and too much unnecessary repetition of primary school work:

> "It is said that they start them off at level 3, even in grammar school. That's a switch off for pupils. With records they could .... pick them up better, if they are at level 4, or wherever" (Primary principal).

The Content of RoAs for Upper Primary Children: Academic Matters

While the primary school informants were (perhaps unsurprisingly) agreed that RoAs should indicate the child's achievements in subjects of the Northern Ireland curriculum, there was more debate on how best to do this. One of the most frequent types of answers recommended the inclusion of objective measures with a Province-wide or national status. Such measures were thought to have greater credibility in post-primary schools ("CCEA tests are more meaningful than school tests because they are standardised"). There were four specific mentions of Assessment Units (AUs) here but more frequent references to commercially available standardised tests. While one teacher mentioned the NFER/Nelson tests related to the National Curriculum for England and Wales, there were some slightly surprising reference to vintage tests (such as Schonnell reading tests and the Vernon Graded Arithmetic-Mathematics test), which in the mid-1990s provide very incomplete coverage of English and mathematics at the end of Key Stage 2 in the absence of any other measures.

Among those primary school teachers who gave details of how they would report attainments on the Northern Ireland Curriculum as such, the balance of opinion – in contrast to that in the post-primary sector – somewhat favoured reporting holistically at subject level rather than AT level:

> "I think it is probably enough for the secondary school to know what the child is capable of in very broad terms. I don't think it needs to be in any great detail because it is something they are going to find out for themselves. So at subject level, rather than lower" (Primary principal, selective area).

However four teachers, three of whom were mathematics co-ordinators, wished their main quantifiable measure to be more detailed than an AT. One preferred to focus on the mastery of such concepts as place value. The second, echoing two grammar school teachers cited in section

2.2, thought there should be brief notes on their performance on "things like multiplication and division". The remaining two, from the same school, thought that the detailed grids they had been keeping, showing each pupil's progress towards mastery of each statement of attainment[10] could usefully tell post-primary teachers the exact stage reached by each pupil. By contrast, in several other primary schools, these grids were singled out for criticism as too complicated and time-consuming or as too rigid ("at any point in time most children are between categories") and their demise on the recommendation of CCEA was unmourned.

Teachers in six schools, including both primary schools in clusters C and G,[11] doubted if the 10-level TGAT (1988) scale could form the basis of a good pupil record. They criticised the scale as too broad, as not differentiating adequately among children or as insensitive to the amount of progress a child typically makes in a school year. These teachers saw the levels as particularly unsuitable for reporting to parents. It was bad, they argued, for the self-esteem of diligent pupils to be recorded as still on the same level as in the previous year and so apparently as failing to make progress.

A number of alternatives to the 10-level scale for recording pupil attainments quantitatively were noted. Some schools were breaking down each level into three smaller stages, usually with the addition of plus and minus signs, to show a more finely graduated scale. Certain other schools preferred to report 'normatively' to parents, essentially indicating whether the child was above average, average or below average; the last of these terms usually signalled that the pupil needed remedial help.

Although the majority of teachers who explained how pupil progress should be reported to post-primary schools wished to include test results, almost as many saw a place for teacher comments, preferably succinct comments ("You don't have to read a whole paragraph to find out that Johnny can't add"). In five schools, including all three primary schools in Cluster A, it was suggested that both strengths and weaknesses should be highlighted, with any marked weaknesses being pointed out in a way that enabled the next school to provide appropriate help. teacher comments were also advised if results on an objective test were not thought to do a pupil justice:

> "If you set a piece of work at level 5 with 20 questions, does 17 mean they have reached level 5 and 16 mean they haven't?... Therefore, though I think AUs are quite good, it's important that the teacher uses his or her professional judgement. That should really overrule anything. Because a child can have an off day on any test...Therefore a wee note should go under each one" (Mathematics co-ordinator)

The inclusion of samples of pupil work was proposed in seven primary schools, in order to substantiate the grades or levels awarded (especially in written English) or to demonstrate what pupils could do. One science co-ordinator in particular, in a cluster where post-primary schools had rejected the offer of pupil folders, hoped to prove through samples of pupil work in RoAs that her pupils had mastered much more science than the post-primary teachers said was possible for them. The primary teachers who planned to send on pupil work were, however, disagreed as to whether pupils could usefully help to make the selection and some simply assumed the choice would be entirely theirs.

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[10]By indicating whether each element of the AT had been (i) introduced, (ii) practised or (iii) mastered.
[11]These clusters were more than 30 miles apart, one in a selective and the other in a non-selective area.

Only two teachers suggested sending any information on course content to the post-primary schools in the RoAs. An English co-ordinator proposed telling them "the reading scheme and how far up they are on it", while a P7 teacher identified science as the one area where the second-level teachers might want to know what had been covered. Although it might seem that the primary school informants were somewhat underestimating the level of interest in their course content by post-primary teachers, especially those in English and science departments, several teachers spoke of the need for post-primary schools to know more about their syllabuses in reply to other questions; it can also be argued that those who planned to send samples of pupil work would be providing the information in another form.

There was some disagreement in the responses on how much of the curriculum should be reported in RoAs. Although many of the primary school teachers took it for granted that they would be focusing on all three core subjects, in five schools serious doubts were raised about giving science the same status as English and mathematics. In two of these schools, including one that was considered 'strong' in science both by its own staff and in the local high school, the doubts were raised by the science co-ordinators; elsewhere they were raised by principals. One of the principals admitted that, "Science is still in its infancy in this primary school". Elsewhere the problems in assessing science were related to the lack of Northern Ireland Assessment Units in science against which to check teacher estimates of attainment, the paucity of standardised tests of science for the age group and, in one school, to the difficulty of teasing out the specifically scientific elements for testing when the teaching had been on a more cross-curricular basis.

Only four informants – two principals, a mathematics co-ordinator and a P7 teacher, all from different schools – made even passing reference to other curriculum areas, although it is possible that more teachers might have mentioned them if the earlier parts of the interview had not concentrated on the three core subjects. It seemed that for other subjects only teachers' free comments were envisaged and perhaps not for all pupils:

> "If they've a flair for any other subject, it should be mentioned."

> "Subjects like art should be in, even if the comments are subjective."

The Content of RoAs for Upper Primary Children: Non-academic Matters

In eight schools it was considered important to include any achievements in out-of-school activities, such as passes in music examinations or certificates for swimming or Irish dancing and also participation in such activities as the school's sports teams or choir. Some schools were already recording these activities and achievements in their existing records and two schools in Cluster E were already sending the information to post-primary schools in pupil folders.

In about two-thirds of the schools mention was made of social and personal qualities. In two schools, however, the implication was that the post-primary schools would be interested only in whether the child was well or badly behaved in school. Though some schools spoke in very general terms about 'personality', the particular qualities most often singled out were social skills, interest in schoolwork and willingness to work hard, the latter two, of course, being related. Among the fuller answers were:

> "I think you also need to include some sort of profile of the child, whereby their likes and dislikes, things that happened to them, if always late or serious illness at home ... that

kind of thing should be in it. Otherwise you don't get a good all-round picture of the child. Tick boxes will never show all that" (Vice-principal in a non-selective area).

"It's the whole person. That means it's social skills, learning to cope with stress and strain, handling bullies, how to cope with looking after yourself, things that are really important " (Principal in a selective area).

"Education is more than the grade on the Transfer test. There's the child's interest, his ability to work, his willingness to work, punctuality, family background, all the things that might give the secondary school an indication of how the child might perform. But nobody is interested. All they want to know is the grade" (Principal in another selective area).

Length and Form of the RoA: the Primary School View

The point most frequently made by the primary school teachers about records of achievement was that they should be short and succinct. This was thought necessary both in order to increase the chances of their being read in post-primary schools and also because the primary school teachers were under pressure and had little time for lengthy form-filling. Three teachers specified that the RoA need not be more than a page in length, while another said, "It's just a brief statement, isn't it?"

A few informants, however, did not think that brevity was all-important. One mathematics co-ordinator was unusual in envisaging a page for each AT, though this would include evidence based on worked examples. Two principals in Cluster E saw the appropriate length varying with the child. A pupil whose schoolwork was satisfactory but undistinguished, who took no part in the school's extra-curricular programme and who reported few outside interests would, they thought, probably have a much shorter RoA than one who played a lively part in the school's clubs and teams or whose academic difficulties needed sufficient explanation to enable the next school to provide suitable help quickly. Another Belfast principal believed the RoA should be "fairly comprehensive", since it was the beginning of the record which pupils would take through secondary school and their time in primary school was an important part of their total educational experience.

Since most of the primary school informants had no first-hand experience of records of achievement, it is unsurprising that few of them had clear ideas on the form they should take. A common view was that there should be some kinds of grades, levels or test scores supported or explained by brief comments but there was no strong consensus regarding the best kind of quantitative measures.

Only four of the primary school informants spoke of the possible inclusion of a statement from the children themselves or of negotiating the content of RoAs with them and of these one was in favour, one dubious and two somewhat negative. One P7 teacher, who knew about RoAs through friends in the secondary sector, hoped that her pupils could be reflective about their work but was unsure how accurately pupils of that age could assess themselves. Another teacher, who was willing for pupils to help to choose items for their folder of work, feared that if allowed to make a statement about themselves, some would "brag and say they could do everything", while a mathematics co-ordinator envisaged an equally unhelpful situation:

> "A self-report by a child sounds nice but if you say to a child, 'Is this your best work?' the child will say, 'No'. And he or she will not have the will to improve it."

The most positive attitude to pupils ' active participation in the development of their own RoAs came from a teacher with recent experience in England:

> "The child can sit down and say 'Well, OK, last month I was really good, I really worked hard at my maths.' And he can sit and he can blow his own trumpet and realise that he has achieved something. And then give him a chance to think, 'Well maybe my handwriting could have been better.' Or pinpoint little areas for improvement, so that we can focus on where he is to improve."

One feature of records of achievement which caused difficulty to many of the post-primary informants – the avoidance of negatively-worded statements – was not mentioned in the primary sector. Indeed, it was noted that, when discussing the aspects of personality and social background which they might mention in a RoA, several primary school informants included various pupil shortcomings. Other teachers expected to point out pupils' academic weaknesses as well as their strengths, although this might be with the intention of trying to ensure appropriate treatment in the secondary school. It may be that some primary school informants were envisaging a slightly more robust form of Record than the type of bland document criticised by many of the post-primary teachers.

Unfortunately it was not possible to suggest, however tentatively, a model for a record of achievement on the basis of the primary school evidence, as was done at the end of Section 2.2 on the basis of the post-primary evidence. Understandably, few of the post-primary informants had yet thought through in detail the contents and form of the record of achievement for their Key Stage 2 pupils, although several had identified pupil records as an area for attention in the near future.

2.4 Summary of Section 2

In 1995 many post-primary schools in Northern Ireland received little detailed information about the attainments in English, mathematics and science of their incoming pupils. Even less information was given to the subject teachers. Though the Transfer Report used in selective areas had a small section for each 'core' subject, these reports were generally considered to be unreliable on academic matters by the post-primary school staff, since they were often written to plead the case for a child's admission to a chosen school. Consequently, four of the five secondary high schools relied more on standardised tests administered by themselves to stream their entrants than on Transfer Reports. Only in one of the eight geographical areas of the study did any of the primary schools forward detailed record cards or folders of pupil work to the post-primary schools but, although one secondary school was reported to be appreciative, it was suspected that elsewhere the folders lay unread.

Although one of the three non-selective schools in the study asked contributory primary schools for brief information on entrants' performance in all three core subjects, the other non-selective schools asked for only an overall rating on each pupil.

All five secondary high schools, two of the three non-selective schools and one of the four grammar schools reported obtaining valuable information on entrants during face-to-face discussions with the P7 teachers. These discussions usually took place on visits to the primary

schools by a liaison teacher or a member of the senior management team in June; by this time most P7 pupils knew to which schools they would be transferring in September.

When informants in the post-primary schools were asked what additional information, if any, they would like on entrants and, in particular what they hoped to see in the records of achievement (RoAs) which are about to be developed for the Key Stage 2 years, it transpired that only about half the post-primary teachers accepted that RoAs could be a good source of information on new pupils. Even some of these made such provisos as "so long as they are not too bland". Another quarter of the post-primary informants wanted more information than they received at present but not in the form of RoAs, while the remaining quarter either did not want any more information or were ambivalent on the matter. Most of those who did not wish further information preferred to meet their new pupils without unnecessary pre-conceptions. Since several schools declined to take part in the study, it is very possible that post-primary teachers in general may be less accepting of the idea of RoAs from primary schools than were the present sample.

Within the present sample, however, the prospect of RoAs from primary schools was welcomed by most of the senior management and liaison teachers. The mathematics teachers were the most anxious to receive data on entrants' attainments, though not necessarily on a RoA. The English teachers, of whom a quarter would prefer no additional information on their entrants, were the most likely to wish to get to know and to assess their new pupils themselves through early coursework; however, more of the English teachers than of the other post-primary groups hoped for brief verbal descriptions from the primary schools of what the pupils had achieved or an indication of their strengths and weaknesses. The science teachers were the least interested in receiving assessments of their entrants' previous work, although more of them than of any other group wished to know about the topics covered in primary school.

Post-primary teachers who wanted information on their entrants' previous achievements disagreed about the best way of conveying this, although reporting at the level of individual ATs had more support than any other way. Some post-primary teachers, however, rejected the 10-level scale because the levels were too broad to distinguish usefully among the pupils.

In the primary sector, few informants had first-hand experience of RoAs and few had thought through in detail what form these might take, although in some schools discussion had already begun and in some others it was on the development plan. Many primary school teachers feared that records of achievement would be largely ignored in post-primary schools, like the present Transfer Reports and folders of pupil work. Another deterrent in some schools was a feeling that no assessment other than the Transfer grade was considered important by post-primary schools.

Like their colleagues in the post-primary sector, the primary school teachers held different views on how best to report on children's progress. The majority appeared to recommend a combination of succinct comment and some kind of quantified measure. In the primary sector rather more teachers wished to report at the level of the subject than of the separate ATs, though others dismissed the 10-point scale as too broad and several preferred traditional standardised tests. In seven schools it was proposed to include samples of pupil work.

Very few of the primary teachers mentioned curriculum areas outside the three 'core' subjects and in five schools doubts were raised about giving science the same status in the records as English and mathematics.

Few primary school informants made any mention of possible pupil participation in the development of their records or of negotiating the contents with pupils. About half of those who did raise such matters thought that such participation would be impractical or at least difficult.

In both the primary and post-primary sectors the main plea was for brevity and succinctness in the design of records of achievement. Several informants appeared to envisage only a one-page document. From ideas advanced by post-primary teachers it was possible to suggest very tentatively a plan for a document of up to 6-8 pages, which might be the maximum length of Record to have much chance of gaining serious attention in post-primary schools.

SECTION 3: CONTINUITY AND PROGRESSION: PRIMARY SCHOOL PERSPECTIVES

3.1 Introduction

With its programmes of study for the twelve years of compulsory education, based on common attainment targets and common attainment levels, the Northern Ireland curriculum has, as Jarman (1990) observed, the **potential** to promote primary-secondary continuity in a coherent sequence of meaningful learning experiences. Indeed, even the renumbering of the year groups in post-primary education as 8-14 instead of 1-6 reinforces the idea of continuing on from the seven years of primary education.

However, the programmes of study have had to allow for the very different rates at which children progress. In mathematics — in which, as Cockcroft (1982) showed, there can be in a class of eleven-year-olds a spread of about seven years of development — at the time of the interviews Key Stage 2 was intended to cater for pupils at levels 2 to 6 and Key Stage 3 for pupils at levels 3 to 8. In science the corresponding levels were 2 to 5 for Key Stage 2 and 3 to 7 for Key Stage 3[12]. These figures indicate a considerable degree of overlap between the work that might be attempted in the primary and the secondary sectors. There is therefore a strong potential for **discontinuity** of content in the Northern Ireland curriculum if pupils do not resume their studies at an appropriate level after transfer. Discontinuity of content can take the form of sharp breaks or large gaps in the syllabus or, alternatively, of unplanned repetition of work (Stillman and Maychell, 1984). In addition, there is the possibility of discontinuity of methodology, in the form of any abrupt, radical and possibly bewildering change of teaching approaches, as contrasted with a more gradual development of ways of teaching and learning, leading on from competencies already in place.

As well as trying to assess the extent of continuity-discontinuity at transition, the present study was concerned with whether there appeared to be progression (i.e. whether the courses were giving progressively deeper understanding and greater competence (DES, 1985)) and with how the receiving schools were coping with the range of pupil ability among the entrants (differentiation).

The remainder of this section presents the perspectives of the primary school principals and teachers, while the next section gives the views from the post-primary sector of teachers and Year 8 pupils. In this section general issues affecting two, if not all three, of the core subject areas at KS2 are considered followed by a more detailed consideration of the issues affecting each subject in turn.

3.2: Primary Schools: General Perspectives

As the interview schedules (Appendix) show, the primary school teachers and principals were given several opportunities to identify problems which might affect continuity and progression in the transition to post-primary education. These potential problems might be located in the curriculum, in the ability of the pupils or in any difficulties the teachers might have in delivering the curriculum. Thus, the primary school informants were asked, among other things, how suitable they thought the Northern Ireland curriculum was for their older pupils, whether the pupils found any parts particularly difficult or unenjoyable, how much of a change the Northern

[12]The revised proposals of March 1995 (CCEA, 1995) recommended that Key Stage 2 should cover levels 1-5.

Ireland curriculum was from what they had been teaching before, whether any aspects of the KS2 programme of study tended to be omitted or skimped and whether there were any areas on which they would welcome inservice help. The primary principals and teachers were also asked to estimate the levels on the 10-point scale reached by their P7 pupils just prior to transfer.

A number of general points recurred frequently in the interviews with primary school informants. Sometimes these were made in relation to the whole curriculum, sometimes to two of three of the core subjects. Taken together, they give an overview of basic difficulties and dilemmas faced by teachers in the upper primary schools of Northern Ireland but also show some schools beginning to feel the benefits of the new curriculum.

3.2.1: An Over-crowded Curriculum

Unsurprisingly in the light of previous representations made to NICC and CCEA, in virtually every school in the sample, whether in a selective or non-selective area, complaints were volunteered, about the overcrowded nature of the (then) current Northern Ireland Key Stage 2 programmes of study. In all except a few schools where ability levels were generally high, the programmes of study were also considered to be too demanding for the majority of pupils. Both complaints were more often made about science and mathematics than English. The most strongly worded complaints came from some of the schools in selective areas and from one school in a non-selective area which had participated in an early version of the Assessment Units. In order to cover the programmes of study, teachers could feel obliged to move on to a new topic before the previous one was mastered. Less able children and those with social or emotional problems were often reported to be the greatest losers. Among the variants on these complaints were the following:

> "Well for our pupils I think it could do with some modification. It appears not to take any serious consideration of the less able, of which we have a very high proportion". (P6 teacher in a disadvantaged area of Belfast).

> "If certain aspects of that programme were deleted or left till secondary school, we would be able to give more attention to what I would call basic areas" (Principal of a school in a residential area, most of whose pupils transferred to grammar school).

> "We'll do it, tick the box and away on to something else, trying to cover what we have to cover. In the past before National Curriculum, if I had felt that the children hadn't learned it, I would have taken as much time as it takes. .. Now I feel I've got so much to cover. It is do it, tick it and the children could be assessed in it. They might do well in the assessment but I know that come next week the slow ones will have forgotten it". (P7 teacher, inner-city school).

> "We would find it nearly impossible to get the whole extent of the curriculum covered. And the greatest feeling about of all of that is that the relationship which we built up with the kids, generally and individually, I think that is the greatest loser" (English co-ordinator in a school on a housing estate).

In a few cases, the pressures appeared to come less from the KS2 programmes themselves than from idiosyncratic interpretations of the programmes or from the very detailed and ambitious schemes of work set out in certain schools in their attempts to meet what were perceived to be the legal requirements. One English co-ordinator, for example, believed that it was expected that

class readers would be abandoned and that each child should have an individualised book-reading scheme. A co-ordinator elsewhere pointed to a chart on the wall listing the statements of attainment up to and including some at level 6. Until recently the teachers had been expected to tick off each statement when it was 'covered' in class and co-ordinators had been expected to find out why any teacher had not 'covered' a statement. Another teacher appeared to be pressurised by an imminent DENI inspection:

> "I find it's simply the amount of work .... and you're trying to hit every AT or area.... Now you feel that you have to make sure that you cover each little area, although we're told not to, but at the same time you're told that people will be coming in, inspectors will come in and they'll check to see..." (P7 teacher in an inner-city school).

Fears were voiced in four schools, each in a different cluster, that the statutory requirements to teach all subjects of the Northern Ireland curriculum — and especially history, geography and science — had cut too far into the time needed for English and mathematics. In two further schools informants focused on science alone as causing an imbalance in the curriculum. In four of these six schools it was thought that the problems had been appreciably alleviated by the various modifications to the curriculum and by changes in assessment plans since 1990. In two schools, however, senior members of staff regretted that their P6 and P7 pupils' performance in English bore the marks of insufficient attention being given to the subject in earlier years.

> "There is only a limited amount of time for the 3 Rs" (Science co-ordinator).

> "English has been 'lost'. Principally because I feel that the other foundation subjects were drawn up by experts. Everyone rammed as much as they could into KS1 and KS2. Presumably they felt their subject was so important that everything had to be covered. And to enable the work to be done in the time available, it meant that something had to suffer. And what suffered was English..... But the pupils' weaknesses show and are showing in English." (Principal, disadvantaged area).

> "I think my difficulty with the NI curriculum is that it is much too wide. Something had to give to make way to include all of these subject areas and I think there hasn't been as much time given to the basic core subjects as in pre-1989. English and mathematics have suffered a bit from lack of time. I know that is something that has been looked at since and things are much better now. It is much more manageable now and the balance is near enough right. But there was a time when aspects of English and mathematics were squeezed out to make room for all of these other things that we were required to do" (Principal, residential area).

3.2.2: Reactions to 'Key Stage 2: Proposals for Revised Subject Requirements'

Those primary school informants who had had time to study the *Key Stage 2: Proposals for Revised Subject Requirements* (CCEA, 1995) before being interviewed generally regarded them as representing a considerable and much-needed improvement on the 1992 programmes of study and as more realistically geared to academic capacity of pupils in P5-P7. Many would have agreed with the principal who described them as "very positive and sensible". The occasional complaints from schools in disadvantaged areas that the science programme should be cut back still further or that level 4 is a sufficiently high ceiling for Key Stage 2 were counterbalanced by occasional regrets elsewhere over the disappearance of items which teachers believed their pupils

could manage (e.g. numbers to three decimal places) or over the virtual discouragement of level 6 work for all except the most able pupils.

However, three informants described themselves as quite cross at the thought of all the hours 'wasted' in their school in preparing the earlier schemes of work, while two had noticed disillusionment among their colleagues:

"And actually the fact that there has had to be change has discouraged schools from investing heavily. You did it to start with, you put all your efforts into getting things streamlined and then it was amended and you were back to square one" (Principal).

3.2.3: The Effects of the Transfer Tests

Background

The study took place during the second year in which the Transfer Tests were based on the Key Stage 2 programmes of study in English, mathematics and science. The Transfer Procedure time-table for the first two years of the new style of tests was similar to that for previous years, when the tests were of the verbal reasoning type, with the first test taking place in early October and the second some six weeks later[13]. In the year of the study there was in fact a third test because of a 'leak' of the first paper but that complication, although mentioned by many informants, was not given undue prominence in the interviews. The primary school interviews began a few weeks after the release of the results.

Among the schools in selective areas there was considerable variation both in the proportion of the age group entered for the tests — from 35% to over 90% — and in the pattern of results. Whereas in some schools over half the pupils were awarded the top grade, in another school not a single pupil gained the top grade and some 85% of the candidates were given the lowest of the four grades. In one of the schools in the Craigavon area a substantial minority of the pupils entered for the tests although it was stressed that the parents of many equally able pupils were happy to opt for the local junior high school. In the other five schools in non-selective areas only a few pupils, at most, sat the tests.

From the time of the TGAT report onwards (DES & WO, 1988) it has been accepted as a benchmark that a typical 11-year-old would have attained level 4 in most subjects by the time of leaving primary school. However, the Transfer Tests, which are currently taken by some 70% of the age cohort in the October of P7, include level 5 material in mathematics and English. For the 'average' child, therefore, preparation for the Transfer tests, especially that in P6, entails working a full level ahead of what would be expected.

Pressures to Cover the KS2 Syllabus Early

Since primary school informants with Transfer test candidates nearly always felt obliged to give them every chance and since many also felt under pressure from parents to secure as many 'passes' as possible, it is understandable that the pressures teachers felt under to keep up with the programmes of study were greatly exacerbated if they were P6 or P7 teachers in selective areas. These teachers felt obliged to have 'covered' Level 4 and level 5 work by early October in the P7 year, if not by the end of P6 to allow a few weeks for revision before the tests.

[13]In autumn 1995 the two tests were held on 8th and 22nd November.

> "It is all done by the end of Year 6. Because it has it be" (Science co-ordinator, residential area).
>
> "I would see it as a pressure cooker. In my class 21 out of the 22 children are going forward to the test. You've an obligation to get them through to level 5. And that requires an awful lot of extra homework, that perhaps you wouldn't normally give, because things need to be learned off" (Vice-principal with a P7 class).
>
> "And in P7 we're trying to teach them things... that a lot of children in first form would never be able to grasp, and we're pushing that in the first two months of P7. We're talking about immature children who cannot cope with it and who are being crammed. Yes, they manage it for a few months but in the long term I think it's damaging" (English co-ordinator in a residential area).
>
> "Because you really are forcing kids. I had a case where I had a child whose writing skills were minimal to say the least but the father demanded that the child do the test. Now in any practice test that child would maybe have been getting 2 or 3 questions correct. So it did nothing for his self-esteem. I had to try to force him into a level 4 situation when really he's level 2" (P7 teacher, disadvantaged area).

There were many requests that the test be postponed until later in the P7 year, some informants seeing no reason why they could not be held the second term. Two teachers thought that even delaying them until November (as has, in fact, since been done) would appreciably relieve the pressures.

Effects on the Curriculum

In all except two of the schools in selective areas it was openly admitted that the Transfer tests had a distorting effect on the curriculum. Eleven informants said that, as the date of the tests approached, the curriculum narrowed towards the three core subjects, with History and Geography being the main casualties. The length of time that the curriculum was reported to be seriously affected varied from the six weeks of P7 before the first test to the whole period from the beginning of P6 or even from P5:

> "At the last general inspection that point was made. It didn't have to be made. We knew that we concentrated on English, maths and science throughout most of P6 and so other subject areas weren't really covered adequately. But we felt we owed it to the children to give them that really intensive tuition... I wish it could have been otherwise, though we stand by the decision in the circumstances" (Principal, residential area).

A principal in a disadvantaged area of Belfast explained his dilemma thus:

> "There's a great conflict: parents, at least some parents, are expecting their children to pass the Transfer Test, and yet we're expected to teach a broad curriculum in P7. The Department's asking for one thing and yet they're asking us to prepare children for the Transfer Test. It's not possible to do the two."

Distorting effects were also acknowledged within the core subjects as teachers felt duty-bound to focus on those aspects which they believed would improve their children's chances of success.

In consequence, there was an often admitted neglect of the three process-based ATs of Talking and Listening, Processes in Mathematics and Exploring and Investigating in Science, as well as of whichever content-based science AT was that year omitted from the tests and of the more imaginative forms of writing in English. Further details of the effects of Transfer test preparation on the individual subjects are discussed in later sections. The main trend was a move from investigative approaches to the acquisition of factual knowledge.

The influences of the Transfer tests on the curriculum were not, however, all baleful. Reading and comprehension were thought by several informants to have benefited by the challenges of the new style of tests. More attention was being given to aspects of mathematics other than Number. In three schools it was suspected that if science were not included in the tests, it would not receive serious attention from all teachers, despite being on the school's official schemes of work.

Preparation for the Transfer tests could be seen to "lead the curriculum" even in schools where few had any realistic expectation of a grammar school place and sometimes even where only a minority were entered. Parental expectations in such schools could still be that P6-P7 work should be geared to the tests. At least three schools in the sample appeared to have this problem.

> "It can be prestigious enough in this area just to have your child sit it, even though he has no chance of passing it. So Mr F.. in P6, for example, has to work towards the 11+ with his class, even though he'll tell you now, a year before, that maybe at best there's two that could pass it. But he has to gear a lot of his work towards it... If there's areas where children are failing and need more emphasis... he's not in a position to take time there. He has to press ahead" (Science co-ordinator, on senior management team).

In those schools in non-selective areas which had Transfer candidates, the effect of preparation for the tests was said to be minimal, although in the school with the highest number of entries for the tests the need for the candidates to have covered topics by P6 was an important factor when reorganising the science programme. Transfer test preparation in the non-selective schools usually took the form of extra homework or of withdrawal from class for a special session once a week, while the life of the school went on around them.[14]

Effects on Pupil Learning

It was generally appreciated that the able and average children were more knowledgeable, especially about science, than their predecessors who had taken the former verbal reasoning tests. However, many of the primary school informants doubted either the depth of their knowledge or whether much understanding lay behind it.

> "I think it has led to skimpy information being transferred rather than in-depth. A kind of Trivial Pursuits" (Principal, disadvantaged area).

> "Our children have acquired a vast amount of material and information in a very short period of time to prepare for an exam which is a paper and pencil test. I'm not so sure that the understanding has followed in direct relationship to that. We would have needed more time to consolidate. (Principal, residential area).

[14]Similar types of preparation were observed nine years earlier by Teare and Sutherland (1988) when the tests were of the verbal reasoning type.

Several informants feared that the less able children who were either entered for the test or were in classroom where most children were preparing for the tests were falling further behind than in previous years because of the forced pace, especially in mathematics.[15] As several quotations above have indicated, teachers sometimes felt that no time could be spared to help these pupils, certainly not until the Transfer tests were over.

> "Because they need to go through things at a slower pace. If they can't understand it straight away you should get out your practical work and teach them from the basics. If you're doing level 5 by October you haven't time for this practical work....If children don't understand something straight away you have to say 'Forget it. We'll maybe come back to it later on.'" (Mathematics co-ordinator).

After the Transfer Tests

Schools varied in the extent to which they seemed able to use the months in P7 after the Transfer tests to redress the imbalances in the curriculum. While some teachers complained that P7 pupils were hard to re-motivate for serious work, others described the more interesting and enjoyable activities for which there was now time, including group writing, the beginnings of control technology, such outdoor practical work as estimating the height of trees and projects on the cross-curricular themes. Generous time might also be given to the non-core subjects. The most ambitious venture was described by a science co-ordinator in a residential area:

> "We tried an experiment this year with a Lifestyles pack, a huge project using history, geography, science, English, a lot of research skills, a lot of study skills, where the children were able to take all the knowledge they had and to apply it".

For many informants, however, an important task in the remaining months was to go over "properly" the topics, especially in mathematics, that had been rushed through in the run up to the Transfer tests and to attempt to put the pupils' understanding on a sounder basis. Pupils' reactions to this differed:

> "Science is the same — it's just crammed. Get it done because this could be on the test. But now that the pressure's gone off they have time to go back on that and the children begin to enjoy it" (Principal of a school on a housing estate)

> "In the case of maths they haven't maybe been able to have the understanding of the maths because they have just had to learn it. For the better children when you go back to teach it, they're not that worried because they know how to do certain things because they've had to. So...for the better children boredom can creep in at that stage" (P7 teacher, residential area)

The same class evidently found revision of science topics rather pointless when they had already learned the conclusions.

The New Style of Transfer Tests Preferred

[15]Future research in this area could usefully investigate the extent to which there is grouping and differentiation in upper primary classrooms.

Despite the criticisms of the new style of Transfer tests, no one expressed a wish for a return to the former verbal reasoning tests, although one teacher in a disadvantaged area regretted the obsolescence of his verbal reasoning coaching skills and a P7 teacher in a more prosperous area found it more difficult than it used to be to provide new and stimulating work in the core subjects after the test. The general opinion, however, was that, even if the pressures and the amount of coaching were regrettable, at least the children were now being coached in something that would be useful to them later:

> "So if they're going to cram, they're better cramming in these three subjects" (English co-ordinator, residential area)

> "I think they're very lucky in the secondary school in respect of the curriculum we've to follow — it gives them a quare boost now. When you see the extent of the work that you do in English, and the maths, and the science as well. It's a great start for them which they didn't have before. They're more prepared now. Because when you look at the old 11+, it was very narrow. You didn't have a lot of maths to do, the English was limited and there was no science at all" (P7 teacher, disadvantaged area).

3.2.4: Do Any Topics Tend to be Neglected Throughout KS2?

If the Northern Ireland Key Stage 2 curriculum was overcrowded, it might be expected that teachers would often be unable to cover all of it by the end of P7, especially if they were focusing on only certain parts for the Transfer tests. Discontinuities at transition could then possibly arise if post-primary teachers assumed that entrants to their schools had mastered material which they had either not seen or experienced very briefly.

However few of the primary school informants were prepared to admit, in reply to a focused question, that there were any areas of the curriculum which they tended to omit or even to skimp. Occasionally answers sounded rather defensive:

> "We have to cover all areas and equally the same amount in the same balance in order to prepare children for leaving PS. So all, these areas are adequately and equally covered" (Mathematics co-ordinator).

The three most usual types of replies were (a) that the speaker did his or her best to cover the whole curriculum, (b) that everything did get covered by the end of P7, even if some areas might be temporarily neglected during preparation for the Transfer tests or in the weeks before a school concert and (c) that an attempt would be made to cover everything, although some topics might be taught in too rushed a manner for full understanding; the more advanced the topic the more likely that it was given less than the ideal amount of attention.

> "Yes, we try to cover everything, but with tremendous pressure on the children. To put a lot of pressure into P1 to P4 is unrealistic. Children of that age are not able to cope, and you need to have a good sound grounding, you can't rush things in the earlier stages. If you do, then when the children get to P6-P7 they haven't grasped the concepts and the principles. This leads to great pressure at the end of P6 and start of P7" (Vice-principal, residential area).

> "We try to cover all. But in the PoS, it's 'understand this' and 'understand that' and I think that there isn't time to give the children a proper understanding of it. There is a lot of glossing over which I don't like but if you don't gloss over it, you don't get it covered so you have to decide. And what I find with glossing over is that the very bright children can pick things up very quickly - it's the other poor souls that I feel are going to be left behind" (Principal, rural area).

In five schools, including three of which had a preponderance of able children, it was, however, freely admitted that teachers might sometimes neglect topics which they either disliked or did not feel confident to teach.

> "I think you'd find a lot of people would leave volume until the very end of the maths year. And then with a bit of luck you find that you just haven't quite got time to squeeze volume in, because it's a very unpopular thing" (P7 teacher, residential area).

Sometimes too, as the interviews proceeded, there were implicit indications that certain items on the programmes of study did not feature strongly in the teacher's or the school's scheme of work. In both the implicit and explicit replies the same two types of curricular topics were the most likely to be marginalised. The first were mathematical topics other than those on the Number AT, especially probability, volume, planes of symmetry in solid shapes and the more difficult aspects of algebra, but sometimes also larger parts of Data Handling and of Shape and Space. The second were the process-based ATs of Talking and Listening, Processes in Mathematics and Exploring and Investigating in Science. In some cases the informant, if a subject co-ordinator, gave high priority to these areas but doubted if all colleagues did likewise:

> "They are provided with materials and an overview that looks good on paper.... but on a day-to-day basis I'm pretty certain that not everything I've asked them to do gets done in the classroom.... It definitely comes down to time. If they are bombarded with memos for all subjects, something's got to give and unfortunately it could be anything that does not interest them or that they feel does not have much weighting."

The structure of a typical primary school science scheme, setting out two or three topics for each term, meant that teachers were unlikely to omit any content-based topic completely, if it were on the school scheme. Any science AT not to be included in the next Transfer test was, however, unlikely to feature as much as the others on the school's scheme. A co-ordinator also suggested that a teacher who was uninterested in a topic might possibly spend rather less time than usual on science during these weeks. There were also a number of cases in which it had been judged sensible not to attempt to proceed beyond level 4, or even occasionally level 3, with a class or year group, unless perhaps on a few topics or with a few pupils:

> "We've come to grips with science now. (*Consulting a scheme of work*) It's mostly level 3. Now, ...I know we're supposed to go further but for Transfer it will be level 3 with a few things from level 4. *And that seems to be okay?* Yes" (Principal).

3.2.5: Planning and Continuity within the Primary School

Although there was no direct question on the matter, informants in ten of the participating primary schools spoke of planning — and sometimes revising — coherent programmes of study for the three core subjects in their schools. Such exercises might be undertaken to ensure that the school was meeting the legal requirements of the Northern Ireland curriculum or, in some cases,

to plan the most feasible way of covering as much as possible of the syllabus before the Transfer tests. Some schools were seeking to improve their Transfer test results by developing a tightly structured programme which introduced topics earlier or revisited them more frequently:

> "After the first Transfer Test I felt the school was not really prepared. We had to take our schemes of work, particularly in maths... and go right back to P1, P2, P3, not in number but , say, shape and space and measures... If it's done from P1 right upwards, I think they should be able to cope, they should have an understanding..." (Principal).

> "We are going to have to restructure our science programme from P4 up to... develop progressional lines in knowledge areas... So that, for example, if you are dealing with electricity, there will be a wee bit done in P4, a little bit more in P5 and a little bit more in P6. So that there is a kind of cumulative process" (Science co-ordinator, Cluster A).

The overcrowded nature of the Northern Ireland curriculum had made schools in non-selective as well as selective areas review and streamline their programmes. Two major benefits were acknowledged in these accounts. Firstly, the programmes that emerged were better planned and more likely to show continuity and progression than what had gone before. One vice-principal who reported the outcome of the discussions in terms of eliminating gaps and overlaps, in fact, came close to the Stillman and Maychell (1984) description of curriculum continuity. Secondly, teachers had to work in year groups, Key Stage groups and sometimes as a whole staff so that they now had a better idea both of what other teachers did and how their own work fitted into the larger plan.

> "It took a fair amount of talking through so that we could inform each other of what we were doing. I think one of the major benefits we found of talking through was to find out what the P1s were doing and what the P2s were doing and how that led on to what the P7s would end up doing. So that sort of strategy of talking through took a while and then translating that into written schemes of work was quite an arduous task." (English co-ordinator, non-selective area).

> "You think of the things like frog spawn, always done at a certain time of year. Whereas now people would do different life cycles... People can be very set, saying 'We always do that.' Now the co-ordinators have worked out, say, that if in P5 people do body systems, they wouldn't do that again till P7... And that would motivate the children. Children don't like to be doing the same thing 'We did that last year.' That's one of the problems I think that people come across" (Vice-principal, non-selective area)

There were, however, some regrets for the loss, or perhaps limitation, of individual autonomy hinted at in the last of the above quotations and for the fact that teachers could no longer always 'seize the moment' when an incidental opportunity for learning arose:

> "We've had to conform a lot more... We would have had much more room before for individual teachers' strengths, and we would have had the chance to branch off and do things that came up in the process of certain areas, whereas now we find we're much, much more restricted. If something comes up in class you don't always have the time to follow it up. Because it may not be connected to what you're supposed to be continuing along" (P7 co-ordinator).

A number of informants had found that their earlier experiences of implementing the NICED Primary Guidelines helped them to plan the new schemes. Two principals, however, who had been happily implementing the Guidelines reported frustration at the change of direction to what they saw as a much more prescriptive framework. Nevertheless, informants in six primary schools — including all three in cluster E — volunteered that on the whole they were quite pleased with the Northern Ireland curriculum, even if they had specific reservations about aspects of it.

3.2.6: Overlap with the Post-primary Curriculum

Although, as was evident in the last section, many of the primary schools had planned their KS1 and KS2 programmes to ensure continuity and progression with a streamlined scheme of work within the school, in all eight clusters concern was expressed about the extent to which material 'covered' in the upper primary school was being repeated in post-primary schools so as to cause discontinuity and lack of progression at the stage of transition. Such complaints were less often made about post-primary English than about mathematics and science. The seriousness of the complaints and the evidence on which they were made varied. There can be a place for some revision of primary school work before taking a topic further and if a topic studied in primary school (such as 'adding fractions' or 'electricity') is being done again in a post-primary school, there may or may have been progression to more advanced work. Three types of complaint, however, appeared to be more serious.

The first was where the repetition of primary school work appeared unduly protracted, affecting not just the first few weeks or even the first term but the whole first year and even in extreme cases much of Key Stage 3. This particular criticism was found in clusters A, B, E and F.

> "There is a feeling that maybe they're taking the pupils and going down to the lowest common denominator. And the feedback from past pupils, is that they've been marking time in the first year. In maths especially and science possibly. Especially with the (local) school here where they're going into streamed classes the first year and yet they still seem to be marking time" (P7 teacher, non-selective area).

> "I find children come back to visit me from Form one, Form two and I would say to them, 'What are you doing in maths?' And they are doing exactly the same things as we are doing in PS. They seem to spend the first two years going over what we do. Okay, you need a certain overlap to reinforce things again which they have forgotten about but not two years!" (Mathematics co-ordinator, selective area).

The second type of serious complaint was where a grammar rather than a high school was reported to spend a long time repeating primary school work at about level 3, especially in mathematics or English, although all (or nearly all) of the entrants had done well on tests of work at levels 4 and 5. This was a recurrent type of criticism in the schools in clusters B and D.

> "Friends who are grammar school teachers have told me...that they go back to level 3 at the beginning of year 8, particularly in science and maths. ... And I've even heard a few science teachers tell me that in second and third year they're still doing work that has been done in PS" (English co-ordinator).

The third indication of a definite discontinuity was seen in cases in which a number of former pupils of a primary school (rather than an isolated grumbler) not only mentioned that they were

doing the same topics as in primary school but complained that they were bored by the repetition:

> "I would say to a parent whose child has moved, 'How is so-and-so getting on?' And I have heard them say, 'Bored.' 'At what?' And they say they are doing work they did here in P6" (Principal, non-selective area)

> "I have children come back to me and I get complaints like 'Science is boring.' Why? 'Because we have done it before'" (Science co-ordinator, selective area).

Several other informants reported that the local post-primary schools would find a common starting-point for all entrants, which was well below the level at which their pupils left primary school. It was not always clear in these cases how much of Year 8 would be taken up by such elementary work:

> "We hear so many cases of whenever children go to their next school, they're all put down to level 3. Now I know a child can alter but some children were working towards 5 but it seems to me a sad state of affairs that they are put back. It is happening time and time again" (Mathematics co-ordinator, selective area).

Where there were no pressures to prepare for a competitive examination by teaching as much as possible of the Key Stage 2 programme, teachers could come to question the programmes of study themselves and the standards expected there:

> "We have been informed that all children will be taken at level 3. And here we are in the PS attempting to produce children who are possibly at level 5, in the best case. Of course, you try to provide opportunities for the children to reach as high a level as possible, within their own ability, but if they're taking them in at level 3... I sometimes wonder are we being asked to do too much.... I'd prefer to see breadth and depth rather than pushing. You have to consolidate as far as I can see, at that stage" (Science co-ordinator, non-selective area)

The few specific mentions of repetition in the English curriculum referred to primary and post-primary schools using the same novels. Steps had, however, been taken in Area F, at a meeting some two years previously, to rationalise the selection of books. There it was agreed which novels the primary schools would be welcome to use and which should be left to the junior high school; novels that were already popular in a number of primary schools were assigned to that sector.

Although many of the speakers in the above quotations were critical of the post-primary schools and their apparent disregard of the quality and quantity of primary school work done, a few informants made other suggestions as to why so much work was repeated in the post-primary schools. Both the principal and vice-principal of one school had doubts about the science course they were able to provide:

> "I feel perhaps that many of us are inexperienced in the teaching of science and then perhaps when they go on to the next stage the teachers are finding they might need remediation" (Vice-principal).

The mathematics and English co-ordinators of a Belfast primary school could appreciate the difficulties of post-primary schools when faced with an intake of children who had varying degrees of experience of the curriculum:

> "Possibly the children that we send... are at a higher level than other schools... So maybe other children need that work. They haven't covered the same amount of work as we have covered, because if they're good we do push them on. There's no point in holding them back" (Mathematics co-ordinator)

The principal of that school, the majority of whose pupils found grammar school places, thought that the pressures of preparing pupils for the Transfer examination were at least partly to blame:

> "I would have some reservations that whenever the children arrive at their new schools and come to approach a topic they will have already covered it — but covered it in a very cursory manner."

That suggestion, which is supported by some of the evidence cited in sections 3.2.1 and 3.2.3 (above), that children transferring to post-primary schools might often have only a tenuous grasp of material 'covered' in class was ear-marked for testing out in the analysis of the evidence from post-primary schools in Section 4.

3.3: Key Stage 2 Mathematics

3.3.1: The Extent of Change in P5-P7 Mathematics

(Based on 30 informants in 17 schools)

On the grounds that a new curriculum which necessitated fundamental and rapid change by teachers might be difficult to deliver fully, the primary school informants were asked if the introduction of the NI curriculum had required major changes in their schemes of work in the three core areas.[16] In nine of the schools teachers reported that there had been little or no change in the mathematics taught in the classroom– or certainly not in comparison with the changes in some other subjects. At most, one or two fairly minor topics had to be added.

> "We've made changes but not so much in our maths" (P6 teacher, Greater Belfast)

> "We are really doing the same work... I know it is now divided into 5 areas. You just had to sort of skim through the things to find what their new name was or the new number was" (Mathematics co-ordinator, non-selective area).

In three of the schools the principal, and in one case also the mathematics co-ordinator, perceived mathematics (and sometimes English too) as a traditional subject which could not change much.[17] The implication was that it was being taught the way it always had been taught:

[16]Teachers who had either qualified since the introduction of the NI Curriculum or who had arrived within the past few years from England or Eire were unable to answer this question.
[17]Due to constraints of time and discretion, it was not possible to explore this idea further.

> "And when the whole thing was introduced, mathematics I think had the least problems because maths is maths" (Vice-principal/ mathematics co-ordinator, non-selective area).

> "The mathematics tended to fit in — even with the new proposals I don't think maths is going to change. I think teachers always feel happiest with maths. There's a beginning, a middle and an end in mathematics" (Principal in the same school).

> "So English and maths has always been English and maths. The PoS may be slightly different or they may be organised in a different fashion for assessment purposes but basically English and maths have always been there. You can't do a lot more with them. They are basic areas that have to be covered at primary level" (Principal, disadvantaged area of Belfast).

Even where there had been little change in classroom mathematics, the NI curriculum had, however, sometimes required a considerable development of documentation, record-keeping and other organisational procedures:

> "The changes here were more in our documentation. What we had was less precise than it should have been....The old maths scheme was a bit bald; it did not include things like resources, appropriate activities, elements of language" (Principal, in residential non-selective area).

In six schools in the sample, a more fundamental restructuring or updating of the mathematics curriculum was described which had resulted in new classroom experiences for at least some of the pupils. In two of these schools a topics-based scheme derived from the Primary Guidelines had previously been used, while in the third the former scheme was based on Deboys and Pitt's (1979) Lines of Development. In all three cases a new scheme had to be worked out under the attainment target headings. In the fourth school (already referred to in Section 3.2.3) there had been a major revision of the scheme of work after the first of the new-style Transfer tests: sounder foundations were now being laid in the lower primary school for pupils' understanding of topics on the attainment targets other than Number. The principal of the fifth school described a more general shift of emphasis – not just in the KS1 years – away from concentration on number work (from which some topics had been dropped) to the development of the other attainment targets. The other major restructuring of the mathematics curriculum had taken place in an inner-city school where pupils' work now depended on their attainment target levels rather than their year group:

> "And we take the children through the levels, so that it doesn't matter what class a child is in, they're just working at whatever level. It used to be we would have had particular books in P6, particular books that P7 used and so on, but it all depends now on just the child's ability" (Vice-principal/mathematics co-ordinator).

For a number of teachers and especially those from two of the schools, the coming of the NI curriculum had obviously broadened or extended the range of mathematics taught. Topics within Handling Data had been introduced or developed by seven informants from five schools; the most frequently mentioned topic here was probability, though there were also references to Venn, Tree and Carroll diagrams and to statistical analysis.

> "Probability was given much more emphasis than it had been. We would always have done some probability in the terms of some wee games, but we weren't really expecting

> the children to understand it. It was just a probability experience more than expecting them to have any knowledge or expecting them to calculate probabilities. Also data handling in general was given much more emphasis" (Vice-principal/mathematics co-ordinator, inner-city school).

Other specific topics occasionally mentioned as new in their classroom were three-dimensional symmetry, negative co-ordinates and triangular areas and there were two more general references to Shape and Space. Two teachers said that they were tackling more advanced algebra than formerly and in another school two teachers explained that previously they would have taught only the simpler percentages, such as 50% and 25%. In reply to the admittedly fairly general question on changes brought by the NI curriculum, only two informants mentioned the Processes in Mathematics AT at this stage although more referred later (Section 3.3.4) to recent or current developments in this aspect of mathematics. It is noticeable that the expansion of work on percentages in one school was the only instance recorded of increased attention to any aspect of Number.

Finally, in one school where the mathematics co-ordinator judged the main change to be a greater emphasis on practical work, the principal perceived the main effect to be a cutting back in the standards of number work attempted – he instanced how long division used to be successfully taught in P5 – while another subject co-ordinator in the school, who had a KS1 class, also reported that there was now less number work to cover without mentioning any increase in other mathematical topics:

> "For maths anyway, I think it has slowed things down an awful lot. I think there's more emphasis now on building, on going slower, and making sure the understanding is there."

The last opinion is in marked contrast to the frequent complaint of an overcrowded KS2 programme of study.

Continuity and Progression within the KS2 Mathematics Programme

In addition to those principals and teachers who talked generally about developing coherent programmes of study in their primary schools (see Section 3.2.5), informants in six of the schools spoke of progression or lines of development specifically within mathematics. This progression was sometimes recognised as a feature of the NICC programmes of study themselves, although it was more often mentioned in accounts of how the PoS had been translated into actual teaching schemes in the school. Two examples already reported were the school that now organised mathematics on the basis of attainment levels rather than year groups and the principal, already referred to twice, who instigated a second major revision of the mathematics scheme after the first of the new-style Transfer tests in order to ensure that work on the ATs other than Number was developed throughout the school. A vice-principal in a residential and selective area believed that progression could be more easily attained if the curriculum were organised on a subject rather than a topic basis:

> "Though teachers can choose a topic approach, for the delivery of the common curriculum, I feel it's actually better to have it more subject based, at the top of KS2.... I think if you're having a project on 'pirates' or something like that, you've got English, you've got a wee bit of history, a wee bit of geography and then you're going to do your maths through that, I think it just becomes so bitty, you don't actually build up the skills. I think in maths and science in general terms, it needs to be the subject approach. Now

you can adapt that and bring in other topics as well but generally speaking, you want to cover the curriculum and ensure that you're building on skills.

Occasionally, however, informants reported difficulty in tracing progression through the NICC programme of study in mathematics:

> "A lot of the data handling—Venn diagrams, tree diagrams, Carroll diagrams—we hadn't covered. And in the document these are down at quite a low level. But to me there's no follow-on into level 4 and level 5. And we cannot interpret as to whether we should be doing that at a higher level or whether we just revise it" (Mathematics co-ordinator, selective area).

Inservice Help Wanted for Mathematics

If the level of demand for inservice help with the three core subjects can be regarded as a rough index of the extent to which Key Stage 2 teachers felt they had not fully mastered the new curriculum, especially where the requests were of a basic nature, then mathematics appeared to be the core subject about which they felt most confident. Only nine informants mentioned any aspect of mathematics with which they wanted inservice help either for themselves or, if they were the principal or the co-ordinator for the subject, for colleagues. Five of the nine, who included four mathematics co-ordinators, identified Processes as the aspect of the subject now in most need of attention: those with whom the matter was discussed further hoped for a guest speaker to run workshops to show them more possibilities. Two other teachers saw a need for help with Handling Data, although one was a mathematics co-ordinator aiming to provide the guidance for colleagues. The remaining two teachers seeking inservice help with mathematics, one employed in a disadvantaged area and the other in a residential suburb, both wanted practical advice on coping with the range of ability in their class.

3.3.2: Suitability of Key Stage 2 Mathematics for the Age Group

(Based on 39 informants in 18 schools)

The primary school principals and teachers disagreed about the suitability of the KS2 mathematics curriculum for their pupils. In four schools there was even disagreement among the staff members interviewed although in several other schools opinions reflected a general opinion about the catchment area, whether advantaged or disadvantaged. In selective areas opinions could also be inextricably linked to the ease of bringing candidates for the Transfer tests up to level 5 by the October of P7.

Seventeen informants from ten schools regarded the KS2 mathematics PoS as at least fairly suitable and in some cases as very suitable and well within the grasp of the great majority of their pupils, although they might query the inclusion of one or two topics. Indeed, two principals thought that their pupils could be 'stretched' a little more. Three other members of this group qualified their answers by saying that, although they were happy with the present PoS, the original version had been overloaded. Five of the seventeen informants who thought the current KS2 mathematics programme suitable for their pupils were in fact expressing general satisfaction with the suitability of the whole KS2 curriculum. As one principal in a selective and residential area said:

> "I like a broad, balanced and coherent curriculum, which is the expectation. of course, of the Order. Our children seem to thrive on the opportunities of the curriculum, which is similar to what has always been available here."

Three other informants – two vice-principals and a P7 teacher – saw much to commend in the KS2 mathematics programme and believed it would be perfectly suitable for their pupils provided that certain topics, earmarked in the *Proposals* of March 1995 for removal from level 5, did in fact disappear from the primary curriculum.

Of the remaining 19 informants who replied to the question with respect to mathematics, 16 were critical of the Programme while three were ambivalent. Nine saw the programme as overburdened with content, five saw it as much too difficult, while two others described it as both overloaded and too difficult. It was observed that the schools where the KS2 mathematics PoS was thought to be generally too demanding for the majority of pupils were located either on Housing Executive estates or in areas of urban disadvantage.

> "A lot of our fellows are not capable of reaching a decent standard" (P7 teacher).

> "We have discovered we were asking far too much of the children; the children were failing in mathematics because the work that was put in front of them was too difficult for them. Basically they weren't learning. They were being asked to do work at level 4, level 5, and academic success isn't very high on their agenda or their parents'. Whether that's our fault or the fault of the NIC I'm not sure" (Principal, disadvantaged area).

By contrast, in another school in a disadvantaged area where the mathematics had been praised in a recent inspectors' report, the programme of study was seen as quite suitable and the mathematics co-ordinator regarded getting Transfer candidates to level 5 as "a fair enough challenge".

Five informants, one of whom also complained of an overloaded curriculum, identified particular parts of the KS2 mathematics PoS as too difficult. These tended to be topics whose removal was proposed in the 1995 recommendations: probability, three-dimensional symmetry, parts of algebra and family and personal finances. Three of this group were, however, generally approving of the PoS, apart from the items which they specified:

> "I think some of the maths, particularly probability, is quite difficult. They can do it at a low level but I wouldn't attempt to get as far as level 5. Some of the level 5 is way beyond their experience. Another area that we had difficulty with—it has been taken out now in the latest proposals, which we're glad about— is symmetry in 3 dimensions. They can just about manage the rotational. We would do that through a lot of art work and they can see it through that, but not the 3D symmetry" (Mathematics co-ordinator, selective area).

> "I'm pleased to see some things moving from level 5 up to level 6, in other words out of the primary sector *(Probe)* 3D symmetry and things like simplifying algebraic expressions. Things that most teachers would have done in secondary school and which aren't really relevant to anything else that is been done by the pupils or to their everyday experience either. Apart from that though, mathematics is pretty good I think" (P7 teacher, residential area in a non-selective district).

It was observed, however, that the principal of the last teacher's school had found probability to be a feasible topic with a particularly able P7 group, whom he took frequently for enrichment lessons:

> "But children, being children, tend to take to things quite well. In maths, for instance, the whole business of probability was new to them, but it was fine, they found it interesting and not particularly difficult. They were glad to drop maybe some of the larger number crunching that had maybe gone on beforehand."

Considerations of continuity influenced the replies of a principal and a mathematics co-ordinator from different cluster groups, who both thought that the post-primary sector would be better served if pupils arrived there with a sounder basis in number, even at the expense of knowledge of certain other areas of mathematics:

> "There are aspects of the mathematics programme of studies which I think might well be better left to secondary school. *(Probe)* I am thinking of aspects of Shape and Measure and Algebra" (Principal, residential district in Cluster D).

> "For example stupid things, like square roots have been taken off and yet this is easy for children. Fractions have also been chopped. Multiplication and division of mixed numbers used to be taught and the Head of Mathematics in the grammar school would prefer if they still were" (Mathematics co-ordinator, Cluster C).

3.3.3: The Effects of the Transfer Tests on Key Stage 2 Mathematics

Preparing for the Tests

Given the very full, if not overcrowded, nature of the KS2 mathematics programme until the revisions proposed in March 1995 take effect, it is unsurprising that many teachers found it difficult to prepare pupils up to level 5 – the highest level at which questions were set in mathematics – by October of the P7 year. As the mathematics co-ordinator of a school on a housing estate said:

> "In P6 to P7 it's just cram, cram, cram. There is no time to develop any one particular aspect as it is such a rush trying to get everything covered before the TT. I don't think I ever crammed as much into a year's work."

Some teachers gave details of their preparation. One teacher in a school in a disadvantaged area, where the mathematics were reported to be sound but the English weaker, concentrated during the last weeks on problems and data-handling rather than on basic number work, in which the pupils were believed to be quite competent. Another mathematics co-ordinator depicted a classroom where the 14 test candidates were rushed through a résumé of three years' work in six weeks, while the other 16 pupils would "get on quietly with normal old-fashioned number work." Two other mathematics co-ordinators, both in inner-city schools but in different cluster groups indicated the compromises made in their teaching at this stage:

> "At the start of the year we have to gear our teaching towards the Transfer Test. And that means I really have to cover as much as possible of level 4 and 5 because anything from level 4 and 5 could come up. Now in some cases that might mean going over a topic

superficially, and then coming back to it later after the tests and doing it in more detail" (Mathematics co-ordinator, inner-city school in Cluster E).

"Before the Transfer Test I feel teachers are rushing through a lot of topics trying to get as much information into the children as possible. They're trying to keep all areas fresh in their mind. They're trying to look at all different angles to see how questions could be presented. The children will be doing a lot of what I call pencil and paper maths, which is not the way we would want maths taught in the school" (Mathematics co-ordinator, inner-city school in Cluster D).

As can be seen from some of the above quotations (and also Section 3.2.3), in the effort to cover the breadth of the curriculum depth of understanding could be sacrificed. Indeed pupil understanding at this stage was variously described in different interviews as going "to the wall" or "out of the window" and as "falling by the wayside". Another casualty of the intensive preparation period, mentioned by ten teachers, could be the AT Processes in Mathematics, which was rarely seen as a likely source of Transfer test questions. The following two statements were made spontaneously in reply to questions on, respectively, the Processes in Mathematics AT and inservice needs:

"Although children can cope reasonably well with the Processes AT, the levels would be slightly lower on this AT as they have not had the opportunity to work in this way until after the Transfer Test" (Mathematics co-ordinator, school on a housing estate).

"We had the maths field officer in once to talk about turtles... and LOGO and things like that. *I suppose the children enjoy that?* Well you see that's the sort of thing, you're taking a long-term view of teaching a concept there. I don't have the luxury of spending the amount of time it would take to do it properly. It's the Transfer Test" (P6 teacher, disadvantaged area)

The two main sources of difficulty were the time-scale and parental demands to prepare children of very modest ability for the tests. As a mathematics co-ordinator in an inner-city school explained, there was nothing on the Transfer test syllabus that they would not have done previously with their abler children. But they certainly would not have done it in such a rush as to have it completed and revised by the sixth week of P7.

Mathematics after the Transfer Tests

After the Transfer test, many of the teachers took the opportunity to spend more time on applied and practical work:

"We go more into problem-solving, investigation work and maybe going out for maths school trails, finding the heights of trees and trying to bring the outside environment into the classroom. You've more time for practical work" (Mathematics co-ordinator, Cluster E).

"At the minute we are using compasses, drawing circles. Whereas before I would not have felt this were a priority for what we were preparing for. I suppose more statistics. We would be concentrating more on that now and doing a lot more practical work, where the children are going around and getting more information for themselves" (P7 teacher, Cluster D).

A main task for nine of the teachers was, however, to go back over the topics which had been 'skimmed' or 'glossed' over in the rush of preparation and to endeavour this time to ensure understanding:

> "Quite often it is found that one has to go 'back to scratch' with topics. Because so much is covered in a short time, one cannot be sure of what has really been learned. Hopefully the better ones will have picked things up despite the speed of coverage" (Mathematics co-ordinator, Cluster C).

Only a few teachers mentioned how their pupils responded to this revision but the classroom atmospheres described ranged from absorbed interest through relief at the end of the pressure to boredom and, in one case, occasional incipient indiscipline. There was praise for the section in the *Proposals* of March 1995 which identified parts of the PoS that would not be included in the Transfer tests. These could now be taught 'cleanly' in the remaining months of the P7 year.

Effects on Pupil Learning in Mathematics

When discussing the effects of the Transfer test on pupils' knowledge and understanding, only fourteen teachers referred specifically to mathematics. Opinions were divided. Following on from what they had said about the superficial coverage of certain topics in the preparation period, five teachers feared that pupils could be left with gaps in their mathematical understanding Four thought that by the time of leaving the primary school the new style of tests would have little effect. The remaining five teachers saw such beneficial effects as improved knowledge and understanding arising from the greater amount of time devoted to mathematics and a sounder coverage of topics other than straight Number. An English co-ordinator added that the mathematics required for the Transfer tests were interesting and not just rote learning any more.

3.3.4: Coverage of the Key Stage 2 Programme of Study in Mathematics

Although many informants claimed to have completed the KS2 mathematics PoS by the time of the Transfer tests, there were indications that in a number of schools there was not full coverage even by the end of P7. This could happen in several ways and for a number of reasons.

First, at the time of the interviews the mathematics PoS was so overcrowded that some teachers reported that it was virtually impossible to complete it all (see Section 3.3.2) or, if they did, other subjects would be seriously neglected. There were two very frank analyses, by a principal and a mathematics co-ordinator in schools over 30 miles apart, of where the emphases in their schools lay – and in both cases it was on Number, Measures and the more utilitarian aspects of the other ATs:

> "But I think in terms of mathematics, there are aspects, for example, of Algebra that don't get dealt with. Number will get dealt with in its entirety. Measure will get dealt with in its entirety. I suppose from then on we.. perceive those two areas as being your core areas and, yes, Data will be thoroughly covered as will Shape but they may well be covered in a more cross-curricular way" (Principal, non-selective area).

> "I would say Number definitely gets priority...because it is central to all other areas. Measurement would also get a fairly high priority for again it is something that relates to everyday living. Some teachers may not give so much emphasis to a topic like Shape and

> Space—they mightn't feel it is as important— although I certainly would. I think it's very important that the children get some experiences in Shape and Space. And again with the Data Handling, the simpler graphs and things like that, teachers can see that these do relate to everyday life.... Some of the other work in Data Handling— for example, Venn diagrams, Carroll diagrams— some teachers might feel well is not that important. And again with the probability, I think a lot of teachers feel there's only a limited amount of probability that's really necessary. I don't think a whole area would be left out .. but some areas would be done very briefly. And they wouldn't have explored all aspects of that area that they should, that would be down on their programme. But the programme is just so wide.. and not all teachers feel that maths is the most important subject they are teaching (laughs)" (Mathematics co-ordinator, inner-city school).

Secondly, parts of the Programme of Study might be perceived as too difficult for the informant's pupils. At the time of interview not only did the KS2 mathematics programme extend to level 6, although it was recognised that only a small minority of KS2 children would advance that far, but level 5 included a number of topics that were soon to be removed from the statutory primary school curriculum. Sometimes it was just individual topics which were considered or found from experience to be too difficult; these were often the topics whose removal was signalled in the *Proposals* of March 1995:

> "I believe it's proposed that 3D symmetry be left out. *Yes.* Well it is very difficult and we weren't really covering it although we were meant to be" (Mathematics co-ordinator, non-selective area).

Alternatively, the school's version of the programme of study might not extend through to the higher levels of the NICC PoS:

> "We tend to spend a lot of the year consolidating level 4 and tend to leave level 5 for the brighter pupils to try to cope with, as best they can almost" (P7 teacher, residential and non-selective area).

A third form of only partial coverage could be found where treatment of a topic had been superficial and the degree of understanding intended in the NICC programme of study had not been achieved. Schools which had difficulty in remotivating their pupils after the Transfer tests would be particularly vulnerable but this form of incompleteness could be found in any school where covering a large number of topics took priority over ensuring understanding:

> "I mean the PoS here, it's 'understand this' and 'understand that' and I think that there isn't time to give the children a proper understanding of it" (Principal, rural area).

Fourthly, there could be gaps in curriculum delivery if teachers did not feel 'comfortable' with a topic, whether because they personally found it difficult – perhaps because it was new to them – or because they believed it was unpopular with pupils. Two teachers, for example, would delay attempting volume in P7 until it was too late in the year to commence any new topic.

Fifthly, as is discussed below, there were many indications of problems in implementing the AT Processes in Mathematics.

The Implementation of the AT, Processes in Mathematics

As already stated in Section 3.3.3, ten teachers admitted that there was little process-based work in AT1 in their classrooms in the period leading up to the Transfer tests. This should be regarded as the minimum figure, since there was no specific question in the schedule on the matter and many respondents opted to reply to the items on the effects of the new Transfer tests either in general terms or in relation to other subjects. In the course of the interviews there were several other suggestions that the implementation of Processes in Mathematics was not always proceeding smoothly in either the selective or the non-selective areas of the Province.[18]

Indeed, there were signs that in some schools Processes in Mathematics had a much lower status than the other ATs in the subject. A principal in a selective area openly admitted that they had not yet concentrated on the 'Process ATs' as much as perhaps they should, although they hoped to work on them in future, while a principal in a non-selective area saw only a limited role for Processes in the upper primary school:

> "Well mathematics wouldn't be as practically based as science. It definitely wouldn't be. By P7 yes, there are practical aspects to mathematics but it's not practical. But I think in each of those areas I would want to qualify that by the teachers' attitudes and values. In terms of mathematics.... throughout the school there is considerable emphasis on practical mathematics. Now obviously it reduces as they go up the school and there's not as many practical activities" (Principal, Cluster F).

Problems of teacher attitudes and values were also identified by the other primary principal in Cluster F, who, although himself committed to a process-based approach, regarding it as the essence of true mathematics, had not yet managed to convince all his colleagues. A vice-principal in a selective area saw an incompatibility between the values implicit in the Processes AT and traditional Northern Ireland attitudes:

> "I think it's probably something to do with Northern Ireland's... our approach as teachers as well. Perhaps we're moving along that route now but I think we're more comfortable with something that's more concrete and with the set answer. I think it's just a reflection of the need for teachers to change their attitudes. (Vice-principal, residential area, Cluster E).

In this connection, three of the teachers debated how much freedom and responsibility can usefully be given to pupils in P6-P7. All three feared that unless there was considerable teacher guidance – probably much more than recommended in the PoS – much class time would be wasted. As two of them said:

> "No, I wouldn't find them greatly independent. Perhaps that's partly my fault in that, I feel to get the best out of them I maybe do put more in than I should. But it's just I feel that if I don't do that.. so many of them flounder, and then I feel that I'm not actually teaching (P7 part-time teacher, Cluster F).

> "I'd say Processes is one of the most difficult ATs, particularly as you get further up the school. In a classroom situation teachers would be inclined—myself included—to explain to the children what they're doing. You may discuss and ask why you would use, what materials would you use, why would you use a metre stick or whatever, and then the children would carry out the activities. To allow the children to carry out the

[18]Clusters A-E were in selective areas, clusters F, G and H in non-selective areas.

activities, to decide themselves what maths is needed, what materials you would use and carry out the activities— and then find that hasn't worked and to go back over it again just takes so long. I feel in a lot of cases the teachers would have a general discussion beforehand about what they're doing and why they're doing it and give the children the opportunity to express their ideas. But then they would be instructed how to do it in most cases" (Mathematics co-ordinator, inner city school, Cluster D).

The interviews were held in the fifth year of the Northern Ireland curriculum so that no cohort of P7 pupils had yet been on it since entry to P1. Teachers attempting process-based mathematics or (following NICC, 1992, p5) encouraging children to talk about mathematics could, where this was not the normal previous practice, initially face pupil puzzlement:

> "They are only a couple of years into the curriculum. Possibly if it were built up from P1, P2, you would find a big difference there" (Mathematics co-ordinator, Cluster A).

> "I think when we do investigations after the Transfer tests with the children it's a shock to their system 'Well, why are we getting out these scissors now?' 'What do we do with these?'" (Vice-principal, residential area, Cluster E).

> "That would be a change now, where they're encouraged to talk through what they are doing. You know, when... I would say 'Right, talk me through this sum' and they sort of look at you. You don't talk in maths" (Mathematics co-ordinator, Cluster G).

Implementing Processes in Mathematics may require teachers to develop new approaches to classroom organisation and management, which few find easy. In addition, five teachers said they found the assessment of this AT particularly onerous.

Eight teachers had found that their less able children, who might possibly achieve a measure of success with routine 'sums', had great difficulty with process-based work, especially if their language skills were also poor. Another teacher saw progress coming with increasing maturity:

> "But it's not one you can teach. It's not specific teaching in the same way as the others are. It comes sort of with maturity (Mathematics co-ordinator, inner-city school, Cluster E).

> "I think that your more able children cope well..... But you find perhaps from the middle of the class downwards, and especially your weaker children, they're the ones who would have difficulty in actually applying the process....There are those who — you can put adding sums on the board and they can all add, they can all multiply, divide, subtract, but ask them to do something which involves a little bit of thinking on their own behalf and they're totally thrown. (Vice-principal/mathematics co-ordinator, Cluster G).

Despite their initial difficulties, some teachers, who had persevered with Processes and with communication in a wide range of forms, were now reaping the rewards. One vice-principal described an animated lesson on area in which pupils worked on the layout of kitchens, giving reasons for the siting of fixtures. The pupils (see above) who were surprised when their teacher first introduced the idea of talking in mathematics lessons had become much more confident, competent and articulate:

> "It's a new concept but when they get into the habit of it, it actually makes life a lot simpler for themselves because they can talk, understand what they're doing basically. Classroom structure as well would play an important part. It has to be set out well so they have the independence to go and get the appropriate instruments or what ever equipment they need. Once they're told that they can be independent and go and get things, then they all tend to do it quite well..." (Mathematics co-ordinator, Cluster G).

3.3.5: Key Stage 2 Mathematics: Pupils' Response and Attainments

In the primary sector evidence on the pupils' reaction to the curriculum was taken only from principals and teachers. While it would have been interesting to hear P7 pupils' views on how they had coped with the core subjects, the project time-table did not allow for a group to be followed through into secondary education. The primary teachers' opinions can , however, be compared with those of post-primary teachers and those of Year 8 pupils in Section 4.3.4 and 4.3.5.

Most Liked Aspects of KS2 Mathematics

There was general agreement that the upper primary pupils liked the practical aspects of mathematics most. Of the 25 primary school informants whose replies to the question on pupil preferences included mathematics, 20 gave such answers as 'practical work', 'the investigations' or, if they mentioned one of the other attainment targets, focused on the practical aspects with such answers as:

> "Data handling - drawing graphs and getting out questionnaires" (Mathematics co-ordinator, Cluster C).

> "Aspects like capacity and volume, for which we have the equipment" (Mathematics co-ordinator, Cluster A).

Occasionally, fuller details were given of practical work which had been particularly enjoyed, although less often than for science or English:

> "When you've no pressure of the 11 plus you can get into more things. We started making things last year. We made graphs, block graphs, straight line graphs and stuff like that out of wood, nails, hammers, and they really enjoyed that aspect of it. They really did" (P7 teacher, Cluster A).

Of the remaining attainment targets, Handling Data, with eight mentions, appeared the most popular; there were specific references here to drawing graphs and pie charts and to practical exercises in probability. Measurement was mentioned by five teachers, aspects of Number by four teachers, Shape and Space by three teachers and Algebra by two teachers. Two teachers had found that their pupils most welcomed new topics, while two others – both co-ordinators in inner-city schools – said their pupils were happiest with the mathematics they could do successfully; one of the latter added that "good old sums" were well liked by those children who thought they were likely to get most of them right.

Least Liked Aspects of KS2 Mathematics

With the notable exception of a teacher of a class of children with special educational needs (SEN) who described her pupils as "a game little bunch," who would willingly tackle even things they found difficult, there was a tendency for the informants to equate disliked topics with those which the pupils found difficult. Only thirteen of the primary school teachers identified any mathematical topic which their pupils actually disliked, as distinct from finding it difficult. Another three – including the special needs teacher referred to above – thought no aspect of mathematics was really unpopular.

Ten teachers, of whom three specifically mentioned fractions, named topics on the Number attainment target as the most disliked. Fractions were thought to be disliked because they were difficult or because much time had been spent on them immediately before the Transfer tests. Other aspects of Number, and in particular basic calculations on 'the four rules' were unpopular because the pupils had been, in the words of one co-ordinator, "drilled to the point of boredom".

Two teachers had found that problems of the paper-and-pencil type, as opposed to those to be solved through practical work, were disliked by many of their pupils, especially those whose reading comprehension skills were weak; one of the two reported that the pupils hated mental arithmetic also. A P7 teacher in a non-selective area found it hard to interest children in the more abstract parts of level 5 Algebra. The remaining teacher, a mathematics teacher in a disadvantaged area said that his pupils might dislike any topic where they had a blockage but that the pupils differed in the areas which they found problematic.

Two teachers, one in a selective and the other in a non-selective area, indicated how they attempted to maintain both facility in basic number work and pupil interest.

> "By that stage they are tired of repetition in the 4 basics, so you have to find a lot of other ways of introducing it,. I have some things, .. when you work them out you get jokes, and puzzles" (Mathematics co-ordinator, non-selective area).

> "I feel the main part of the P7 teacher's task, is to try and motivate the children, to try to show them different ways of doing things. So if it's number facts you don't approach them in the same way as the P5 or P6 teachers. You approach it from a totally different angle – make it interesting and enjoyable through games, investigation work and outside in the playground". (Mathematics co-ordinator, selective area).

Pupil Difficulties with KS2 Mathematics[19]

Twenty of the primary school informants identified aspects of mathematics with which their pupils found difficulty. For one mathematics co-ordinator in an inner-city school the problem was the pupils' poor memory for concepts and information, which were often found to have been forgotten by the time that a topic was revisited. Seventeen teachers mentioned one or more topics listed on the KS2 Programme of Study. The remaining two teachers were among the five, all from selective areas and four from boys' schools, who expressed concern about their pupils' difficulty in reading and understanding questions with a high verbal content; even pupils who knew sufficient mathematics to answer a question were often unable to work out what mathematical processes they should apply.

[19]Areas in which several teachers volunteered that their pupils showed particular competence in basic number work, data handling and co-ordinates.

Just over half the group (eleven teachers) spoke of difficulties with aspects of Number. A vice-principal in a school in a small town was concerned that some of the P7 pupils still had still not fully mastered the basic number facts, especially their multiplication tables. This was now severely hampering their progress with more advanced aspects of mathematics, such as fractions and the calculation of areas. Other aspects of Number causing difficulty. with frequencies in brackets, were fractions (6 teachers), percentages (3), long division (2), place value (1), mental arithmetic (1) and square roots (1).

The only part of Handling Data to cause pupils serious difficulty was probability, which was mentioned by four teachers, including three in non-selective areas. Topics on the other ATs which pupils were said to find hard were the more abstract parts of algebra (3 teachers), area (2 teachers) , plane symmetry and tiling (1 teacher each). Although not mentioned in reply to this question, three-dimensional symmetry was cited by several teachers at other points in their interviews as a problematic topic which they were delighted to see disappearing from the primary school syllabus.

Attainment Target Levels in Mathematics Reached by the End of KS2

Following Magee (1992), it was hoped to compare the levels which the primary school informants thought their pupils would normally attain by the end of P7 with those which the post-primary teachers reckoned their entrants arrived at the beginning of Year 8. This proved to be a more complex task than anticipated.

A number of primary school informants were rather hesitant to suggest any levels, although virtually all were persuaded to do so. However, their answers were variously expressed in terms of the levels already achieved, those which they expected would be fully achieved by June, those which (following the principles of the level descriptors) might be described as 'best fit' predictions for June and the levels on which pupils were currently working and which – since each level represents about two years' work for a typical pupil – might or might not be achieved in the last few months of P7. In consequence, answers cannot be directly compared and, with hindsight, it can be seen that the interviewers should sometimes have asked for more clarification. In several schools there were appreciable discrepancies among the estimations by different informants, although answers which appeared to refer to a respondent's class rather than the P7 year as a whole could be ignored.

Only a few of the schools had participated in piloting AUs or CAIs but even where the answers were based only on unmoderated teacher estimates these could help to shed light on the issue raised in Section 3.2.6, namely the belief held in many of the primary schools that after transferring to post-primary education their pupils were unnecessarily made to repeat much work which they had already mastered.

Although the findings have to be hedged with the above caveats, in most schools the 'average' or 'typical' pupil was estimated to achieve about level 4 in mathematics by the end of P7. In two schools, both in essentially middle-class districts, the one in a selective and the other in a non-selective area, it was claimed that most pupils would achieve level 5 and even be tackling some parts of level 6 work. In one of these schools any child not on level 4 by P7 would be considered in need of remediation. In three other schools, all in selective areas and two of which sent the majority of their leavers to grammar schools, the 'typical' child was said to be working on level 5 but not to have quite achieved it; their ablest pupils would, however, have achieved level 5 and be capable of some level 6 work.

In one school in a disadvantaged area where level 4 work in mathematics had been found too difficult for many pupils, level 3 might be regarded as a more appropriate 'benchmark' or target for the majority. In five other schools, all in inner-city or disadvantaged areas, there was some disagreement between the principal and the mathematics co-ordinator or P7 teachers as to whether a typical pupil would actually have achieved level 4 or might be more accurately described as "achieved level 3, working on level 4".

Nearly all informants were aware of a broad range of achievements among the P7 age group. In all except one school this was seen as extending across at least three levels and sometimes over four levels, from remedial children at level 2 to able pupils attempting topics set at level 6. There were six schools where some pupils were working at least partly on level 6 mathematics although one school had very few on level 5 for any subject. At least half the schools had some pupils reckoned to be not above level 2 in mathematics.

When asked how their pupils' levels on Processes would compare with their levels on the other mathematics attainment targets, teachers who thought they would be much the same were outnumbered in a ratio of about three to two by those who thought the average level on Processes would be lower. Reasons volunteered by some of the teachers for the lower levels on Processes were that these approaches were still quite new for the current P7 pupils, that only limited time could be spared for this type of work and that the less able pupils found the tasks to be very demanding, both at the planning and the recording stages.

3.4: Key Stage 2 Science

3.4.1: The Extent of Change in P5-P7 Science

(Based on 36 informants in 18 schools)

The implementation of the KS2 science programme had necessitated changes far greater than those required for the other two core subjects. Indeed, of 14 primary school informants who recalled the introduction of the NI Curriculum as being particularly traumatic for their colleagues, leading some to the verge of nervous breakdowns or to seek early retirement, 12 referred specifically to science. Before the 1989 Education Reform order, the majority of Northern Ireland schools would have included in their normal teaching programmes substantial parts of the present Living Things and Environment ATs, perhaps under the headings Nature Study or Environmental Studies. On the other hand, most of the physical science topics on AT3 Materials and on AT4 Forces and Energy, although taught for years by some enthusiastic teachers, were new to many schools.

> "Well science definitely has a much bigger part to play now than it did before the new curriculum came in. We would have done things that we didn't actually call science, which are now in the science PoS. We would have done a lot of nature study and bits of geography topics would have been now what is called science. But definitely there's quite a lot of the science things we wouldn't have done at all, especially in the Forces and Energy AT, and in Materials too" (Vice-principal, Cluster E).

> "Essentially, prior to 1988, there would have been some science done but it would have been low level science, if you like. Most of it would have been biological, nature-study

> oriented rather than hard pure science: forces, energy, materials and so on. There would have been some work done in these but not across the board and in the same depth. Post-1988, we had suddenly to gear up from square 1, from doing virtually no science in real terms, or in NI curriculum terms, to full-blown science within a year. Which we managed to do after a fashion" (Science co-ordinator, Cluster A).

Some of the 18 primary schools in the project had been better positioned than others to cope with the demands of the new science curriculum. In two of the schools – one in a selective and the other in a non-selective area and both of which had been previously actively implementing the Primary Guidelines – a whole-school scheme, which included many of the topics of the KS2 science, had been worked out well before the PoS became statutory; in at least one of these schools, however, it was evident from the interviews that not all P5-P7 teachers were implementing it. In several other schools there was at least a small nucleus of teachers who were interested and in many cases qualified in science and who were able to lead their colleagues:

> "At that time we had a couple of teachers who were very interested in science and science was a feature of the curriculum here. The advent of the NI curriculum formalised that and made it whole-school. We had to set about reassuring quite a number of staff members that if wasn't bubbling test-tubes and nuclear explosions but it was quite a straightforward matter of processes and all that. We went about that with the help of a couple of co-ordinators and threw together a very comprehensive scheme of work based on the PoS" (Principal, non-selective area).

Even in these schools, however, implementation of KS2 science was not always easy and teachers who had previously studied little science had often needed considerable support. In this connection there was great praise for the support services of three of the education and library boards which had variously sent field officers to work alongside classroom teachers, led school-based courses, provided equipment and answered pleas for help.

Two of the 18 primary schools had been able to release a teacher from full-time class duties to work wholly or partly as a science support teacher within the school; one of these was a member of the senior management team who was also involved with a remedial education project and had various administrative duties. In another school, in which the science was praised by teachers in the local high school, the KS1 science co-ordinator had just returned from secondment as a local education board field officer, an experience which had widened her perceptions about possible ways of implementing the PoS.

Such progress was not found in all the schools. In one less fortunate school the principal doubted if he or any of the staff had sufficient background knowledge to teach the KS2 science curriculum. The science co-ordinator of a second school admitted that, largely because of the attitudes of the previous principal, "There has been very little science taught in this school" and that work had not yet really begun on developing the school science scheme, although that was time-tabled for the following year.

In five other schools, including three from non-selective areas, there were informants who did not appear to have entirely accepted that science should be one of the three core subjects of the primary as well as of the post-primary curriculum, especially for weaker pupils.

> "My own class would be fairly remedial, weak in English and in maths and they would need to spend more time on the two main areas rather than bringing in a lot more scientific

work .... I just find with these pupils that I would need to concentrate more on English and maths and as much science as possible. At the same time I can see the value of the science...But I suppose English and maths would be the two main subjects anyway and then we've brought in the science" (P7 teacher, Cluster A).

"There are more important things than some of the science content for those children who cannot read or write" (Mathematics co-ordinator, Cluster G).

"We would teach a lot of science on a cross-curricular basis. But we would still at the same time find it hard to put it up along with English and maths. Our perception... wouldn't have it as important a subject as English and maths" (Principal, Cluster H).

Continuity and Progression within the KS2 Science Programme

As well as the changes described above towards more science and more physical science in the primary school, a third dimension of change in most schools was towards a much more tightly structured science programme. This was necessary to fit in all the requirements of the PoS and, in selective areas, of the Transfer test syllabus. Such a tightening up of the syllabus could have decidedly beneficial effects where it reduced the kind of unnecessary repetition that has been much criticised since the time of the 1981 Inspectorate Report (DENI, 1981):

"It meant we really had to look at progression and lines of development. Because the traditional subjects – the body, ourselves– had been covered ad nauseam and weren't necessarily being built on. There was a lot of repetition" (Vice-principal, selective area).

This type of change was felt most acutely in schools where previously much of the science teaching had followed seasonal or topical events or pupil interests and where attitudes to the change could be more ambivalent:

"In a way it can be limiting now because.. there are things that happen in the classroom, spontaneous things, and a child says 'Well I got this outside' and you know you have a curriculum to cover and you can only say 'Well that's lovely. Put it there.' But you can't really go into a great deal of detail. I think that's the problem" (KS1 science co-ordinator, selective area).

"When you're dealing with young PS children, a lot of learning takes place in an almost incidental way. Someone has a leaking ball pen, for instance. And we have to get it cleared up, his hands washed and the rest of it. But that... can start off so many things, that maybe just come out of an interest at the time, where some of the children ask me questions: 'Why does this happen?'....But the treatment at that level, is not a very in-depth scientific study...The children ask a question, they want a fairly immediate answer; they're not really particular about the detail of the answer as long as it satisfies that need. Whereas the science now has become more a question of 'We've got to learn this. And you must learn and you must remember it. And you are going to be tested on it.' It's a different context " (Principal, inner-city school).

When devising their KS2 science programmes, many of the schools, following advice from the support services, planned on the basis of two major topics a term. In schools which entered pupils for the Transfer tests, however, the time-scale of the Transfer Procedure distorted such plans. There were further complications because of the agreement in the first years of the new-

style Transfer tests to base the science sections on three ATs only. The first year AT3 Materials was dropped, the second year AT4 Forces and Energy. While the reduction in the number of ATs to be tested was intended as a concession, the delay until the spring term of the announcement of which AT would be dropped that calendar year meant in practice that there was often a feverish reorganisation of the school's programme to suit that year's circumstances. The suggestion in the Proposals of March 1995 that content from all ATs could be tested but that, if so, certain more difficult topics from each AT might not appear in future tests meant that at the time of the interviews teachers were facing the prospect of yet another revision of the P6-P7 science syllabus, although there were hopes that the position was about to stabilise.

Because of the pressures, devising a school scheme which gave Transfer candidates a reasonable chance of reaching an adequate level of mastery in time was no easy task. As a KS1 co-ordinator, who had wider experience as a local education board field officer pointed out:

> "So there wasn't any set way to do it because it isn't logical. It's not like maths where you've got the natural progression.... Each school chose different ways of doing their science. And you might be doing Earth in Space in P6 and P7. Other schools were doing it in P7. Or you might be doing something with fabrics in P5, whereas another school might have chosen to do it with paper, you know, using different materials."

There was also the question of how long pupils could be expected to retain information and concepts. In some school schemes, especially revised schemes, teachers were opting to revisit the main topics regularly rather than concentrate on just two topics each term; for example, the science co-ordinator from Cluster A quoted in Section 3.2.5 explained their plans to do a little electricity (and similar topics) each year from P4 upwards. Matters could be even more complicated where there was a composite P6-P7 class. Some informants were still very much wrestling with the possibilities:

> "The Materials thing would be the one I would be worried about, as to how we're going to work it in P6 and P7.... We're going to have to split it some way and we are not too sure exactly what we're going to do. We're going to do solids, liquids and gases.... The water cycle - we're not too sure exactly where we're going to do it, probably P7 now. And do it as solids, liquids and gas....We're doing a bird study which would be between the two. It was in P7, we're going to take it down to P6 because of the questions that were on the Transfer. And they enjoy that in the spring term" (Science co-ordinator, Cluster C).

Even in non-selective areas there could be considerable juggling of the curriculum between year groups to try to ensure smooth progression, especially if the school was interested in participating in Assessment Units or gearing up for end of Key Stage assessments:

> "Well the only thing we would have had trouble with as far as the science goes was that the P7s at one stage had far too much to cover in the last curriculum, and we tried our best to divide it up and give the P5s and P6s more to do. Of course.. then sometimes we went too far and we then found the P6s had too much to do. So really it was just too much content altogether" (Science co-ordinator, Cluster F).

Inservice Help Wanted for Science

Sixteen informants, including five principals and seven science co-ordinators, from ten schools, expressed a need for further inservice help with science. Whereas all but two of the nine

teachers who saw a need for help with mathematics were thinking of advice on pedagogy or class organisation, 13 of the 16 who were seeking help with science wanted to include a more content-related but still very practically-based input. Four science co-ordinators identified the Forces and Energy AT as the one with which their colleagues felt least confident; the other nine spoke of a more general content-related course.

> "AT4, because I do feel teachers aren't confident with the idea of gears and levers and forces and floating and sinking because they're difficult concepts." (*Interviewer: "What sort of help?*") "I think practical work with actually the gears and levers and those things, let the teachers use them themselves and then they can see how to use them in their classroom." (Science co-ordinator, selective residential area).

> "Personally, I would love more in science, to be a bit more knowledgeable...There is no sort of book you can go to that would cover your science for you" (P7 teacher, disadvantaged area).

Two science co-ordinators and a principal intended to have inservice sessions focusing on Investigations in Science in the near future; one of the science co-ordinators, from a non-selective area, was, in fact responding to an inspection report, which criticised the school's over-emphasis on factual knowledge. Two other principals, also from non-selective areas, thought they might use an exceptional closure day to revise and update their science schemes, especially if the new Proposals were accepted.

It was also noted that, in comparison with the envisaged inservice courses in mathematics, more of those in science would be led by an outside speaker rather than run entirely by teachers in the school. Even for the sessions to update the science schemes, a field officer might be invited to play a supportive role though such meetings would be mainly in-house.

Perhaps another indication of the extent to which the KS2 science curriculum is not yet secure and established in all schools were the independent requests from a principal and a P7 teacher in two schools in disadvantaged areas for a substantial period of inservice release. No informant made this kind of suggestion for either of the other two core subjects.

> "What we have often said here would be good would be if a group of teachers were to be released for a week to work on particular topics. At least they would get their teeth into something definite over a period of a week rather than having a menu day going from half nine to three o'clock " (Principal, selective area).

3.4.2: Suitability of the Key Stage 2 Science Programme of Study

Suitability for Pupils

(Based on answers from 38 informants in 18 schools)

Only four informants seemed to be happy with the current KS2 science PoS. Two were principals – one in a selective and the other in a non-selective area –who spoke of the suitability

of the KS2 programme in general terms without reference to specific subjects.[20] The third was co-ordinator in her school for KS1 science and appeared to be referring only to the KS1 curriculum. The fourth was an English co-ordinator with a P7 SEN class; having had many years' experience of innovatory science teaching before the 1989 Order, she had radically adapted the PoS for her pupils.

The two main charges made against the current statutory KS2 science programme were that it was seriously overloaded (17 informants) and too difficult for the age group (24 informants), with nine informants making both criticisms. Two mathematics co-ordinators preferred to describe the PoS as in parts irrelevant to the needs and interests of the age group.

As the series of interviews progressed, an increasing proportion of the participating teachers had had time at least to read through the CCEA Proposals of March 1995 and those who referred to that document all modified their criticisms. Provided that the Proposals were to be accepted, eight informants thought the expected amount of content would become manageable and 14 thought the difficulty levels would become acceptable. The only suggestion that the proposed revised KS2 science curriculum might still be too advanced came from a science co-ordinator in a disadvantaged area, who would personally be happy with the proposed changes but reported that some of his colleagues wanted further cut-backs.

Although in selective areas some of the criticisms of an over-demanding science curriculum were made with respect to the Transfer tests rather than to the actual KS2 programme itself, there were also complaints from each of the six primary schools in non-selective areas that the standards expected were too high. As with mathematics, teachers were sometimes forcing their pupils on to more advanced work in science than they could properly understand:

> "It's just far too broad and you find in your hurry to get through, you feel guilty because you're maybe skipping over things, or not doing them the way you want to do them because you've this week's lesson and then you've next week's lesson rather than .... giving them adequate time" (KS1 science co-ordinator).

Four teachers –from both selective and non-selective areas – made the point that the advanced levels of science on the programme of study were particularly inappropriate if, as they believed, the work would be repeated in the post-primary schools:

> "It is difficult to work out why there is such pressure to reach level 5, when children in grammar schools are repeating work they have done in primary school. Not long ago, one of the my nieces spotted some of the work I was planning to do with the my class and said 'But I'm doing this'" (Mathematics co-ordinator, Cluster B).

> "I find the present science curriculum very unsuitable. Very top-heavy. The level 5 material that we are expected to be pushing our top children to is certainly mid-grammar school stuff, and very difficult. Very difficult to teach and to understand as a primary non-specialist. And very difficult to resource" (English co-ordinator, Cluster F).

There were fifteen mentions of particular parts of the science curriculum which teachers thought were too difficult for their pupils; as in the case of mathematics, these were often topics whose

20Another six informants who thought the KS2 programmes of study generally suitable (see, for example Section 3.3.2) had certain reservations about the science PoS, especially the earlier versions.

removal from the primary curriculum was signalled in the Proposals of March 1995. Eight were to AT4 Forces and Energy, including three specific references to levers and one each to gravity, light and to floating and sinking. Three teachers would be happy to see the disappearance of their unit on the Earth in Space and especially the requirement for children to know the names of the planets. Two teachers thought the level 5 genetics concepts much too difficult for primary school children, while two more thought that they were expected to know the parts of the human body in far more detail than was necessary at that age:

> "I don't agree with the content in science. One of the questions in the recent 11+ paper was about the heart, the ventricle and aorta. A 10-year-old – and that's the age they do it at – doesn't have to know that. That's knowledge that could be kept" (Principal, selective area).

A science co-ordinator thought certain parts of the KS2 syllabus might be better left to the post-primary schools and sympathised with friends in the local high school who saw the introduction of such topics as electricity into the primary school syllabus spoiling the excitement of secondary school science for Year 8 pupils:

> "I could understand their views and a lot of our children don't understand the concepts if they're introduced too soon. And perhaps we, as non-specialists, don't understand the concepts ourselves perhaps."

While not denying that there should be some study of the physical sciences in primary school, two other teachers regretted the extent of the shift of emphasis away from traditional nature study. One, a vice-principal in a village school, feared that primary school children could no longer recognise common wild flowers or say from what kind of tree a leaf had come. The other, a P7 teacher in a Belfast school, believed that the primary school years were the best time to teach children to understand and to care for the environment around them as a basis for caring for wider environmental issues later on.

Three other teachers expressed the view that the knowledge-based aspects of science were over-weighted in the present curriculum and it would be better to have a much greater emphasis on the skills and processes.

Suitability for Teachers?

It was perhaps a symptom of the pressures which teachers experienced when trying to implement the unfamiliar parts of the KS2 science PoS that the question on the suitability of the programme of study for P6-P7 children was sometimes initially answered with respect to the difficulties faced not by pupils but by staff. This did not happen with either of the other core subjects.

> "The original document was far too detailed. It was done by experts and it wasn't geared at primary school level at all. It's OK if you're an expert in science; you know where you're going but the non-expert hasn't a clue and just picks little bits and uses them" (Science co-ordinator, selective area).

> "What you found was that people who were field officers and the like were sort of semi-specialists, talking at a very high level. Whereas the other seven-eighths of ordinary primary teachers, the level was not appropriate and did not really take into consideration the fact that quite a lot of the primary school staff were not geared or I was going to say

interested or capable or confident enough to be able to take on the amount of science that we're talking about" (Principal, selective area).

Exactly how many KS2 class teachers were still having difficulty with the science curriculum some five years after its introduction was impossible to determine but there were signs of this in about two-thirds of the schools. The number of teachers who still saw a need for content-related inservice support is one pointer. Each of the core subjects was discussed mainly with the co-ordinator or another teacher with expertise but several of these, even if coping well themselves, had observed the problems of their colleagues:

> "I think the science is too technical, especially for primary teachers, never mind children. If you're science oriented like I am, I found it quite all right to organise, but a lot of people are sort of out of their depth. I found that a lot of work that usually had been done in secondary school had all been squeezed down to us" (Mathematics co-ordinator, non-selective area)

> "We just found that a lot of it was difficult to deliver: solids for instance in terms of molecules and what not .... For a teacher who has never encountered that, it's crazy" (Science co-ordinator, selective area).

Rather more worrying were a few cases where a science-trained co-ordinator sounded satisfied with progress in implementing KS2 science in the school but other teachers in the same school sounded much less secure:

> "We'll base any future workshops on any misgivings the staff have, but they're all reasonably capable and confident and I have found that there have been very few problems in that way" (Science co-ordinator, non-selective area).

> "With the science I really don't know where I'm going yet. I think in school we need to do a lot more work on the science" (Mathematics co-ordinator, in the same school).

The second example comes from comments on AT1 Exploring and Investigating in Science made in a school in Greater Belfast:

> "Teachers have become used to setting up the experiments and I think they can see the benefit of them because the children remember the stuff, obviously, if they have carried out the experiment rather than just the teacher standing and giving them the facts" (Science co-ordinator, residential selective area).

> "People are not comfortable with science. I have never been a scientist personally and to be expected to teach science to the level that we reach in P7, is at times a complete mystery to me.... Now if you get somebody like myself who doesn't know a lot about science and the children are doing an experiment, what can very often happen is that they can all come up with different conclusions. And there's no relationship between the conclusions at all, but they've all got reasons for them. Well I don't know what the proper conclusion is. I'm not quite sure why they come up with this one or they come up with that one" (P7 teacher in the same school).

There were, however, also a number of optimistic notes. One science co-ordinator said that several colleagues who professed little knowledge of the subject a few years before had enjoyed

learning it a few steps ahead of their pupils. The teacher who thought it "crazy" that non-specialists should be expected to cope with such concepts as 'particles' and 'molecules' could, however, teach such things successfully in an inner-city school to a "particularly good class" who shared his own love of science. The principal of another inner-city school also reported finding encouragement in the response of pupils:

> "There's a lot of new work in Forces and Energy and in Materials but the children enjoy it. They very much enjoy the science, and it's just a question of us all getting up to date. We're re-writing our science policy and schemes at the moment."

3.4.3 The Effects of the Transfer Tests on Key Stage 2 Science

Preparing for the Transfer Tests

As with mathematics, the problems of teaching what was commonly agreed to be an overloaded curriculum containing much difficult material were exacerbated in selective areas by the pressures of trying to prepare pupils for the Transfer tests. In consequence, teachers in ten schools admitted teaching some of the more advanced topics earlier and faster than considerations of sound learning would lead them to do.

> "There are some aspects of the science that are far, far too advanced for kids, and let's be honest , if it wasn't for the 11+ you wouldn't be maybe going as far. But you know it could be on there so, yes, you are doing it" (Science co-ordinator, Cluster D)

An additional complication in KS2 science is that several of the statements of attainment – examples include 'explain the functions of the major organ systems, namely digestive, circulatory, respiratory and reproductive' from AT2 and 'describe the water cycle' from AT3 – give little indication of the depth or detail expected. As a result some teachers were attempting to guard against all eventualities by teaching much detailed factual information; their uneasiness could be increased by rumours of even more advanced work being done in 'competitor' schools:

> "Because it wasn't clearly identified which aspects of science had to be covered for the Transfer Test, teachers in P6 were covering a number of areas of work that would be GCSE standard. And it was being covered at a fast rate, which was essential to get it covered in the time available and I feel children were learning off lists of parts of a flower, parts of the body and the ear and the eye which some of them wouldn't be doing till first year in medical school! (Mathematics co-ordinator, inner-city school).

> "... people were influenced and put under pressure, for example to do the eye, to do the ear, to label the bones of the body with their proper names. I would say that wasn't even on the original programme. But people put their own interpretation on it then and they thought 'Oh if I don't do that - it might come up'.... I just said "I'm not doing the eye – that's GCSE. I did the ear for O-level'. Tarsals and metatarsals! I mean it's crazy" (Science co-ordinator, inner-city school).

The concession in the first years of the new-style Transfer tests to include questions based on only three of the science ATs was referred to with some gratitude in about half the schools in selective areas, although one science co-ordinator found it "demoralising" to have to chop and change the P6-P7 syllabus from year to year. While most teachers appeared to drop the omitted

content-based AT at least until after the tests, one science co-ordinator in a disadvantaged area regarded that as too risky:

> "But essentially they can and will test everything. Because they can produce forms of questions and forms of words which incorporate elements not specifically referred to when we are informed about what is going to be tested. Which means that we have to try and cover as much as possible because we know our kids are at a disadvantage."

For those teachers prepared to discuss their preparation methods, the secret appeared to be a well planned scheme which got the material 'covered' in time, leaving some weeks at the end for revision. Three teachers, from clusters A, D and E[21], described essentially similar approaches to prepare pupils to cope with any type of question on the topic. As one of them said:

> "We have to try to cover every angle possible. And because our kids tend to think in straight, narrow lines, we have to come in from a number of angles. Children who are experienced readers and knowledge-researchers know to approach subject matter from different angles without being told, or they require only minimal direction and guidance to do that. But ours are not like that, so we have to teach everything from every angle to prepare the children for the test. So the workload is much more than superficially it might appear" (Science co-ordinator, Cluster A).

In the course of describing their Transfer preparation or the effects of the test on the science curriculum, some half dozen teachers indicated (sometimes just through a phrase like "rote learning") that the transmission of factual information took precedence over understanding. A larger group of 15 teachers, including eight of the ten science co-ordinators in selective areas admitted neglecting investigations and practical work, at least during the run-up to the Transfer tests and in some cases throughout much of P6:

> "My science teaching became a factual thing, not the way that it was designated to be taught. We are supposed to work on an experimental basis, with a large focus on the meaning of everything and the understanding of everything. But at the end of the day I was forced to say 'Look, this is what it is, this is the answer and that's the way of it'" (English co-ordinator, Cluster B).

> "You have to keep on with the practical stuff there, but now and again time might be short, and you say, 'Right, we're doing it on the board". Or they do it on worksheets but they don't get practical stuff. But .. that's only at certain times" (P7 teacher, Cluster A).

> "I would tend to concentrate more on paper and pencil simply because of the system whereby they're being tested at the beginning of the year. Once that system's over then we would tend to veer more towards the practical. Ideally it should be the practical first and then the theory, put it into practice. But the system doesn't allow for that. There's so much to be covered" (Mathematics co-ordinator, Cluster C).

One science co-ordinator in an inner-city school had a different perception from the majority of the nature of the science questions in the Transfer test:

[21] cf. the mathematics co-ordinator from Cluster D cited in Section 3.3.3.

> "We have learned, even from just studying 11+ papers, that it is not a knowledge-based test, the science in the 11+: it is applying what they have learned from experience...You actually couldn't study for the science on the 11+, because things come up that you wouldn't have done. It's the application they are looking for."

In this teacher's eyes, the best preparation for the science sections of the tests was a practically-based curriculum, from which he refused to be too much diverted until the very last few weeks. Transfer test candidates would, however, be given some extra knowledge-based material and it was admitted that the pace in P6 had to be faster than the ideal.

Science after the Transfer Tests

After the tests, many of the teachers said they would focus on the content-based AT which had not appeared on that year's Transfer test syllabus and which – depending on their school's scheme – might have been virtually untouched since P5. With the removal of the pressure to coach for the tests, a more investigative approach was possible. Informants from three schools described going over "properly" what had previously been rushed through for the tests but for pupils in at least one of the schools the novelty of these topics had worn thin.

Effects on Pupil Learning in Science

All fourteen teachers who focused on science in their replies to the question on the effects of the Transfer tests on pupil learning were agreed that their pupils were more knowledgeable about science than were previous pupils; one teacher, however wondered whether this might not be the result of the programme of study becoming better established in the school rather than of the Transfer tests. Only two teachers reported any increase in pupils' understanding of science and eight teachers doubted if the increased factual knowledge was matched by increased insights or understanding. The other four teachers spoke only in terms of wider knowledge.

Although two teachers wished to see science dropped from the Transfer tests and one principal feared that its inclusion in the tests destroyed children's enjoyment in the subject, there were implicit or explicit indications in replies from three different schools that, were science not in the tests, it would receive little attention in some P6 and P7 classrooms. As one science co-ordinator said:

> "This is only my third year as co-ordinator but I can tell you that, even in the first year or the second year, it was going down on paper but it wasn't being done. But now you see it has to be, which is a good thing."

3.4.4: Coverage of the Key Stage 2 Programme of Study in Science

Despite the claims of many informants that the whole KS2 syllabus was 'covered' and that in selective schools it was covered and revised by the time of the Transfer tests, a study of the interview transcripts suggests five ways in which this may not always have happened.

Firstly, in at least one, possibly two and perhaps more of the primary schools, science was not yet a fully established subject on the curriculum. In one school it was reported that the previous principal had given low priority to science and, although under the present principal a rolling programme of curriculum development was being followed, science was not due for review until

the following year. In a second school, the principal described science as being "in its infancy". In five other schools there was no interview with either a co-ordinator or other spokesperson for the subject, although this may in some cases have been for such reasons as absence or difficulty in finding 'cover' to allow the teacher to be interviewed in privacy.

Secondly, it was not certain that the AT omitted from the Transfer test was always studied in the remaining months of P7, although many teachers obviously welcomed the chance to have fresh science material to teach. Two teachers said they would "try to" cover the remaining AT, a principal admitted that it would receive less time than the other ATs and a vice-principal declared, "There's no way I'm doing Forces and Energy if it is not on the Transfer test". Some teachers may have seen a greater need to turn to other parts of the curriculum which they had set aside during the run-up to the tests, such as history and geography, than to spend much more time on science.

Thirdly, as with mathematics, some teachers acknowledged that, in the rush to cover the breadth of the science curriculum, understanding could be sacrificed to factual knowledge. Pupils might therefore be arriving at their post-primary schools less well grounded in certain science topics than might appear from the primary school scheme.

Fourthly, in planning their science schemes, schools differed in how far up the levels they went. One small school included all level 3 science topics but only certain level 4 topics, even for Transfer candidates, and seemed to find this sufficient. Other schools saw a need to coach level 5 topics by imparting much detailed factual material, even if sometimes doubting the long-term (as opposed to the short-term) value of so doing.

Two science co-ordinators in non-selective areas explained how they based their schemes on what they reckoned their pupils could master but their solutions were somewhat different. In the school in Cluster F, the teachers as a group had decided that certain topics, including the genetic material, were not suitable for primary school children and – in anticipation of the Proposals of March 1995 – omitted them from their scheme, although retaining such level 5 topics as electricity. The co-ordinator in Cluster H, however, preferred to concentrate solely on level 4 topics but to provide extension activities for those pupils capable of level 5 work. As an example, he described an open-ended session on Explorations and Investigations related to the topic of electricity. The children produced devices powered by electricity, such as sounding buzzers and flashing lights. The abler ones were then given the further challenge of producing a 'burglar alarm', which could be set off if a book was lifted from a shelf.

However soundly based these various decisions were about what to include and exclude from a school's P5-P7 science scheme, one likely consequence would be pupils still arriving at their post-primary schools with different science backgrounds, despite a supposedly common curriculum. Unfortunately, it was not possible to obtain copies of the current schemes (some of which were said to be in a very transitional state), let alone records of what had actually been taught, in order to gauge the extent of the variance within the cluster groups.

Fifthly, as with the corresponding AT in mathematics, there were many indications of problems in fully implementing AT1, Exploring and Investigating in Science.

The Implementation of the AT1, Exploring and Investigating in Science

As already indicated in Section 3.4.3, fifteen teachers, including eight of the ten science co-ordinators in selective areas, admitted, often regretfully, that there was little time for the practical and exploratory aspects of science in the period before the Transfer tests. Since the information was volunteered in reply to an open-ended questions on the effects of Transfer, the numbers concentrating almost exclusively on paper and pencil work may have been even larger. Problems in implementing Exploring and Investigating in Science were, however, also found in some of the schools in non-selective areas and, indeed, one of the six had been criticised in a recent inspection report for paying insufficient attention to that attainment target.

Although, one principal said that teachers were concerned at the time-consuming nature of practical science, which could interfere with such 'basics' as reading, no informant took the line – which one or two did with mathematics – that practical or process-based work should have little place in science for upper primary pupils. A few, however, seemed to have difficulty in organising investigative work and relating it to the rest of the curriculum:

> "It's easier to deal with, in many ways, chalk and talk.....They talk about letting them have experience, hands-on, this , that and the other but there wasn't really a great deal in the science that usually lent itself to doing that—a lot of it became very contrived and you had to do basically 2 or 3 things yourself that justified it and hope it worked" (Principal, non-selective area).

That position can be contrasted with that of a science co-ordinator in a disadvantaged area of Belfast who, while realising that teacher demonstration rather than class groupwork had sometimes to form the backbone of a lesson, nevertheless tried to involve the pupils as much as possible:

> **"**Well they like.. practical activities, .. failing that, teacher demonstration. But they prefer to do the experimental work themselves, even if it's only a small amount of work. With a lot of the work I would have taken children out to do individual little bits and try and make the activities spread, so that every child had a little bit to do."

Practical difficulties in carrying out investigative work were expressed by six informants who were variously concerned about the amount of teaching and preparation time required, about the lack of specialist science facilities or of technicians to assist in primary schools, about the near impossibility of giving all children in a large class adequate attention during the lesson and about the sheer physical labour of carrying equipment out to mobile classrooms:

> "The primary school seems to be the pauper in the education budget. ... When you consider that we're having to cope with larger class sizes for science, and the secondary schools / grammar schools have purpose built labs and so on..... There is absolutely no difference – or there should be no difference – between our teaching of level 3 science and their teaching of level 3 science.[22] If there is to be a difference (in resources) then we can't provide the same service. It's as simple as that" (Vice-principal, residential and selective area).

A more conceptual issue which arose in seven of the interviews was the distinction between merely practical work and investigative work in science. In most of these cases it was admitted explicitly or implicitly that the pupils – perhaps with the exception of the ablest – were not really

[22]A debatable point, which it was inappropriate to explore with the informant.

moving towards independent thinking. In some cases they were perhaps being taught to behave less like scientists than like laboratory technicians. In the third case quoted the problem was thought to lie in the pupils' rather than in the teachers' attitudes:

> "I suppose it's all in the way that you present the practical task to them.....The actual worksheet would have to be very well laid out and very clear and specific. For them to take the initiative after that, you'd be talking about the top 10% in the class" (P7 teacher, disadvantaged area).

> "Science comes more naturally. It's not something perhaps which requires just the depth, or the level of intelligence that the maths requires. I think most children can make a stab at carrying out whatever the instruction is." *(Interviewer: "And they'd understand things like fair test and so on?*") "Well I suppose again you're talking about the more able children" (Vice-principal, residential and non-selective area).

> "....issues such as the design of fair tests, and putting forward logical hypotheses, those things are difficult for children who prefer things to be specified for them. ... I think we definitely live in a culture where children want to know whether they are right, there is even a certain amount of satisfaction... in knowing that you're wrong, because you then may well know what it is correct. I think if a science activity is completely open-ended is difficult sometimes for children to be committed to be investing in that" (Principal, non-selective area).

Many of the teachers discussed the difficulties which their pupils experienced with Exploring and Investigating in Science. Several pointed out that their P6 and P7 pupils were still disadvantaged by not having studied science systematically through the Key Stage 1 years. There was general agreement among the informants that most pupils are not spontaneously able to think through testable ideas and appreciate fully the concept of a fair test in science. The thirteen teachers who raised this topic differed radically, however, in the progress which their pupils had made towards these attainments. Where there was mastery, this was often attributed to their giving the pupils plenty of support and practice. Of particular interest are the observations (below) of the P7 teacher from a disadvantaged area, whose pupils, with her encouragement, seemed to show more enthusiasm and progress with this aspect of the AT than some from more privileged backgrounds:

> "Fair testing is also quite difficult for children. We're pushing that an awful lot more this year." (*Interviewer: "But they can manage to get that concept?*") "Oh yes, even in P5 you can notice it's coming out now" (Science co-ordinator, residential area).

> "And working out their own experiments, they just love that. Fair test and all. 'When we were doing this experiment it suddenly made me think, Miss.' But it's because they know that if they do come up with an idea of their own I will set aside a time for them to test it. So they're constantly thinking. So they're treating it like a reward. The reward is you get to do extra work. Fine by me! " (P7 teacher, disadvantaged area).

Pupils' ability to predict, hypothesise and to draw conclusions were discussed by only a few teachers but these tasks were found difficult even by children who could plan a fair test. Though a P7 teacher in a disadvantaged area blamed the difficulty on the lack of formal thinking in the pupils' backgrounds, a co-ordinator who taught science full-time thought the reason was pupil immaturity:

> "It's nothing to do with science at all - it's to do with their development and their own maturity, and their own observations and experience of the world" (Science co-ordinator, residential area).

Getting pupils to record their science investigations satisfactorily was a major concern voiced in eight schools, including five in relatively disadvantaged areas where general standards of literacy were below average. Several teachers had devised ways to make the task easier. Two KS1 co-ordinators did not expect more than a completed worksheet. A science co-ordinator in a non-selective area found that for less able pupils computer packages simplified the classification of data and the production of tables and graphs. A science co-ordinator in a disadvantaged area of Belfast found that, although the pupils were "fine" at planning investigations through group discussion, they needed a carefully structured framework to help them to record:

> "So I would tend to do most of the work on a whole group basis.. And take them all through the process in sequence, and even go through the statements....I would start off by saying 'I wanted to find out' and they will continue the sentence. It's sentence completion And then the better ones can write a little bit more elaborate responses and the weaker ones can maybe only write two or three words" (Science co-ordinator).

A teacher of a P7 class of children with special educational needs often moved away from a straight narrative account:

> "They don't mind tables and flow diagrams and things like that; they don't mind as long as they don't have a solid block of writing. I suppose when I think back in creative English even, I would break up even stories by letting them do little illustrations in between... But when we come to recording results in nearly any topic, I think long and hard about how can I get them to record in a way that's going to appeal to them. And it might be these sort of what I call puddle diagrams, that spread out; it could be flow charts" (P7 teacher of SEN class).

3.4.5: Key Stage 2 Science: Pupils' Response and Attainments

Most Liked Aspects of KS2 Science

Of the 34 primary school teachers who mentioned science in response to the question on pupil preferences, 26 spoke of practical or investigative work, seven said their pupils enjoyed all their science and the only answer which did not at least implicitly include practical work in science had been mainly focused on another core subject. Most teachers who reported their pupils' liking for practical aspects of science spoke in general terms (e.g. "Their practical work— they get in there and enjoy it" but a few gave rather more detail about their most successful activities, while another had observed a more intellectual type of satisfaction among the pupils. The lesson on circuits and burglar alarms described in Section 3.4.4 was among those said to have been "thoroughly enjoyed".

> "And all kinds of different experiments with air. ... They love it" (P7 teacher, non-selective area)

> "They like practical activities, e.g. growing their own vegetables" (P7 teacher, disadvantaged area)
>
> "The children have thoroughly enjoyed developing the school garden to this point, that's been very useful. They've planted a number of shrubs, hedgerows; we've been provided with a school pond, and that's been very interesting for the children this year. At the moment - that's been a one-off but it's now going to be ongoing" (Science co-ordinator, non-selective area).
>
> "Their definite likes would be any practical work, investigative work, proving hypotheses, predicting and then proving their predictions or disproving them" (P7 teacher, non-selective area).

Of the 19 references (from 12 teachers) to content areas of science, ten were to aspects of Living Things, including four to plants, four to the human body and one each to birds and to nature study generally.

> "They particularly enjoyed doing the body. They use a computer for it " (P7 teacher, Cluster A).
>
> "Anything medical. I've taught in another PS with an entirely different catchment to this, a more working class school, to this middle class school, and it doesn't matter which side of the fence you are from: children just love to be in there, in the blood and gore, and to know the medical terms" (Vice-principal, Cluster E).

In two schools – one in a selective and the other in a non-selective area – pupils were particularly interested in environmental and ecological topics. One of these teachers, who also mentioned the Earth in Space unit, said that although topics such as the ozone layer and the greenhouse effect were not easy for children of 10-11, they could arouse their attention and imaginations.

There were five references to Forces and Energy: two were general references to the AT, two were to electricity and one was to light. The only teacher to mention the Materials AT was a science co-ordinator in Cluster A who had found that Materials and Forces and Energy provided the pupils with the best opportunities for practical work.

Least Liked Aspects of KS2 Science

Only nine teachers pointed to any aspect of the KS2 science curriculum which their pupils actually disliked (as distinct from just finding it difficult) and another seven maintained that no part was disliked.

Only two aspects of science emerged as unpopular in some schools and both can be seen as the obverse of pupils' enjoyment of practical work. Six teachers reported that pupil interest levels sank when it came to writing up the experiments. Five teachers (two of whom also mentioned written work) found it less easy to motivate their pupils when the topic contained little or no practical work. The only teacher to give an actual example was in a school where it was very rare for any pupils to be entered for the Transfer tests and so 'cramming' for the tests could not be blamed for the pupils' lack of enjoyment:

> "And then they wouldn't be too keen on the content based stuff where they learn parts of the body and the digestive system and things like that. They can't get their hands on it" (P7 teacher, non-selective area).

Pupil Difficulties

The difficulties faced by P7 pupils in their practical and investigative work in science (see Section 3,4,4) were again apparent in responses to the question on pupils' greatest difficulties in the three core subjects. Of the 26 references to science from 17 teachers in twelve schools, 20 were to aspects of Exploring and Investigating in Science, including nine to difficulties in reporting. While one vice-principal replied simply. "Investigative work generally", there were two or three mentions each of predicting and hypothesising, the concept of a fair test, making up tables of results and drawing conclusions from demonstrations or experiments.

Of the six more content-related replies, two were to Forces and Energy generally, one to "sound and light", two to pollution and the greenhouse effect and the sixth to a more general difficulty in understanding and remembering scientific concepts. In the light of the considerable number of complaints about the over-demanding nature of some of the content in Section 3.4.2, more answers of this type might have been expected and one can only speculate on the reason for the low number. Perhaps if investigative work were being attempted reasonably often (and the interviews took place well after the Transfer tests) the teachers may have been made more regularly aware of their pupils' difficulties with AT1 than with individual topics on the other ATs. It is also possible that some schools may have dropped certain conceptually difficult topics from their school schemes so that the current pupils were no longer seen struggling with them.

Attainment Target Levels in Science Reached by the End of KS2

The estimates of pupils' levels in science, like those of their levels in mathematics, were variously based on the level at which pupils were working at the time, the level already achieved and the level expected to be achieved by the end of the year. Again, therefore, the results need to be interpreted with caution. However, only in one school – where the science co-ordinator reckoned "between 2 and 3" and both the principal and a P7 teacher reckoned "between 3 and 4" – was there as much as a whole level of difference in the levels suggested by those who were probably best placed to give an accurate answer at school level, i.e. principals, science co-ordinators and teachers of mainstream (non-remedial) P7 classes.

In two schools, both in middle-class districts, the one in a selective and the other in a non-selective area, it was claimed that most children would already be on level 5; in both cases, however, the answer referred to the core subjects generally and no specific reference was made to science achievements. In nine schools it was thought that most P7 pupils would leave at about level 4 in science. In three schools the 'average' pupil was expected to be between levels 3 and 4 but not to have achieved level 4, while in the remaining four schools the 'average' pupil would be about level 3 or, in one case, "approaching level 3". Therefore the estimated average levels emerged as rather lower for science than for mathematics.

In ten of the schools the ablest pupils were thought to be on at least level 5, although in five cases any informant who gave this answer was speaking generally about the core subjects. In five schools, however, no pupil was thought to have reached beyond level 4, although it might be "a good solid level 4". Although many informants indicated that their weakest leavers

(sometimes literally just one or two pupils) would be about level 2 in all three core subjects, virtually nothing was said about pupils with specially low levels in science.

It was evident that several informants had more difficulty in estimating levels for science than for the other two subjects. As with the other subjects, the most process-based AT, here Exploring and Investigating in Science, was felt to be the hardest to assess; one P7 co-ordinator explained that it was particularly difficult to identify individual attainments when assessing AT1, because the pupils usually worked in groups. A rather optimistic line was taken by one principal who thought that because the classwork was pitched at level 4, that was what the majority would achieve:

> "I would say there is nobody at level 5 because the work is not being pitched at level 5. They are achieving, I think maybe in science they achieve what they are taught, and it's maybe more a reflection of what is taught. And so as the work is geared at level 4, the majority of them will achieve level 4."

Of the teachers who were prepared to compare their pupils' achievements on Exploring and Investigating in Science with those on the other science attainment targets, just under half thought the levels would be comparable and just over half thought the pupils would do rather better on the content-based ATs. Three explanations were volunteered for poorer performance on AT1: that the investigative approach was not yet fully established in the school, that it had not been established long enough for the pupils to be trained in such approaches from their KS1 years and that many pupils were handicapped by poor standards of writing and recording even although their oral and practical work might be quite satisfactory.

3.5: Key Stage 2 English

3.5.1: The Extent of Change in P5-P7 English

(Based on 30 informants in 17 schools)

Two-thirds (20) of the teachers who referred to English when discussing the effects of the Northern Ireland curriculum thought that the KS2 English programme had required little or no change in the classroom, especially in comparison with the demands of such other subjects as science:

> "I think, generally speaking, the English curriculum was easier to deliver in the sense that there wasn't any massive change to the content – it was just labelled differently" (Science co-ordinator, Cluster D)

> "We brought in new schemes and new books but we are still teaching to the same standard" (Science co-ordinator, Cluster E).

Nine of these 20 teachers, including most of the English co-ordinators in the group, had found, however, that, even if classroom practice could remain largely unchanged, their written schemes and other documentation had to be updated to fit the new curriculum. This task could be regarded as a useful piece of curricular planning or a bureaucratic chore:

> "The changes in English were more in our documentation. What we had was less precise than it should have been. Whilst work was obviously needed when I first came here, we marked time for a year until the NIC documents to come out and then set about a rigorous programme of drawing up schemes, which really were lacking" (Principal, Cluster F).

> "We had spent two years developing Primary Guidelines for English... And..that had to be rewritten so that it connected to the curriculum. And when you do your notes you have to make sure you're writing down that you have covered everything. But I don't think the classroom practice is much different it's just that it made a lot of extra work" (English co-ordinator, Cluster H).

Of the three attainment targets in English, Talking and Listening was the one which had most often required development in the upper primary school. Teachers from eight of the schools explained how it was now given an increased time allocation or more systematic planning (see Section 3.5.4 for further details of that AT). In particular, having children give short formal talks to the class was a new activity in several of the schools.

Four informants from three schools had found they were expected to widen the types of writing tasks given to KS2 pupils. Their reactions varied:

> "For a long long time I suppose writing in the primary school consisted largely of writing stories, composition as it used to be called, whereas now I think we're making more self-conscious efforts to write for varying purposes, which is nice. It's a different slant on things" (English co-ordinator Cluster C).

> "There's a greater variety of writing and a greater variety of comprehension skills to be dealt with, more so than we did years ago. This again takes up a lot more time.... I question the wisdom of this. I would find, and I think I would have the support of most teachers, that the basics are not being concentrated upon, they're not being focused in on as they were years back" (English co-ordinator, Cluster B).

The greater variety of comprehension skills referred to in the last quotation was more often discussed in relation to Transfer test preparation (see Section 3.5.3) and was mentioned only by teachers in selective areas.

Three other types of change were reported by one informant each. A principal in Cluster B said that the NI curriculum had led them to give more attention to poetry. Another principal, in a non-selective area, spoke of a general widening of the curriculum and the use of a greater variety of source material. The English co-ordinator in a school in a selective area had moved from class reading schemes to individualised book programmes, with a weekly discussion with the class teacher; another development in that school was that cloze procedure had become "a big plank" of the English programme:

> "When it first came out, I suppose I found a few things in it a bit off-putting, for instance it was something of a leap of faith to go into an individualised reading scheme where the kids were not necessarily reading aloud to me... By and large there's a lot to recommend it and there's a fair amount of enthusiasm for books. It was more the initial hiccups." (Interviewer: And you interpreted the curriculum as saying that there shouldn't be reading books, that it should all be individual reading?") "Well that's the way I would operate it now and I think most people do at the school."

Continuity and Progression within the KS2 English Programme

Although informants from seven schools talked about drawing up KS2 or whole-school schemes specifically for English, few details were given as to how the content of these schemes—as distinct from their format—differed from previous schemes. In two schools, however, the previous written scheme had been either too sketchy or virtually non-existent. Elsewhere the aim sometimes appeared to be less to reform the curriculum than to demonstrate that the school was covering it; there could be a secondary aim of ensuring that all class teachers knew what was expected to them.

> "We had to write things down in a different format, with aims and the ATs and so on, but I'm not teaching anything new that I didn't teach before" (English co-ordinator, non-selective area).

> "Now that it's been in place for several years, we're beginning to see the benefits of having it written down like that. Because although you can be held accountable through what you have written down, you can also cover yourself as well. If you are doing what they have asked you to do then nobody can pull you up on that. So it's a double-edged thing. It can work for us and work against us. But all-in-all, looking at it from an overview, I think it's been quite positive" (English co-ordinator, selective area).

It was an English co-ordinator (already cited in Section 3.2.5) who gave one of the clearest accounts of how the whole-school planning could help teachers to have a sense of coherence and to understand how their work fitted into the overall plan:

> "I think one of the major benefits we found of talking through was to find out what the P1s were doing and what the P2s were doing and how that led on to what the P7s would end up doing" (English co-ordinator, non-selective area).

Most informants appeared to be reasonably satisfied with their current school schemes in English. However, teachers in one school in a disadvantaged area, where the mathematics but not the English had been praised in a recent Inspectorate report, were replanning their English syllabus as a matter of urgency, following disappointing results in the Transfer tests. They were pinning their hopes on "a very organised, coherent programme from P4 to P7", which would indicate more precisely than the NI curriculum exactly what had to be done each year.

Inservice Help Wanted for English

Thirteen informants from ten schools, including three principals and eight subject co-ordinators, saw a need for further inservice work in English. The requests covered nearly the whole span of KS2 English activities, with several of the group naming more than one topic. Six teachers looked for inservice support with Reading in the KS2 years, of whom two particularly wanted help with group novels and ideas for follow-up work on them. Two teachers sought advice on teaching poetry, again with the pedagogy rather than the content:

> "I certainly would welcome some assistance with poetry and I'm sure there's not an awful lot of people around who do feel terribly happy with it. What sort of help? It's not really the materials. Someone with a flair for English to come in and team teach as they do in science and other subjects where they do have field officers. I think it would be very

worthwhile, if someone dynamic came along to talk to us, to teach the children, so that we could observe how it should be done" (English co-ordinator, Cluster A).

Talking and Listening activities were mentioned by three informants, of whom two would also be interested in workshops on drama, while the third was particularly concerned about the assessment of Talking and Listening. As the English co-ordinator in a school in Cluster E said:

> "The Talking and Listening that we talked about and drama. It is a very personal thing and some people are scared of it and I feel that a workshop on that would be useful. Because it's not that scary when you have seen it or been introduced to it."

Of the three teachers who hoped to develop further the teaching of Writing in their schools through inservice support, one was looking forward to a two-day education and library board (ELB) course the following week and a second identified redrafting as a particular problem at Key Stage 2. Another English co-ordinator included spelling in his list of potentially useful topics. Requests for general assistance with assessment in English came from a P6 teacher and an English co-ordinator in two schools in disadvantaged areas, while for a teacher interviewed primarily in his capacity as a science co-ordinator English was "an on-going thing, something that's at the root of everything so it's probably an area where you could always be learning".

3.5.2: Suitability of Key Stage 2 English for the Age Group

All except three of the 20 informants from twelve schools who commented on the appropriateness for their pupils of the KS2 programme in English (rather than on the KS2 programmes in general) thought it at least quite suitable and in some cases very suitable.[23] A number of teachers in disadvantaged areas said that many of their pupils found their English work difficult but they seemed to be commenting on standards in their schools rather than faulting the actual programme. Such views can be compared with those of an English co-ordinator in a residential area of Belfast who was 'happy' with the present programme but would be concerned if any attempt was made to lower the standards.

The most specific criticism of the KS2 English programme came from the principal and English co-ordinator of a school on a housing estate in a medium-sized town, who questioned the wisdom of requiring so many different kinds of writing rather than just straightforward narrative. As a consequence, they thought that 'the basics' were receiving inadequate attention. The only other teacher to hold an essentially negative view found the whole KS2 programme overcrowded but admitted that the English PoS was less unmanageable than those of the other two core subjects.

Several minor criticisms were made by teachers who were otherwise content with the programme. Most of these referred to difficulties in assessment, especially of their pupils' Talking and Listening skills. The vice-principal of a school in a residential area of Greater Belfast sought greater clarification on the amount of emphasis to be given to grammar and syntax:

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[23]There were in addition eight informants, including five principals, who were satisfied with the whole KS2 programme of study, especially in its revised form, and three others who thought the entire programme either overcrowded or too difficult.

> "Hopefully they'll be a bit more specific about parts of speech and so on and give them their place without deferring to what I would call trendy notions on language. I would feel that it's important that there's a basic grounding in standard English — up to a point. I'm not talking about flogging a dead horse. I just feel it's important... that teachers feel confident in taking lessons in grammar and they don't feel that they're going to be pulled up on this".

In contrast to the principal and teacher who objected to the wider range of types of writing required in the new curriculum, several other informants welcomed the broader range of opportunities and the new challenges, even where they were difficult:

> "I enjoy my English more but I find it harder to teach" (P7 teacher, disadvantaged area)

> "I think that prior to the NI Order we tended perhaps to be narrow in our curriculum and it then became statutory to broaden it out" (English co-ordinator, disadvantaged area).

The most vivid example was given by a principal who regularly taught English to KS2 classes and was sometimes surprised at the contents of recent text-books for the age group; in particular, a poem by Robert Frost ("which I would never in a million years have dreamed of introducing") sparked off some interesting and good work, even if the pupils did not quite share the same perspectives as the adult taking the class.

3.5.3: The Effects of the Transfer Tests on Key Stage 2 English

Preparing for the Transfer Tests

The DENI's decision that all Transfer test items should be suitable for objective marking means that the tests cannot include pieces of sustained writing. Since the KS2 English programme of study contain no set books, any testing of the pupils' response to literature has to be mainly through the comprehension of unseen passages of prose or verse – apart possibly from a few questions on such things as genre. The proportion of the KS2 programme of study covered in the Transfer tests is less than that of the other two subjects. The tests focus mainly on the attainment target Reading, with some questions on the formal and mechanical aspects of Writing.

Whereas preparation for the mathematics and science sections of the Transfer tests was generally seen to require coverage of a considerable <u>breadth</u> of topics, the most appropriate coaching for the English sections was usually perceived to be preparation in <u>depth</u> in the skills of comprehension, together with trying to ensure an understanding of the basic features of English grammar and of the rules of punctuation:

> "In English you have to do a lot of reading and comprehension and so on... And punctuation and things like that because they tend to forget it. In the 6 weeks before the 11+ you concentrate probably on the type of work that you think will come up: the punctuation work and that sort of thing. A lot of factual stuff, looking at advertisements and looking at the Dewey system and things like that" (P7 teacher, disadvantaged area).

The high levels of vocabulary and of comprehension skills demanded in the Transfer test were commented upon by nine teachers from disadvantaged, working-class or isolated rural areas. Teachers in three schools felt their pupils were handicapped because of their backgrounds not only in the English sections of the test but also in the mathematics and science sections, where

they often failed to understand questions for which they knew sufficient mathematics or science to answer. However, it was the inclusion of inferential as well as simple factual questions in the formal English comprehension sections which caused the greatest difficulties to pupils who did not read widely.

> "We've maybe had to up-grade our ideas about comprehension.. (Interviewer: "In what way?") "Well obviously less literal comprehension, a lot more of the inferential kind. Comprehension has gone up-market, if you like. Because some of the Transfer Test questions on comprehension would stretch most adults" (English co-ordinator, Cluster C).

> "...but it's comprehension that children can't comprehend!... And I just find that even the text books at the minute are not geared to that type of comprehension. In the past you would have been doing a comprehension, which was straightforward and then some of them could have done it without being able to read, nearly. I don't understand it but I've seen that." (Interviewer: "Just matching the words?") "Yes..." (Principal, Cluster B).

A few teachers explained how they tried to prepare their pupils for these more advanced comprehension exercises. The P7 teacher who described approaching poems and prose passages from different angles or viewpoints was from the same school in a disadvantaged area as the science co-ordinator (previously cited) who tried to help pupils to approach science questions from any angle. The science co-ordinator was one of two teachers who described the spin-off effects in unseen comprehension work of character studies in novels.

> "I found myself in the lead up to the Transfer paper in English, doing an awful lot of comprehension: looking at stories, poems, looking at them from different angles." (Interviewer: "What do you mean by 'different angles'?") "Trying to look— for example if you take a poem – at a poet's point of view, very much in line with the sort of questions they were going to ask them on the transfer paper" (P7 teacher, disadvantaged area)

> "Given the nature of our children's backgrounds – where, for example, they are not encouraged to talk much at home – we would be desperately trying to make up for the lack of stimulus. So my P6 would have a massive input in terms of trying to build up their vocabulary. We would do a lot of novels, ... so that develops their vocabulary. It also develops their skills of prediction and empathy and all of those things, which again are tested in the 11+. It's not a straightforward comprehension in the 11 plus. They will be asked to empathise with a character or to make predictions, different things like that..... certainly for the children who opt to do the 11+ I would make a very very special effort to give them a lot of extra activities based on that.....The imagination could very well be there and the other necessary skills, but their actual language is weak given that they just don't have the stimulation" (Science co-ordinator, inner-city school).

While there were no complaints of having to rush through the English syllabus, leaving parts imperfectly understood – as was the case with mathematics and science – three teachers admitted that the Talking and Listening AT might receive little attention during the weeks before the tests.

> "The talking and listening will go way by the board, definitely. It might be used as a little filler to give a bit of light relief at the end of the day, but to be honest a lot of it would be left out" (English co-ordinator, residential area).

Five teachers also saw a reduction in the amount of sustained writing during this period. One of them, an English co-ordinator, saw children having to develop a speedy way of slapping answers down on paper, which was completely contradictory to the careful habits of neat writing and sentence construction he had previously tried to inculcate:

> "There's nothing about neatness or handwriting style or skills mentioned in this exam and it's never going to be tested. And that can go by the wall...So up to the first half of P6 you're asking for a full comprehension-style answer from a child, but by the time it gets to Easter you don't want that. 'Just get the facts down and forget the rest' .Then after the Transfer procedure in P7 you go back.. and say 'Forget what you've learnt for the last 6 months, we now want you to write in full sentences again'. Is it any wonder the children don't know what I'm talking about? They really feel lost... And some children.. were beautiful writers who you never get back to that neatness again because they've learnt bad habits, through speed, which they had to get for the test."

English after the Transfer Tests

Although one English co-ordinator suspected that only some of his colleagues took full advantage of the months after the Transfer tests to attend to those parts of the English programme of study which they felt unable to prioritise before the tests, seven teachers gave details of more creative and enjoyable activities for P7 classes after November.

> "After the tests there is more of the creative side of English, even the creative writing. Writing about themselves. We would concentrate more on this after the tests. But I think they enjoy it more then anyway. They are more mature.. We do keep a little bit of it in all through, though maybe not as much. Poetry we try to leave in...though we would do more of it afterwards" (P7 teacher, Cluster D).

Increases in the amount of time spent after the tests on creative writing and on talking and listening were recorded by three teachers each, while two teachers spoke of having more time for poetry, including in one case "group sessions writing poems". In a school on a housing estate novel reading – which was an important part of the long-term Transfer preparation strategy in the inner-city school cited above – had to wait until after the tests, but then it was thoroughly enjoyed.

Effects on Pupil Learning in English

The question on the effects of the Transfer tests on pupil learning was more often answered with respect to mathematics and science than to English. Four teachers, however, believed the intensive study of texts to be beneficial, although difficult for many pupils:

> "....a lot of the teaching now would be geared towards this deeper understanding of what the children are reading so therefore I think it can't do them anything but good" (English co-ordinator, disadvantaged area).

At least four other teachers – two of them English co-ordinators – had doubts about the effects of the tests upon pupils' sustained writing. Three teachers who said that the time spent on writing was reduced in the period before the tests gave no indication of any compensatory increase afterwards. Thinking of the concentration before the tests on aspects of grammar and

punctuation, one English co-ordinator described the effect (in KS2 terminology) as a focus on the 'secretarial side' at the expense of the 'compositional'.

3.5.4: Coverage of the Key Stage 2 Programme of Study in English

The Implementation of AT1, Talking and Listening

In the spring of 1995, nearly five years after the introduction of the Northern Ireland curriculum, progress towards the implementation of Talking and Listening appeared to vary considerably among the 18 primary schools participating in the research. One school in a non-selective area had been advised in a recent Inspectorate report to give this area more attention, while the staff of one school in a selective area did not seem to have fully accepted Talking and Listening as a serious part of the KS2 English scheme of work[24]:

> "In English we didn't do much with that (Talking and Listening). Presumably we will eventually be doing more of that.... But it'll take time for that to be put in" (English co-ordinator, disadvantaged area, Cluster A).

In another school in the same cluster, it was suggested that Talking and Listening could be perceived as a threat by teachers accustomed to traditional, teacher-centred approaches:

> "We're certainly experiencing some difficulty with talking and listening... You are asking children maybe to not be so much receivers of education or whatever you want to call it. You're giving them a freer role in their own education so it's a new departure for teachers" (P6 teacher, another school in Cluster A).

Two teachers in different schools, however, maintained that Talking and Listening was just the new label for something which they and their colleagues had been doing for as long as they could remember. As one, who acknowledged that the situation might be different in other schools, said:

> "People got very uptight about what exactly is Talking and Listening. But we were all doing Talking and Listening from the year dot anyway, but maybe for some teachers who didn't really emphasise that, it drew it to their attention that it was a very important part of the curriculum" (Science co-ordinator, inner-city school).

In at least 13 of the schools the idea of Talking and Listening as a component of English in its own right had required a change of perspective. In some schools Talking and Listening had previously been regarded as only a preliminary to written work or as more appropriate for infant classes, with their tradition of children telling their "news".

> "But somehow as an AT on its own it's hard to prepare and plan specifically.... To me it arises... more naturally as part of ongoing reading and writing activities. However, having said that I think it's good that's there's some sort of strand that is written down that identifies the skill of talking and listening.... It's important that it is discussed at scheme of

[24]The previously cited principal of a small school who confessed that she and her colleagues were not yet putting sufficient stress on the process-based attainment targets may well have been thinking more of mathematics and science than of English.

work level with the staff.... But whether or not it should be a single AT I wouldn't be overly convinced" (English co-ordinator, non-selective residential area).

"I think perhaps we became more aware of Talking and Listening, particularly in KS2, because we had perhaps seen Talking and Listening as something children did when they first came in, in the early years before they could do much writing. I think after that we saw Talking and Listening as only something children would do before writing a story about something" (English co-ordinator, disadvantaged area. School PA1).

Several teachers had found that effective lessons based on Talking and Listening required a good deal of structure and planning and this could represent quite a change from their previous practices:

"Whereas before you did it in a kind of ad hoc natural kind of spontaneous basis, maybe you might plan for it that much more now and you're more aware when it's happening and you drive towards it a bit more than you used to, push it a bit more" (English co-ordinator, selective area).

"If you presume that talking and listening simply happens, the quality of talking and listening is very poor. Even for children who ought to be very able in it. Where talking and listening is pre-planned and organised, even if it's an open activity, very definitely teacher prepared, the standard can be quite high" (Principal, non-selective area).

A related concern expressed in several schools was that, although talking and listening is an integral part of everyday living, most pupils need training and guidance over a long period of time in order to perform the more formal aspects of these activities well. In schools where systematic approaches to Talking and Listening were not well established, pupils were reaching P7 with very imperfect skills . There is an obvious parallel here with what was found with AT1 Science (see Section 3.4.4) and, as with AT1 Science, those teachers who were most pleased with their pupils' performance in Talking and Listening usually indicated that these skills had been improved through training and practice. A few teachers gave details of how they developed their pupils' Talking and Listening abilities. In one school the audio tapes of the English Alive scheme were found to help listening concentration:

"They know there's a certain time that they're going to have to spend really concentrating and then something's going to happen afterwards .. and really that focuses them a lot more" (English co-ordinator, Cluster C).

"We've used a video camera to set up interviews, little news programmes where they had to work in small groups to prepare that. I suppose it's not easy for them because they maybe haven't done it enough, or maybe we as a school haven't been building up those skills so that by the time they come to me.. they've established the ground rules." (*Interviewer" "But 7 years from now?*") "Yes, 7 years from now hopefully that'll be improving or it will be in the process of improving.... They can handle small group discussions or balloon debates or whatever. They're relatively competent at holding a sensible conversation about whatever topic" (English co-ordinator, non-selective area).

"Certainly we would have a lot of discussion around reading,... a lot of discussion around the science investigations. In P7 we would have things like debates... We use the circle time... and that's worked really well. And we bring in issues that are perhaps a little bit

> controversial, like the EMU programme...how effective is it in bringing together our children from the Protestant community with the children from the other schools? .... That's certainly one side of life in this school that I feel is a strength" (Vice-principal, residential and selective area).

Difficulties in assessing pupils on Talking and Listening were mentioned by nine primary school informants.

Other Aspects of English

Apart from the imperfect coverage of Talking and Listening in some schools discussed above, there were only a few indications and hints here and there in the primary school interviews that any other part of the programme of study might be omitted or skimped. In two schools it was suspected by the English co-ordinator – in one case backed by the principal – that poetry and perhaps also work on the class novels received less attention than they should from some of the staff.

There were also some doubts (see Section 3.5.3) as to whether in those classes where the time spent on sustained writing was reduced during the run up to the Transfer tests the deficit was always made up afterwards. One English co-ordinator in a disadvantaged area even wondered if it were any longer necessary for pupils to be able to write two pages of creative imaginative prose, claiming that his pupils preferred sequencing exercises and grammar and punctuation work.

3.5.5: Key Stage 2 English: Pupils' Response and Attainments

Most Liked Aspects of KS2 English

In reply to the general question on the aspects of the three core subjects more enjoyed by pupils, there were 44 mentions of parts of the English programme of studies from 23 teachers in fourteen schools. In contrast to mathematics and science, where most pupils' preferences were thought to be located on one attainment target—Processes in Mathematics and Exploring and Investigating in Science—there were favourite aspects of English on all three attainment targets. Many of the answers, however, demonstrated just how intertwined the three English attainment targets are in actual teaching and learning situations.

There were fifteen references to reading or literature, of which at least eight were to class novels, one to poetry and one to the Reading 2000 scheme. Three book titles mentioned were 'Under the Hawthorn Tree', 'Carrie's War' and 'The Borrowers'. While three teachers said their pupils particularly enjoyed being read to, four others described such follow-up activities as set discussions, worksheets and pieces of writing tasks:

> "One of the things they like most is being read to. It comes down to the basic thing of their mother reading to them when they were younger.... And the better you read the better they enjoy it. And if you can make something come alive for a child you can see it in their eyes ..it's brilliant. ...but I like them to have a book in front of them and to follow. So even the weak readers know where you are" (English co-ordinator, selective and residential area).

> "They have come to the stage where they are independent readers and they like the time to have to read on their own. That's at the end of P7 when they have the time to do that. Before the Transfer test they don't have time to do that. I find my class at the minute, that's one of the aspects that they do enjoy. They enjoy me reading novels for example. They enjoy that teacher-pupil conference on the novel. And they enjoy having time for that silent reading themselves....They ask for that. And if there is no time one day they will ask for it the next day" (English co-ordinator, school on a housing estate).

There were fifteen references to aspects of Writing, including seven mentions of original creative fiction and five of writing based on the class novel or arising in a cross-curricular way from their study of history or other subjects. Two examples of the latter type of writing are given below. Two teachers – one in a selective and the other in a non-selective area – reported that their pupils enjoyed forms of writing that had a novelty value, such as producing invitations or posters, while a P7 teacher in a non-selective area said that some of her pupils were happier with grammatical exercises than with the more creative forms of writing, which their classmates would prefer.

> "Story writing, creative writing, newspaper writing, writing about a Victorian boy or life in the slums or whatever rather than straightforward comprehension-type writing or hand-writing exercises" (English co-ordinator, residential and non-selective area).

> "We would teach a lot of our English through history themes. If we were doing... something like the famine, they would be writing stories, letters from the ship emigrating to America and how you would feel on the ship, how you would feel in the workhouse, that type of thing" (Vice-principal, small town in a non-selective area).

Eight teachers from five schools found that their pupils' favourite activities included such aspects of Talking and Listening as giving two-minute talks, debates, discussions and planning work in small groups. An overlapping set of five teachers spoke of their pupils' enjoyment of drama or role play, although sometimes the shyest members of the class did not share the enthusiasm of the others.

Least Liked Aspects of KS2 English

Only ten teachers from eight schools included any part of the English programme of study among the aspects of the three core subjects which their pupils liked least, and in two cases the negative attitudes were confined to certain pupils. No teacher mentioned any dislike of reading, of class novels or any other type of literature. Comprehension work was, however, unpopular in four classes. Since two of these were in non-selective areas, the dislike could not always have been simply a reaction to Transfer test coaching. In two other classes pupils did not enjoy what one teacher described as "the hard slog of grammar, nouns, verbs, parts of speech and spellings that just have to be done".

Three teachers reported that written work was not much liked, although in one case it was disliked only by pupils who were poor at it. The English co-ordinator who disapproved of having so many forms of written work in the NI curriculum said, "They take all this for a while and then they get fed up." Handwriting exercises were mentioned by the co-ordinator who regretted the deterioration of pupils' handwriting in the run-up to the Transfer tests.

There were only two references to Talking and Listening. One was from a P7 teacher who found that formal sessions could be dreaded by the most reticent. although enjoyed by the more

confident. The other was from the English co-ordinator in whose school least had been done to establish Talking and Listening in the upper primary curriculum:

> "I think that's something they'll not particularly like and we're not doing that yet really. But it's something we'll have to think about."

Pupil Difficulties with KS2 English

Twenty-two teachers from twelve schools included a total of 32 aspects of English among the parts of the three core subjects with which their pupils had the greatest difficulty. In one school in a disadvantaged area the principal, the mathematics co-ordinator and the teacher of the abler P7 class all spoke of the general difficulty which their pupils had with the subject, for which both scores on standardised tests and a recent Inspectorate report were less favourable than for mathematics.

Those informants who distinguished among the components of English made more than twice as many references to the attainment target Writing (16 mentions) as to the other two attainment targets together. Within the AT Writing, aspects of grammar were found confusing or irksome in three schools, redrafting was difficult for the pupils of one class to accept but the most frequently mentioned problems concerned planning and sequencing:

> "They tell me that find the fictional story easy but they find it difficult to report facts, or express events accurately or sequentially" (P6 teacher, disadvantaged area).

> " I think that the writing would certainly be helped by the talking and listening. If children get a chance to discuss things they can certainly write better about them" (Principal, non-selective area).

One English co-ordinator appreciated that for her pupils to reach the desired levels in Writing by P7 a more coherent approach would be needed from P1 onwards.

Eight teachers were most concerned about the poor reading or comprehension skills of some or all of their pupils; two of these teachers spoke of how progress in other subjects, such as science or history, could be adversely affected, especially if library research was expected:

> "We have just tried to tie in a linen project with Victorians. We went down to the Linen Museum, got all the stuff, and they have two weeks now to prepare a project. Now for the able readers who can go to the library and research, who can look up the computer or whatever, that's exciting, that's great, that's ideal— that's not work to them. For the less able child it's a very different matter" (English co-ordinator, non-selective area).

The six teachers who thought their pupils had difficulties with Talking and Listening tended to focus more on their inability to concentrate in listening and especially to listen to what other pupils were saying. Occasionally modern media were blamed, sometimes just youthful egotism:

> ("In this area...the children generally are quite good at the talking, maybe not the listening...I think children now, a lot of stuff goes over their heads. I think it is brought on by TV and all sorts of things. (English co-ordinator, selective area).

> "The talking they're very good at. It's harder to get them to listen and it is always a struggle to get them to listen to each others' points of view because they are so keen to talk themselves" (English co-ordinator, non-selective area).

Attainment Target Levels in English Reached by the End of KS2

The same caveats apply in interpreting the estimated levels in English as in the other subjects. A number of informants, especially principals, gave general rather than subject-specific answers, leaving only ten schools where at least one reply was focused on English. In one school no estimate was made for English. As in the other two subjects, the estimates were variously of levels already achieved, levels expected by June and levels on which pupils were currently working but which they might not actually achieve for a year or more. The within-school estimates of the average level for English appeared closer than for the other subjects, with nowhere more than a notional half-level of difference; the largest discrepancy occurred where a P7 teacher said confidently that her class averaged level 4 but the principal thought there were equal numbers on levels 3 and 4, with very few outwith that narrow range.

As mentioned before, there were two schools in middle-class areas where it was stated that the pupils would already be on level 5, apparently in all three subjects. In one case the principal backed the claim for English by adding that almost all their P7 pupils had a reading age of at least 12+ on a standardised test. In nine schools it was estimated that the 'typical' pupil would achieve level 4 but there were six schools, five of them in Belfast, where that benchmark would not be reached. In three of these schools the average pupil would be approaching level 4 and a sizeable minority would attain it but in the remaining three schools the average pupil was thought to be only about level 3.

In all schools there was an estimated range of at least three levels and in about half the schools a range of four levels. It was thought in five schools that an appreciable number of P7 pupils would not have progressed beyond level 2 and in ten schools that there would be at least some still on level 2; indeed, in three schools some pupils were believed to be still on level 1, although in one rural school there was just one exceptional spina bifida case. Although in four schools, it was very rare for any pupil to be above level 4, in four other schools some were said to be approaching level 6 or sometimes producing work at level 6, while in the remaining nine schools the abler pupils were at or approaching level 5.

In three schools, all in disadvantaged or inner-city areas, there was concern that the levels for English were lower than those for mathematics. In one case the complaint was not about the average level but about the difficulty of getting any of the work in English which they submitted for End-of-Key-Stage moderation assessed above level 4, although they had no difficulty in securing level 5 for their abler pupils in mathematics.

Many teachers were hesitant about estimating their pupils' levels on the Talking and Listening attainment target. Of the 16 who ventured an average level, seven thought it would be much the same as for English generally, seven thought it would be somewhat lower – usually because of poor listening skills – and two teachers from schools in disadvantaged areas reckoned that it would be higher than for Writing, since their pupils were better at expressing themselves orally than in writing.

SECTION 4: CONTINUITY AND PROGRESSION: POST-PRIMARY PERSPECTIVES

4.1: Introduction

4.1.1: Rationale for the Post-primary Interviews

In the post-primary sector interviews were conducted with members of staff and with groups of 4-6 pupils. Unless absences or other unforeseen circumstances prevented it, for each subject both the head of department and a second teacher were interviewed. Although the main reason for asking for a second informant from each department was the (correct) expectation that some heads of department would not have a Year 8 class and so would be unable to comment at first-hand on some of the issues on the schedule, the two interviews provided a useful element of 'triangulation' or internal verification of the evidence, especially if both teachers taught Year 8. Although there was no serious instance where two members of the same department flatly contradicted each other on a simple statement of fact, it was apparent that colleagues could sometimes have different perspectives and preferences within a subject (for instance, teachers of English could vary in the time they devoted to group-work) and that certain classroom procedures (such as how to record science experiments) might in some schools be a matter of departmental policy but elsewhere left to the individual teacher to decide. The discovery of such differences in practice within departments helped to explain certain discrepancies in the pupils' evidence, i.e. they could well have been reporting accurately enough on experiences in different classrooms.

In addition, wherever possible, there was an interview with a vice-principal or other senior teacher in the school with a general responsibility for the curriculum and another interview with a year tutor or liaison teacher who could provide an overview of how the pupils adjusted to the new curricular demands. In practice, however, this group of informants varied in the extent to which they were able to take a whole-curriculum view or were essentially subject teachers with additional pastoral or administrative responsibilities.

The group interviews with pupils enabled further triangulation of data with both the primary and the post-primary teachers' evidence. Unfortunately, the project time-table and the need to meet the Year 8 pupils, if possible, during the months November-February, when the KS3 programme should have been well under way but pupils would still be able to recall their primary school days, meant that the pupil interviews were more or less co-terminous with the interviews with post-primary teachers and almost completed before any visits to the primary schools.[25] In consequence it was not possible to explore with the pupils some important issues that emerged only during the analysis of the primary school evidence. The most that could be done in these circumstances was to trawl the pupil transcripts for relevant evidence.

4.1.2: The Teacher Interviews

An important consideration in planning the interviews in post-primary schools was that informants should feel no guilt in describing situations in which there was little curricular continuity between primary and post-primary schools and that they certainly should not be inhibited by thinking that the interviewers regarded such situations as 'wrong'. There was therefore a need for an acceptable alternative concept to continuity. The idea of 'a fresh start' or 'a new beginning', although derided in some of the literature on continuity (for example

[25]With the exception of the interviews in one grammar school.

Blatchford and Howard, 1993), was chosen for this purpose and proved useful. The idea was promoted in Northern Ireland by the late John Malone (Crone and Malone, 1979) and is of obvious relevance in secondary high schools, where entrants who were disappointed in their hopes of a grammar school place may need their confidence in themselves restored. The notion of 'a fresh start' proved, however, also to be attractive to many of the informants in grammar and non-selective schools.

In choosing the wording of the first interview question, "To what extent do you see Year 8 as a follow-through from Year 7 and to what extent do you look upon it as a fresh start?" the researchers were careful to avoid presenting a dichotomy, since there are senses of 'a fresh start' which are quite compatible with the idea of building on previous learning. In the event the teachers use the term in even more senses than had been anticipated, including the following:

- 'Novelty value': Starting with something new in the hope of interesting the pupils.
- 'Starting afresh' or 'starting all over again', perhaps out of distrust of the thoroughness of primary school preparation
- 'Fixed starting point': the starting point for the course is pre-determined by the chosen text-book, the teachers' interpretation of the NI programmes of study or an estimate of the pupils' capacity based on previous experience. Individual differences within the class or any differences between the class and previous classes, however, play little part in deciding where to begin.
- 'Common starting line': new pupils, certainly within a class, are given the same learning materials and treatment and left to differentiate themselves by outcome without (further) reference to any evidence from the primary schools.
- Fresh start as a fresh opportunity, especially in secondary high school; all, or virtually all career options are presented as still open to the pupil.
- Fresh start as absolution, a pastoral rather than an academic concept. Any misdemeanours reported by the primary school may not be even known to the general class teachers and will never be mentioned unless the undesirable behaviour recurs in the post-primary school.

The reports on the interviews with post-primary teachers of the three subjects each fall into four parts. The first part gives the teachers' 'orientation' on the question of whether Year 8 was a follow-on or a fresh start and their perceptions of the similarities and differences between learning and teaching in the upper primary school and in Year 8. The second part presents the post-primary teachers' views of their entrants' attainments: their estimates of the levels reached in the subject by transition, the pupils' familiarity with Year 8 course material and their mastery of the skills needed to begin KS3, any particular difficulties which the new pupils find with their work and any effect of the new-style Transfer tests on their knowledge and understanding of the subject. The third part summarises the post-primary teachers' evidence on the Year 8 courses in their schools: the basis on which they decide where to begin, the balance of the attainment targets in the course including the amount of attention given to the process-based ATs, teachers' reactions to situations where some entrants have already covered parts of the Year 8 course and how they cope with the varying ability levels among Year 8 pupils (differentiation).

In addition, the post-primary teachers' perceptions of which aspects of the Year 8 course were most and least enjoyed by the pupils were recorded. Unless they had also been nominated as informants for one of the three core subjects, the pastoral and senior teachers were asked only those questions for which a whole-curriculum response would be relevant.

4.1.3: The Pupil Interviews

As already indicated in Section 1.5, in each post-primary school four groups of 4-6 (but most usually 5) Year 8 pupils were interviewed. Two of the four interviews were entirely about science, the subject about which pupils had most to say, and two about English and mathematics. If Year 8 was streamed or banded, a request was made that one group for science and one group for English and mathematics should come from near the top of the ability range and the other from further down, although it was suggested that it would be better not to pick any children with learning difficulties serious enough to prevent their answering the questions meaningfully. Whether or not the school grouped their entrants by ability, the use of two rather than just one group for each subject gave a somewhat broader picture of Year 8 pupils' experiences and reduced the chances of any bias in the evidence arising from an exceptionally popular or unpopular teacher or from teachers in the same subject department using different approaches and methods.

For each subject the group was first told to take a few moments to remember what it had been like studying it in primary school. They were then asked if the subject was "mainly the same" or "mainly quite different" in primary and post-primary school and to give reasons for their general impressions. Next, the interviewer took the group through, point by point, the various aspects of the subject, as listed on the interview schedule (such as the seating arrangements, the books and other things used in class, writing and talking in the subject, the difficulty level and the availability of help),and asked them to indicate in each case the degree of similarity and difference between their primary and post-primary school experiences. In questions paralleling those for the teachers, the pupils were then asked about aspects of the subject which they liked most and least.

4.2: The Perceptions of Pastoral and Senior Teachers

The 21 liaison teachers, heads of year, curriculum co-ordinators and other members of senior management teams in the interview sample fulfilled a variety of roles in their schools. Not all felt in a position to comment on every item in the schedule and so the number of responses to individual questions fluctuated. The members of this group also varied in the extent to which their perspectives on teaching and learning were cross-curricular or focused on a particular subject department.

4.2.1: Perceptions of the Relationship between KS2 and KS3

Continuity or Fresh Start?

Of the 16 members of the group who commented on the nature of the transition for pupils, only two described Year 8 as mainly a follow on from primary school. One was a science/liaison teacher in a grammar school who admitted that, since she did not really know what or how primary schools taught, beyond what could be gauged from the official KS2 programmes of study, she could only hope that their departmental Year 8 science programme succeeded in being the follow on that was intended. The other was the vice-principal of a non-selective school whose description of following on appeared to have some of the characteristics of 'starting afresh'.

> "It depends on the subject. In maths we would see it as a follow-through. The maths syllabus or curriculum would start off very basic. It would depend on what class you had,

whether you kept it fairly basic. In the higher classes we would probably start at a very basic level but move on very quickly, depending on how they answered."

Two vice-principals, both with backgrounds in English, saw Year 8 as both a follow through – in that subjects built upon what had been done before in primary school – and as a fresh start in the relationships offered to pupils. The remaining twelve informants in this group perceived Year 8 as essentially a fresh start.

Of the 14 pastoral and administrative staff who regarded Year 8 as partly or entirely a fresh start there were five who regretted the current situation and would have preferred closer links with the primary school. Two of this group said that they had previously hoped that the coming of the NI curriculum would have improved continuity but that so far their hopes had been disappointed ("there is precious little continuity or communication in any subject"). In two secondary high schools there was documentation that each department should have responsibility for keeping in touch with developments in the subject in neighbouring primary schools but it was admitted that these plans were not yet being implemented.

Five other informants, however, rejoiced in the idea of a fresh start, describing it as a fresh opportunity or a chance to wipe the slate clean. For three of these five informants who were in secondary high or non-selective schools, transition was a time to forgive and, where applicable, to forget past failures and behavioural shortcomings ("no stigma is attached to past performance")[26] In a Catholic secondary high school the idea of a new start was indeed the theme for the Year 8 parents' Mass in November and for a Year 8 magazine. However, the idea of Year 8 as a fresh start was also positively welcomed by two grammar school informants because they saw it as a way of treating entrants – all of whom had either secured top grades in the Transfer tests or otherwise been judged good enough for the school – as equal and of setting them at the same starting line for the next stage in their careers. The remaining four informants who saw Year 8 as a fresh start appeared to accept this phlegmatically. In their view pupils, whose ability levels were presumed to resembled those of previous entrants would arrive and simply embark on a course which was designed for pupils of that age:

> "My impression is that it is a fresh start; taking into account what stage the child is at, but the curriculum here is simply set and that is what you do" (Curriculum co-ordinator, boys' grammar school).

Similarities and Differences between Primary and Post-primary School

When asked what they thought new pupils would perceive to be the main similarities and differences in learning and teaching between upper primary school and the first year of post-primary school, the administrative and pastoral staff tended to concentrate on the differences with all mentioning at least one difference. Eight of the group pointed to the obviously more fragmented nature of the post-primary curriculum. In their new schools pupils would find separate subjects taught by different teachers in different parts of the building in strictly limited periods of time (commonly 35 minutes), with some subjects not reappearing on their time-table for several days. This was seen as requiring a great deal of adjustment from pupils who had been accustomed to a single class teacher, less rigid time-tabling and, it was believed, a more integrated curriculum in primary school. Two vice-principals, one in a grammar and the other in

[26]Such attitudes could, however, co-exist with banding policies and/or the provision of remedial help. The interpretation of the term 'a fresh start' by these teachers implied that all would be well, provided that the pupils did their best in their new schools.

a secondary high school, expanded on the difficulties of adjusting at once to 12-13 new teachers, who were likely to have different personalities, even different speech patterns, different teaching styles and different expectations of pupil behaviour; in effect pupils had to learn simultaneously the rules not just of one new game but of 12-13 new games.

Informants from six schools (3GS, 1SH, 2NS) saw a major difference between the sectors in the types of ability grouping and the consequences for teaching. Whereas in primary schools pupils are normally in mixed-ability classes but may be placed in groups by ability within these classes, in all twelve post-primary schools the range of ability within classes was reduced from the full range by streaming, banding or the selection process[27] but teaching was more likely to be directed at the whole class. Although some of the pastoral and administrative staff may have over-estimated the amount of differentiation there actually is in primary school classrooms (McGarvey *et al*., 1996), several of the curriculum co-ordinators – and in particular those in three of the four grammar schools – felt that there was not yet enough in their schools.

Other differences which it was thought pupils would face on transition, each mentioned by between one and three of the pastoral and administrative teachers, were (a) the more focused work required by the short 35-minute periods in which pupils had often to write faster than they were accustomed; (b) the generally more didactic teaching methods and more passive learning methods of the post-primary school; (c) the expectations of such independent learning skills as note-taking (which however, were not necessarily taught) and (d) the greater need for self-discipline in such matters as homework and turning up at classes with the right books, files and other equipment.

In three schools, however, it was thought that the use of group-work or of working in groups in at least some subjects would be appreciated by the pupils as a point of similarity with their primary school days. Two curriculum co-ordinators believed that the methods used in English and mathematics would resemble those of the upper primary school, although the change to laboratory work might make science feel very different to the new pupils.

The three informants who spoke of pupil-teacher relationships each took a different stance. The vice-principal of one grammar school believed that, despite the greater responsibilities for organising their own work, their Year 8 pupils could feel a lack of status after being the senior pupils in their primary schools. The head of year in a second grammar school, however, insisted that their pupils were treated as young adults, not children, from the moment they entered the school, while the vice-principal of a secondary high school simply hoped that his colleagues had the same caring attitude towards their pupils as had those in a good primary school.

4.2.2: The Abilities of the Entrants

The Perceived Effects of the New Transfer Tests

There was little consensus among the 13 pastoral and administrative staff who responded to the question on the effects of the new Transfer tests.[28] Six had not noticed any differences among their entrants. While one vice-principal of a secondary high school was pleased to hear the Year 8 pupils talking more confidently about science, two senior grammar school teachers regretted the focus which the tests were placing on the learning of content at the expense of more creative

[27]Or both streaming and the selection process in the case of most secondary high school classes.
[28]This question was not asked in non-selective areas.

investigative work. In one secondary high school there was such concern about the "abnormally high" standard of reading required that a Paired Reading scheme had been initiated. In two grammar schools there were complaints (in one case from the Head of Year 8 who was also a history teacher) that the short, often one-word answers required in the tests made extended writing or answering in sentences difficult for pupils.

Although the vice-principal of a rural secondary high school thought the new-style tests were more appropriate and less disruptive to the curriculum than teaching the "monkey tricks" of verbal reasoning, two grammar school informants expressed doubts about the accuracy of the new tests, admittedly from their experience of only one cohort in one school:

> "This year we have had more As than any other year but I don't feel that their standard is as good. I don't think it is one of our best Form 1s. But I don't know whether it is the new test or not. But on paper, they should have been the best."

> "I think their normal schooling does suffer a lot. All they do is tests. I know they do research and science but their energy's sapped their creativity's gone... We've taken 3s and 4s and you couldn't tell one from the others in class."

Informants from the two boys' grammar schools also pointed to the considerable differences in the use made of the rest of the P7 year, after the Transfer tests.

Effects of the Northern Ireland Curriculum

A few of the pastoral and administrative staff volunteered comments about the effects of the Northern Ireland curriculum on their entrants' capabilities. Both the principal of a junior high school and the vice-principal of a secondary high school spoke of pupils now arriving with a more extensive knowledge of science. The former described this in terms of a levelling-up, in that all pupils had now obviously done some science in primary school. The vice-principal of a non-selective school, however, blamed the extensive nature of the NI curriculum for reducing standards in 'the basics', resulting in a decrease in entrants' numeracy and literacy levels.

4.2.3: The Organisation of the Year 8 Curriculum

Deciding Where to Start

None of the twelve post-primary schools appeared to have any whole-school curricular policy on where to start teaching a new Year 8. Those members of the administrative/pastoral group who felt able to comment said that decisions on where to start were taken at departmental level. A few also gave details of the initial testing procedures in the school as their means of deciding the best level at which to start.

Differentiation

In ten of the post-primary schools (4GS, 4SH, 2NS) curriculum co-ordinators outlined what, if anything, was being done at school level to cope with the varying capabilities of the entrants. In the secondary high and non-selective schools, but not in any of the four grammar schools, there was a greater or lesser degree of streaming or banding and it is known that in the two schools where differentiation as such was not discussed (1SH, 1NS) Year 8 was fully streamed. Where

streaming was practised, the upper classes might move through the programme more rapidly or else study topics in more depth.

In the non-selective schools having fully streamed classes from the beginning, with the possibility of moving any children who were misplaced, was the chief or only method of differentiation in Year 8. One vice-principal added that his own (science) department also used extension work for abler pupils but he was unsure how many other departments did anything similar.

The grouping methods in the secondary high schools were more varied than those in the non-selective schools. One secondary high school had experimented with mixed-ability teaching but the mathematics department had successfully fought for the introduction of setting for their subject and by 1995 two classes, which were recognised to be the weakest, were receiving additional classroom support for other subjects. Both the girls' secondary high schools had a four-stream entry. One organised Year 8 into two broad bands and had found it counter-productive in terms of pupil motivation to stream the lower Band further; it was preferred to keep the two Band B classes smaller than those in Band A and to give both Band B classes additional support. The other girls' school, however, used full streaming, with the fourth and smallest class consisting of pupils with special educational needs. While the upper classes were found to be sufficiently homogeneous in ability to enable whole-class methods to be used for much of the time, in the third and fourth streams there was a greater spread of skills and abilities, which required more adaptations to the needs of individuals. Among other forms of differentiated teaching mentioned in secondary high schools, three curriculum co-ordinators reported time-tabling a second member of staff to work with lower-stream classes for at least a few periods each week and in one of these schools special needs teachers collaborated with subject specialists both in the classroom and in the production of special units of work.

The only grammar school with a whole-school policy on differentiation had opted for 55-minute periods, one reason for the change being to give more opportunities for differentiated approaches. The curriculum co-ordinator believed, however, that only the English department had taken any formal steps towards introducing differentiation.[29] A second grammar school had in the past streamed Year 8 but the attempts had been "neither accurate not helpful" and any differentiation was now left to the individual subject teachers. In a third grammar school pupils were grouped by the languages they had chosen, without regard for any differences in ability. The curriculum co-ordinator in the fourth school admitted that, "like most schools, we have not really cracked the nut of differentiation" but believed – as was confirmed during interviews with subject teachers – that most departments had extra work units or other strategies for coping with the different rates of pupil progress.

4.3 Mathematics in Year 8

4.3.1: Mathematics Teachers' Evidence: Relationship between KS2 and KS3

Continuity or Fresh Start?

[29]This view appeared to be largely supported in the interviews with subject teachers in the school, although even the English department's quite elaborate plans for differentiation were only on the point of actual implementation.

Year 8 was looked upon as a fresh start by most of the mathematics teachers. Of the 20 teachers who responded to the question only the two informants from one of the junior high schools claimed that their Year 8 mathematics were essentially a continuation from Year 7, fourteen teachers perceived Year 8 to be essentially or entirely a fresh start and four others regarded both aspects as important. Three of this last group said that, although their Year 8 mathematics course was a follow-through in the sense of building on primary school work, they tried encourage a fresh and more positive attitude.

The term 'a fresh start' was used by the mathematics teachers in three different senses. For one grammar school head of department and all except one of the informants from secondary high schools (10 teachers), the idea was to motivate or encourage, or to make the subject seem like new, especially where entrants were jaded with mathematics or had had "bad experiences" in primary school. This was usually attempted by starting pupils off with something which it was hoped would be new and interesting to them all and with which they would experience a measure of success that would help to counteract any previous sense of failure.

> "If you try to continue with some of the work that has already been done in primary school, you come up against a brick wall. The youngsters have been tested throughout the years and they've found difficulty in it ...They've already been labelled as 'not as good'... as the people who have passed their 11 plus We try to do our own thing initially to give them a sense of achievement, a sense of success. In other words take something which they can do, that they haven't done before something maybe new or approached in a different way – and then at least they get success in it. And they suddenly begin to believe in themselves" (Head of Mathematics, secondary high).

To the informants from the other three grammar schools and from the comprehensive school (7 teachers) 'a fresh start' implied setting off at the beginning of Year 8 on the school scheme at a pre-determined level of attainment, which previous experience had suggested was likely to be the most appropriate one. The baseline levels, however, varied considerably among the schools and where Year 8 was streamed or banded, they could also vary for different classes. In one grammar school it was reported that over the years the level was getting lower and lower.

The remaining teacher – the head of department in a secondary high school – used the term 'a fresh start' in a different sense again, as 'starting afresh', taking very little for granted and allowing pupils to find their own levels, regardless of their placings in primary school:

> "We decided that we couldn't assume that the children had all been taught the same stuff or that they had covered it to the same extent. So we regard Form 1 as a fresh start and every child is given an opportunity then.... We just assume that they don't really know anything" (Head of Mathematics, secondary high).

Similarities and Differences in KS2 and KS3 Mathematics: Teacher Evidence

When asked what they considered to be the main similarities and differences in the learning and teaching of mathematics between upper primary school and the first year of post-primary school, two heads of department in grammar schools said they did not know enough about what happened in primary school to reply; another six teachers, who ventured a reply, admitted that their answers were based on listening to their own family, reading the KS2 programme of study or observing pupils' work and behaviour in the first term of Year 8 rather than from any first-

hand knowledge of primary schools. (Other informants may, of course, have had equally little direct contract with primary schools without mentioning the fact.)

Five teachers, including four from secondary high schools, thought the similarities between Year 7 and Year 8 mathematics far outweighed any differences. One of this group added that there was a greater difference in approaches to mathematics teaching between the earlier primary school years and the time when preparation for the Transfer tests began in earnest than between primary and post-primary school.

The majority of the mathematics teachers, however, concentrated on differences between the two sectors. A number of these answers referred to organisational differences between primary and secondary schools which would affect most subjects rather than to specific curricular differences in mathematics. Thus, for four teachers a major difference was the fact that post-primary mathematics are nearly always taught by subject specialists rather than by generalists; three of this group had reservations about the ability of some primary school teachers to deliver parts of the KS2 curriculum.[30] There were also between two and four mentions of each of the following: the greater spread of ability in primary school classes, the much stricter time-tabling in post-primary schools, the more integrated topic-based approaches possible in primary schools and the less formal behaviour and greater freedom of movement in a typical primary school classroom.

Teachers in a grammar and a secondary high school in the same cluster perceived KS3 pupils as being under less pressure than upper primary pupils preparing for the Transfer tests. In consequence, there was more time to teach for understanding and less rote learning than in primary schools.

Among the primary-secondary differences specifically related to the mathematics curriculum, there were two references to the Processes AT in secondary high schools. In one case, the head of department said that the AT was neglected in primary school but given attention in his school. In the second case the difference was perceived as treating Processes as a separate topic in the post-primary school but as an integral part of the whole mathematics curriculum in most of the contributory primary schools. The heads of department of the two junior high schools both spoke of some pupils arriving to find different methods for such operations as subtraction or long multiplication from the ones to which they were accustomed. Finally, teachers in two secondary high schools who believed in 'a fresh start' as a means of regenerating pupil interest reported as a main difference that their Year 8 pupils now enjoyed mathematics but had hated it in primary school.

4.3.2: Mathematics Teachers' Evidence: Perceptions of Entrants

Estimated Levels of Entrants in Mathematics

Estimates of the levels in mathematics of the Year 8 pupils on entry fell into three distinct groups, matching to the type of post-primary school. All informants from schools in non-selective areas spoke of a wide range of levels – from at most 2 to at least 5 – paralleling the range in the contributory primary schools. Occasionally levels 1 and 6 were mentioned as the

[30] At various points in the interview doubts about the mathematical competence of some primary school teachers were expressed by 6 of the 21 post-primary informants.

extremes. In all three non-selective schools the average pupil was reckoned to be capable of level 4 work on entry .

In all four grammar schools the median entrant was judged to have been at level 5. In two grammar schools the ablest pupils were estimated to be between levels 6 and 7 in mathematics (or "six pushing seven") and in a third grammar school about 30% of entrants were reported to come in at level 6. However, in the grammar school which regularly had the highest percentage of top grade entrants in the Transfer tests, it was considered that only a few entrants had fully achieved level 6 on entry, though many were working towards it and it was hoped that most pupils would achieve it by the end of Year 8. The lowest level on entry in two of the grammar schools was believed to be 4 but in the other two grammar schools a few pupils were thought to have been only on level 3, judging from some of the things they could not do.

In each of the five secondary high schools the average pupil was reckoned to have achieved level 3 but in all cases it was recognised that a sizeable percentage was still at level 2. In one rural secondary school there were believed to be few able pupils at level 5 but elsewhere level 4 was considered to be the upper limit in mathematics on entry.

Entry Levels on Processes in Mathematics.

There were three post-primary schools where no Year 8 work on Processes had been attempted by the time of the interviews and so comparisons between the entrants' performance on that and on the other mathematics ATs could not be made.

In seven of the other nine post-primary schools the mathematics teachers thought that their entering pupils were less advanced – and in some cases much less advanced – on Processes in Mathematics than on the other ATs, while in an eighth school much seemed to depend upon which feeder primary school the pupil had attended. Two explanations were advanced for poor initial work in Processes. The first was that the AT had been neglected in primary school: the Transfer test was sometimes blamed but the complaint was also heard in non-selective areas.

> "As far as the investigative approach is concerned, they're maybe starting from square zero. So they've to catch up on that" (Head of Mathematics, secondary high school).

> "We find they haven't a clue when they come in... And yet they tell us they enjoy the work that is geared towards the processes, which is good.... It seems to us that work is all totally new to them" (Head of Mathematics, grammar school) .

The second explanation for lower levels on Processes was that, even if pupils could carry out some practical operations satisfactorily, poor literacy and recording skills marred their performance.

> "They need good literacy skills to follow a process and explain a process. Some of them don't have that. The literacy skills to follow commands.. and record" (Mathematics teacher, secondary high school in a disadvantaged area).

> "They know what they want to say but they can't express themselves on paper ..They know the answer but they can't write it down... We're doing a piece of course work at the minute (details given). Now a third of each of my classes can do this without any problem. The others .. know what they're supposed to be doing but they can't write it down in an

> intelligible way that I could understand or that you could understand. I always say to them, 'Now your granny is going to read this, she doesn't know anything about it. Could she understand what you've been doing ?' and .. they agree that she couldn't understand what they've written" (Mathematics teacher, grammar school).

The only teacher to speak well of entering pupils' initial skills on Processes was the Head of Mathematics in a Belfast secondary high school who thought that, because of their skills in handling and presenting data, their new pupils were rather better on Processes than on most other ATs.

Effects of the New Style Transfer Tests

Three heads of mathematics in grammar schools said that they had in principle welcomed the change in the basis of the Transfer tests from verbal reasoning to material directly relevant to pupils' post-primary careers. However, while one of them thought that the new-style tests had helped to widen their entrants' range of knowledge, especially in topics outside Number, another saw no change in the pupils and was disappointed in the lack of improvement in the understanding of basic number work. The third did not comment on any pupil changes. In the fourth grammar school in the study – the one with the highest proportion of A grade entrants – the main concern of both informants was that even their able pupils had been pushed beyond what they could fully understand, since some of the mathematical concepts at levels 5 and 6 were really difficult for pupils of that age; they surmised that the problems would be worse in schools where pupils were less able. As the Head of Mathematics said,

> "We saw some of this year's 11+ papers and were amazed at the standard and the difficulty of the questions. But there is no way that the pupils know this work, certainly by the time they come to us in September... I don't feel they have full understanding of the material that has been taught in mathematics".

In all five secondary high schools it was found that pupils had not understood work that had apparently been 'covered' in primary school, although some of the teachers blamed Transfer preparation more specifically for this than did others. One secondary high teacher's main grievance was that the inclusion of science in the Transfer tests reduced the time available for mathematics. Elsewhere the complaints were of pupils being rushed on to the next topic before they had understood the last or of being 'force fed' material in P6-P7 that they would not have to tackle again until well into secondary school. In consequence, many pupils gained at best a superficial understanding but they were often left confused and at worst had adopted a defeatist attitude towards mathematics. The following quotations came from different cluster groups:

> "They're covering too much and not doing it sufficiently well. Too many subjects are touched on" (Mathematics teacher, School SHD6).

> "I would say for the majority of children and even the children who are very good and very competent, their understanding is very very shallow and often there's a lot of misunderstanding, especially in things like algebra.. I mean they really don't know what they're doing...I would say that the transfer test at the minute has a very bad effect on mathematical learning" (Mathematics teacher, School SHE9).

> "The level of it, the higher bits, it's too advanced for them. There's percentages in it, that we wouldn't normally have done until 3rd year... And then I think once the children are lost, it's 'Can't do it' 'Can't do that'" (Mathematics teacher, School SHB4).

Entrants' Familiarity with the Year 8 Mathematics Course Material

Although all pupils in Year 8 mathematics classes were selected, streamed or banded, most teachers found that in any class of entrants there were likely to be marked differences in the work with which the pupils were familiar and competent; such differences were usually thought at least partly attributable to differences among the contributory primary schools. This had been a somewhat disconcerting to those post-primary teachers who had expected the Northern Ireland common curriculum to produce entrants at a set level of attainment:

> "Although there is technically a programme of study for KS2 but not everyone has reached the designated level in that so .. . Its a dilemma" (Head of Mathematics, grammar school).

Great variation in the coverage by contributory primary schools of all ATs other than Number was reported by the Head of Mathematics in one secondary high school and of the ATs other than Number and Measures by the Head of Mathematics of a junior high school. Although they came from different cluster groups, these answers echo two replies from the primary schools (quoted in Section 3.3.4) about prioritising an overcrowded KS2 curriculum. In several schools, Algebra and Shape and Space were singled out as the ATs in which entrants' prior knowledge varied most. Even in Number, however, some entrants had done more than others, members of a Year 8 class may have been taught to apply different methodologies and, in some cases, they had been accustomed to different terminology.

In four schools – including two grammar schools – pupils were thought to be noticeably less sound on Number (or "the basics") than in the past. In two of these schools it was acknowledged that this was because of curriculum changes and that entering pupils had compensatory strengths in other topics. The teachers in one grammar school somewhat regretted that their present entrants would not have mastered all basic operations with fractions and decimals but appreciated that some of these were now placed quite high on the programmes of study. Both informants in another grammar school were much more critical of the effects of the changes brought by the NI curriculum:

> "We have a very simple view in the mathematics department. We think that primary schools should teach them to add, subtract, multiply and divide and if they were sound in the 4 operations we could take it from there. I find it totally illogical that they're being exposed to algebra or data-handling, which seems to be very popular. ..The amount of algebra some of them think they have and yet they can't do basic arithmetic. You don't build a house until your foundations are right" (Head of Mathematics, grammar school).

> "Previously children from primary schools knew everything about the four rules, in both decimals and fractions. Now some certainly can add and subtract. But long multiplication is something they have never heard of, long division is something they have never heard of. They don't know the word 'factors'. As for fractions, they could tell you what a quarter of something is but they have no concept about what six fifths of something is; they don't know what it means to divide by a fraction; they can't add three fractions

> together; I believe this isn't really in KS2 but I think this is wrong" (Mathematics teacher in the same grammar school).

One teacher in a secondary high school in Greater Belfast was unusual in thinking that the Number work of her current top-stream Year 8 class was sounder than usual; her suggested explanation was that the local grammar schools had been oversubscribed and that, since they were often a first-choice secondary high school, they had attracted more able entrants than in previous years. Elsewhere, the topics which teachers had noticed were now becoming more familiar to Year 8 pupils all lay outside Number and included algebra, probability, symmetry, graphs, nets, co-ordinates and Shape and Space. These topics would, not however, necessarily be familiar to all members of a class and there could also be changes from year to year: for instance, the Head of Mathematics in a grammar school, having been surprised to find his Year 8 class more knowledgeable about algebra than any previous group, had just discovered that, unlike previous classes, most of them seemed to know nothing about the area and circumferences of circles.

Responses from four of the secondary high schools to the question on entrants' familiarity with the Year 8 programme also appeared to support the admissions of some primary school co-ordinators that, although it would be rare for a topic to be omitted completely, it might be rushed over or teachers might not be satisfied that their pupils had achieved understanding. Such treatment of topics had sometimes left the pupils with negative attitudes.

> *"*They will have done a lot of the material we do in Year 8 before.. They may not be confident with it, they wouldn't perhaps be competent either in a lot of the work.... For example, they all know the term 'algebra' and they all know there are Xs in it, but whether there is anything else in it, they don't know. ... So in Year 8 we have to consolidate on the work they have seen before. And give them confidence as well... They may have been made familiar with some of the work and they didn't understand it and then they arrive here with that fear of the work because they didn't understand it" (Head of Mathematics, School SHD6).

Perceptions of the Main Pupil Difficulties with Year 8 Mathematics

The three ATs in which difficulties were most often reported among Year 8 pupils were Number, Algebra and Processes. Seven of the mathematics teachers, including five from secondary high schools listed a total of 16 aspects of Number work which pupils did not find easy. These included 5 references to fractions, 4 to decimals and 3 to place value.

Of the six teachers who mentioned investigations, three spoke of difficulties at the planning stage, five of poor skills in recording and two of difficulties at both stages. Seven teachers said their pupils found algebra particularly hard, some of them doubting how suitable the topic was for the KS2 curriculum.

Among the difficulties mentioned by smaller numbers of teachers, both informants in a secondary high school in a disadvantaged area reported that their pupils' poor reading skills frequently prevented them from understanding questions they were otherwise perfectly capable of answering; similar comments were made by primary teachers in the same cluster (Section 3). In addition, three teachers found their pupils to be confused by imperial measures and there were individual mentions of difficulties with three-dimensional work and sums involving time.

4.3.3: Mathematics Teachers' Evidence: Year 8 Curriculum and Strategies

Deciding Where to Start

Given the varied mathematical backgrounds and attainment levels of their entrants, about which little or no prior information was available, together with the negative attitude to the subject of many pupils in some schools, it is unsurprising that the mathematics teachers had different views on the best way to begin Year 8. In seven of the ten schools where the choice of the initial topic was discussed (informants in the remaining two schools concentrated on the attainment levels at which they would start) the first priority was to foster positive attitudes. In the one grammar and the one non-selective school in this group the aim seemed simply to catch the pupils' interest but in the five secondary high schools it was considered essential to assuage fears that post-primary mathematics might be even more intimidating than primary school mathematics, in which pupils' success had been at best limited. Five of the schools opted for novelty as the means of engaging their pupils' attention. In three schools algebra was chosen as the new topic, since in previous years the entrants had done little in primary school. However, as already indicated, in the grammar school which tried this approach the entrants in the year of the study were much more familiar with algebra than their predecessors had been. Two of the secondary high schools began instead with graphical approaches to mathematics, which were thought to be intrinsically interesting and where there was a high expectation of success:

> "We started off with flow charts. This was an easy way to break them in, because there was a lot of drawing with it. It didn't appear as if it was mathematics at all, it just appeared as if it was wee lessons in logical thinking and organising their work" (Head of Mathematics, secondary high in disadvantaged area).

In this school and in another, where the initial work took the form of preparing displays of statistical data for an Open Night in early November, there was the additional advantage of helping to inculcate at an early stage good habits of neatness and presentation and of taking pride in their work.

Two other secondary high schools adopted a rather different tack in trying to build up pupils' confidence by deliberately choosing material likely to be familiar – and so not strange and frightening – and making the revision as fun-filled and enjoyable as possible. As one teacher explained:

> "Generally what we would have in our first term would be things that they should be familiar with, so that sort of dread of it.. it should anyway help... Now they might have a different name or just a different approach to it .. but it's generally now rarely the first term would it be something they hadn't met....I would generally start with number. I mean they're all familiar with it and they need the four rules. So we would start with basics, just the four rules. Table work would be something that I would do at the beginning, again making it sort of into a game. We would have a quiz and a bit of a prize, 50p or whatever" (Mathematics teacher, School SHB4, secondary high).

Though the classroom atmosphere may have been different, the SHB4 teacher's choice of initial content area was similar to that in the other group of three schools – one non-selective and two grammar schools – where the first priority in Year 8 was identified as the consolidation of Number work. Indeed, the Head of Mathematics in one of the grammar schools expressed a

view comparable to that in the last quotation by suggesting that revision of familiar Number work

> " … gives them a good sound base but very often it gives them something familiar to hang on to when they're moving into a fresh, totally different environment. Something familiar can be useful to them".

Even in grammar schools the introductory number work could be very elementary. The Head of Mathematics in another grammar school described what had been done until the time of interview in early December:

> "Basic number facts and routine things like making sure they know their tables. And then moving on to adding, subtracting, multiplying, and dividing whole numbers. Then we would go on to fractions: what a fraction is, what a fraction means, adding, subtracting, mixed numbers. We are about to do multiplying and dividing fractions."

The attainment levels at which the Year 8 courses began were indicated in two grammar, three secondary high and two non-selective schools. Whereas one grammar school began at levels "3 to 4", the other took level 5 as the general starting point, acknowledging that even at that level most pupils would be familiar with much of the work. The textbook used in the second grammar school included some level 4 material, which would be omitted or – especially for Algebra and Shape and Space – used for rapid revision. The two non-selective schools began each stream at what was considered the appropriate level for it, usually level 5, 4 or 3, or even less for some special needs groups. While one of the secondary high schools began their top stream at level 4, the others began all mainstream classes at level 3 and then moved forwards as fast as the class's ability would allow. In the other schools participating in the study no initial levels were specified but it was obvious that the early units usually included some fairly (or very) simple work. The aims typically were to consolidate what had been done in primary school and to establish a common starting point for the class.

Because of the lack of reliable information on the entrants' attainments, in several schools the early weeks included a considerable amount of diagnostic work. This could be either overt or covert:

> "The year would be banded. But the bands are broad. Inside that band then you try to discover the highest end of it and the lowest end of it. So normally the first few weeks you do a few little number tests just to discover the number level and then start taking it from there" (Mathematics teacher, secondary high school).

> "It very difficult because you have 30 in front of you and some of them have covered topics and some of them haven't so.... quite a lot of time spent, covertly rather than overtly, you don't want to pressurise the children into thinking they're always under review , so when I take in homeworks I notice the methods they are using and it gives me a truer picture of what they have been doing in the primary. It's a very gradual process" (Head of Mathematics, non-selective school).

The Balance of the Year 8 Mathematics Curriculum

From those interviews which gave an overview of the whole Year 8 mathematics course two models emerged. In the first teachers endeavoured to maintain progress fairly evenly across the

attainment targets. This would typically be done by including at least one topic from each AT each term, certainly from the second term onwards. Some topics would, of course, bring in more than one AT (for example, Angles in Shape and Space would include aspects of Number and Measures) but the aim would be to achieve a balance. In the second model, Number was given far more time than any other AT in Year 8. Even three schools which began with a 'novelty item' fell into the second category since afterwards they spent most of the Year 8 year on Number.

Both models were found in grammar and secondary high schools but all three non-selective schools preferred to balance the attention given to the various ATs; indeed, one non-selective school appeared to spend less time on straight Number work than any of the other post-primary schools:

> "Number does come in through decimal theory early on in eighth year but we try not to spend too long on it .. reading tables, distance tables .. we bring number in from that point of view, but we don't spend vast quantities of time on adding subtracting multiplying and dividing because we know they are already sickened with that" (Head of Mathematics, junior high school).

Several informants described their Year 8 course as very much based on a textbook, sometimes with other volumes in the series being used throughout Key Stage 3. The MacMillan Secondary Mathematics Book and Mathematics in Action were among those mentioned. A few teachers, however, commented that no one textbook was ideal: the MacMillan book, for instance, was quite highly praised by the grammar school teachers using it but it had been found necessary to devise some supplementary units, on such topics as imperial measures. One secondary high school went further by basing their course on a series of worksheets and handouts rather than on a textbook.

Sometimes the main subdivision of the chosen textbook were the branches of mathematics rather than attainment levels. Where this happened the teachers had the choice of working out an alternative route through the book based on the levels, as was done in the comprehensive school, or of paying relatively little heed to the levels, as was the case in two of the grammar schools. In one of these grammar schools, which put the main emphasis of Year 8 work on Number, the order of the topics in the Northern Ireland curriculum was not accepted and it was said that occasionally topics as high as levels 7 and 8 would be taught in first form. In the second grammar school, where it was believed (in the mathematics department at any rate) that the Northern Ireland curriculum would soon be jettisoned, a textbook series was used which would cover everything necessary to get the pupils up to level 7 or 8 by the end of Year 10;

> "But they will have covered it in the order in which the books do it. So basically we don't take on board the programmes of study, knowing that everything is going to be covered anyway at some stage."

Those teachers who mentioned calculators indicated that the schools had very different policies regarding their use in Year 8. Calculators were variously forbidden, allowed freely, issued to the whole class for specific tasks, "used guardedly" for such purposes as checking a multiplication sum and an integral part of the school's Year 8 mathematics curriculum.

Processes in Year 8

There was a wide range of attitudes to Processes by post-primary teachers and of the amount of time given to that AT. In three of the twelve schools no mathematical investigations had been attempted by the time of the interview. There was no simple relationship between the type of school and attitude to Processes although the Head of Mathematics in one secondary high school regarded the focus on processes as one of the best aspects of the new curriculum while the head of department in a grammar school regarded them (and GCSE coursework) as a nuisance and of limited value to pupils. In another grammar school, however, there was evident pleasure in the greater independence and initiative which the pupils had shown in their second formal coursework exercises in comparison with their uncertain approaches in the first; in that grammar school an additional investigation was the most usual form of extension activity for pupils who completed a unit of work early. One of the schools least sympathetic to the idea of teaching Processes was in a non-selective area; there the teachers believed that children benefited more from the teaching of skills than from any work involving processes and the head of department suggested:

> "If we're going to do processes, the way we intend to introduce it is to simply take a week sometime .. and do one assignment for all the junior classes and that will be our processes done."

For many teachers the entrants' obvious lack of previous experience with Processes presented challenges. In one secondary high school both informants spoke of how their pupils needed considerable encouragement to accept that a mathematics question does not always have just one right answer, while a number of teachers, including a grammar school teacher cited earlier, found that many of their Year 8 pupils were quite unable to provide an adequate explanation of what they had done.

Overlap between the Primary and Post-primary Curriculum

Mention has already been made of the situation encountered by many of the mathematics teachers when, perhaps as a result of their different primary school experiences, some members of a class would claim familiarity with a topic which was apparently quite new to the others. The usual practice was that if any of the class had not done it before or if it were on that school's scheme or the scheme for the class, it should be taught. While some teachers seemed confident that the repetition would always be useful, one or two admitted that it could be difficult to keep the interest of those who had done it before and the Head of Mathematics in a junior high school would make an effort to ensure that there was something new in her approach:

> "Very often we're repeating work that they have done in primary school but we probably approach it from a completely different angle and that helps to reinforce it. They may have had some difficulty in primary school" (Mathematics teacher, non-selective school) .

> "And therefore when we go over it or go to teach the class because the whole class hasn't done it, it's repetitive to them and therefore they get bored with that particular area" (Mathematics teacher, secondary high school).

> "There'll be 6 or 8 in the class who have solved equations and the other 20 have not , so you just do your best with what you've got . I try and make it unusual and varied for them all, so they're not going over the same thing" (Head of Mathematics, non-selective school).

A teacher in a secondary high school (SHE9), where it was a matter of school policy to try to build on primary school work, described how, when introducing a topic, she would have a chat with the class to see what they already knew. If there were some children in the class a step ahead of the rest, she might ask them to explain the topic to the others. What this often revealed was the shallowness of the pupils' understanding. For example, area to them might be simply "length times breadth". Nevertheless, she found this approach better than ignoring the knowledge, however limited, that some pupils had.

Several mathematics teachers spoke of the problems they faced when pupils arrived with what seemed to be poorly taught rather than poorly remembered concepts and methods. A grammar school teacher found a third of the class attempting long division by a convoluted method that required about two pages for each example while two Heads of Mathematics in secondary high schools had observed pupils who were confused by wrong or primitive concepts of place value or algebra:

> "Again a law is sometimes given to pupils, when you multiply by ten you move the decimal point and this is very very difficult to break down. They don't even understand that the numbers move. 11 multiplied by 10 becomes 110. OK, they can do that but they can't relate that to actually columns of units, tens, hundreds. The numbers actually move one place and your decimal point stays where it is. But where youngsters have been taught that decimal points move, it's no wonder they don't understand their own number system. .... And sometimes it's like teaching a new language.
>
> "They think they know algebra but they don't, that's their problem. Their concept of algebra isn't correct. What they think algebra is something different from what it really is and the way we treat it.... They seem to have this 'x' idea, that they have been given in the primary school that if it is 'x' it is algebra. Whereas we don't necessarily use the letter 'x'. We will use 'b' if we are talking about bananas and we will use 'a' when we are talking about apples. And if we have four banana and three apples, it is 4b and 3a."

Those mathematics teachers who raised the issue seemed able to cope without undue fuss with pupils who arrived with different – but not incorrect – methods of carrying out such operations as subtraction (decomposition *versus* equal addition) or long division. None of this group would automatically require children to change methods with which they felt secure, although the pressure to change seemed greater in one school than in the others. Sometimes the teachers would demonstrate alternative methods, indicate their personal preference and give pupils the opportunity to change over if they wished or were not fully happy with their current methods.

Differentiation

Although the range of ability in all Year 8 mathematics classes had been reduced by the selection process or by the school's system of banding or streaming, about half the mathematics teachers found that the resulting range in their classes was still large enough to require some differentiation in their teaching. This was most often provided by giving extension work to the ablest or spending extra time with the weakest. In two of the secondary high schools the less able classes had a support teacher timetabled for at least two periods a week, a practice which the informants thoroughly recommended. Other methods occasionally mentioned in secondary high schools included letting the more advanced pupils, who had completed the set work, help the others and setting tasks at different levels of difficulty but on the same topic to groups within the class. In one secondary high school a series of booklets, which allowed more differentiation,

might be substituted for the main textbook for certain topics such as algebra "where the pupils really spread out". In one secondary high school the HOM said that much use was made of the computer both for extension and support work.

Only one of the grammar schools reported that the range of ability in their unstreamed Year 8 classes was causing a real problem (although a second grammar school used extension work with their brightest pupils). In the first school the Head of Mathematics, who was teaching a Year 8 class for the first time for several years and had so far been keeping them together at a steady pace, appreciated that the ablest pupils were becoming frustrated. He was therefore considering "unleashing" the ablest and letting them forge ahead through the textbook-based scheme, even if this might result in two streams within the class, one of them two chapters ahead of the other.

4.3.4: KS3 Mathematics Teacher Evidence: The Response of Year 8 Pupils

Perceptions of Pupils Preferences in Year 8 Mathematics

Whereas there was substantial agreement among the primary school teachers (see Section 3.3) that practical work was the pupils' favourite aspect of mathematics, with Handling Data a poor second (20 and 8 mentions respectively), in the post-primary sector there was actually one vote more for items on the Handling Data AT than for any kind of practical work or investigations (10 and 9 mentions respectively). Within Handling Data there were five references to drawing graphs or pie charts and one to a highly successful lesson the day before on probability, based on Lottery numbers. It was also observed that the references to the Processes AT were mostly to "investigations' or "coursework" rather than to practical activities as such.

Two teachers said their pupils enjoyed practical measurement[31] and a number of other aspects of mathematics were mentioned by a single teacher each: number work generally, "problems involving money", computer work, space and shape, co-ordinates and using the calculator to check multiplication.

Least Liked Aspects of KS3 Mathematics: Teacher Evidence

Although there was a shift in the pupils' preferred aspects of mathematics between primary and post-primary school (at least as seen through the eyes of their teachers), the least popular AT remained the same: Number. Twelve teachers from eight of the twelve schools mentioned a total of 14 aspects of Number. These included five references to fractions, two to decimals and five to large amounts of basic calculation in the four rules.

There were three references to investigations as unpopular, although one was to writing them up rather than carrying them out. The HOM in a grammar school thought "the brighter children did not like investigations much". In a secondary modern school the dislike evaporated once the pupils understood more about the nature of investigations and that there is not just one right answer. The latter observation helps to confirm the general view among post-primary mathematics teachers that many primary schools paid scant attention to Processes.

Algebra and the measurement of time were each mentioned by one teacher.

[31]These answers were also counted as practical work.

4.3.5 Mathematics: Year 8 Pupils' Evidence

Introduction

The sections of this report which examine the Year 8 pupils' perspectives on the three core subjects each begin by summarising the pupils' overall impressions of the subject as they answered the question on whether the subject (here mathematics) was mainly the same as or mainly different from what it had been in primary school. Each of the sections ends by considering how often the transition appeared to have been a difficult or unhappy experience. Here particular attention is paid to what the pupils said about the availability of help in the subject and its relative difficulty in primary and post-primary schools. The central parts of the sections look for pupil evidence on particular subject-related issues raised by the teachers. Since the pupil interviews took place simultaneously with those with post-primary teachers and before those with primary school teachers, it was possible to attempt this only by scrutinising the existing transcripts for evidence rather than by framing questions for the pupils in the light of the teacher evidence.

The specific questions relating to mathematics were as follows:

- To what extent, as some primary school informants complained, were Year 8 pupils simply repeating primary school work? In particular, were they repeating primary school work to the point of boredom? While some revision of KS2 material can be justified, it would seem time-wasting if the pupils had spent, say, a whole term without learning anything new or mastering aspects of mathematics not previously mastered.
- Conversely, to what extent was much revision of the KS2 programme of study necessary either because topics had been rushed through so fast in primary school that pupils had failed to understand them or because they were inappropriately difficult for the pupils? Was there more evidence of over-hasty coverage of material in selective than in non-selective areas, perhaps as a result of trying to prepare pupils in time for the Transfer tests?
- To what extent, as post-primary teachers complained, were pupils arriving at their new schools having studied different aspects of mathematics?
- What evidence was there of pupils having tackled investigations either in primary or post-primary school or of process-based teaching and learning?
- Were any parts of mathematics particularly popular or unpopular?

Pupils' Overall Impressions of Similarities and Differences in Mathematics

The initial open-ended question on whether mathematics was mainly the same or mainly different from what it had been in the upper primary school elicited a wider range of types of response than did the corresponding questions on English and science. Most of the 23 pupil groups concentrated on differences — whether of content, methodology or classroom atmosphere — although five groups found mathematics much the same or only slightly different from what they had been in primary school. About half (11) of the groups[32] volunteered that the KS3 course had begun with familiar work but in most of these cases pupils went on to say either

[32]Figures and fractions in this sub-section are based on answers to the general question on similarities and differences. Quite often, more pupil groups would make similar points after being prompted about the aspect of the subject in question.

that topics were studied in more detail than in primary school or that the class had later proceeded to new work. For a non-overlapping set of five groups, the main impression of post-primary mathematics was that they were 'harder', although three other groups volunteered at this stage that mathematics were now easier. During the interviews it soon became apparent that in pupil terminology 'harder' tended to mean 'more advanced' rather than unduly difficult and to be doing 'harder work' was often a matter of pride rather than complaint. If one combines the groups where mathematics were said to be harder and those where pupils spoke of studying familiar work in more detail, then it seems that in at least half the groups pupils were, without any special prompting, describing some sort of progression within the first term or term and a half, even if the progression was not necessarily very smooth and even if the course did not necessarily start from the best place.[33] The opening of a group interview in a grammar school in December illustrates a fairly commonly perceived situation:

- We started off with the same sort of questions..
- With revision.
- At the start it was very similar but not at the end of it....
- Some of the questions at the beginning of the book were easy, easy questions. And you thought that book is going to be really easy but when you get on a bit it is not so easy. It goes up in stages.

Six groups highlighted new topics they had been studying when asked about general similarities and differences. Three of these groups, including two from the same grammar school, spoke of doing investigations for the first time, while the new topics mentioned in the other groups (1 GS, 1SH, 1NS) included data handling, algebra, standard form and long division. In three groups (2GS, 1NS) one of the main first impressions was of working all the time from one large book rather than from smaller books or worksheets.

Other matters on which at least four groups spontaneously compared their KS2 and KS3 experiences in mathematics in the opening section of the group interviews were the helpfulness of the teacher, the amount of homework and the frequency of class tests. On each of these issues the groups' verdicts differed.

Was Year 8 Mathematics Simply a Repetition of Primary School Work?

It will be recalled that a common complaint from the primary school informants (see Section 3.2.6) was that, instead of progressing to more advanced work, their ex-pupils had to spend an excessive amount of time repeating what had already been covered in primary school, especially in mathematics and science. This issue had been anticipated by including a prompt in the interview schedule which asked the Year 8 pupils whether "the sort of things you do in a mathematics class" were the same as or different from what had been done in primary school. Although the prompt was unlikely to pick up every case where a pupil recognised post-primary work as familiar, it was hoped that if the majority of a group had done little or nothing new in mathematics since transfer, they would have adequate opportunity to say so.

In the event, repetition or revision of primary school work was mentioned by 18 of the 23 groups, representing all twelve participating post-primary schools, but in only three groups (1GS

[33]Evidence on these latter points would have required longer and more focused interviews as well as scrutiny of the courses actually delivered in Year 7 and Year 8.

and 2SH) did they appear to describe an undue amount of repetition or pupil boredom. This was most marked in an upper stream group from a secondary high school:[34]

- I'd say it (maths) would be much easier in high school because in my primary school you used to do all the high school maths and here it's much easier for me.....
- Well really up to Christmas we were doing revision, and we still are because I was doing the area and perimeter in Primary 7 and we're doing it now.....*Are you finding the same?* •Yeah
- Area's much easier in high school, but it's the same thing that we were doing in primary school. In primary school I thought it was really hard.

In a lower stream group from another secondary high school, mathematics were again said to be easier than in primary school because they were "just revising the same work", and the only new topic which anyone could name was pictograms. The grammar school group was more of a marginal case; although some differences in methodology were reported and investigations were new to everyone, there was a certain feeling of disappointment in the group about the lack of fresh material:

- In my primary school we did the same topics but they're just harder (here), but I thought we would have done different topics. We're just doing some different topics. *Like what?* I can't really think of any .*(Symmetry, area, maps and bearings, co-ordinates, algebra had all been done before).*

Although it might have been expected that the course in the grammar school where teachers believed it necessary to begin with, "Basic number facts and routine things like making sure they know their tables" might have bored the pupils, the only comment on revision in that school was favourable:

- "Some of the things that we've done in primary school, you need revision because you've forgotten and you have to revise before you go on to harder stuff. Which is good" (Grammar school).

The majority (12) of the groups who mentioned beginning with revision of primary school work spoke of topics being taken to more advanced levels in Year 8 than in primary school. In four of the groups, including the upper-stream group in a secondary high school who described their Year 8 course as "a wee bit harder", the amount of progression may, however, have been somewhat limited. Although most of the pupils' accounts of progression were stated very generally, as by the group in a non-selective school who said, "We're doing things we've already done, in more detail", there were two more precise examples. One was given by a grammar school group, who explained that, although they had added negative numbers in primary school, they learned how to subtract them in Year 8 and the second came from pupils in a non-selective school who had previously substituted numbers for letters in simple algebraic equations (e.g. $n + 10 = 12$) but were now learning to collect like terms.

Several other groups (discussed more fully in the next section) indicated that there were topics which they now understood for the first time after they had been revised in post-primary school. The repetition in such cases was obviously of value. Three groups (2SH and 1NS) commented on the greater variety of mathematical topics in post-primary school and for a lower-stream

[34]The symbol (•) denotes a new speaker in this and subsequent quotations.

group in a secondary high school, who had been more bored by repetition in primary school, the variety of topics as one of the features of post-primary mathematics which they liked best:

- You get more subjects. *More topics?* Yeah.....
- All we really did in primary school was multiplication, division and (things like that)

Had Pupils Understood Mathematics in the Upper Primary School?

The concern of many teachers in the survey that pupils were being hustled through the KS2 programme of study faster than they could cope is less well documented in the curriculum literature than, for example, the belief that much primary work is repeated at secondary level and it emerged as an important issue in this study too late to shape the design of the pupil interview schedule. Although there was a prompt on whether mathematics was easier or more difficult than in primary school and although pupils were free to mention any similarities or differences which they thought important, they were not specifically focused on how well they had understood mathematics in their different schools. In these circumstances, the three clear examples where pupils indicated that they had failed to understand topics in primary school because of the speed of delivery should be regarded as a minimum estimate of occurrence, There were also five less clear-cut cases where, for example, pupils said that teachers in the post-primary schools were more prepared to explain things to them or simply that they had understood a topic better in their post-primary school. One can only speculate whether more focused questioning would have brought more instances to light.

It was noticeable that none of the eight cases came from a grammar school although four or the less clear-cut ones were from non-selective areas. The three clearest examples came from three secondary high schools in different clusters, which would have no overlap in their contributory schools. Two examples are worth quoting: the first concentrates on the speed of dashing through topics and the second on the resulting imperfect understandings:

- We didn't spend enough time on the one thing the new things we were coming on to learn ... we didn't spend enough time on that, we just shot on to another thing and we had tests and we couldn't remember much, because...
- The teacher concentrates on you (here) if you have any problems.(Upper stream group, rural secondary high school).

- We didn't really do algebra in primary school, not that much of it, but we do it here and it is better.
- You know it but you don't really know it.
- You know algebra but you don't really realise how to do it properly. *So are you saying you did some in primary school but you did not really understand it then?* • Yes • Yeah..
- Miss B___ just talked and talked and talked until you understood it. And if you had a question about it, she would explain it and tell you.
- You work on it for longer than you did on primary school.
- In primary school we just skimmed through it, like we did just a few sums, but here you spend a month practically on one thing, like algebra. (Upper stream group, large secondary high school).

Ironically, however, the lower stream from the Greater Belfast school was the one group which said that the pace of work was too fast in the post-primary school. They presented a somewhat

worrying picture for pupils at their stage, which is reminiscent of the confessions of some of those primary school teachers who knew that their less able pupils were not coping well:

- Sometimes the subjects go too fast, like you don't get to .....
- You've just got to understand it when you go on to another one.
- And if you don't get some of the work copied up, you do it for homework.
- Or you'll just have to leave it. (Lower stream group, large secondary high school).

Pupils with Different Mathematical Backgrounds

In seven groups (3GS, 4SH) pupils spontaneously disagreed about whether or not they had studied particular mathematical topics in their primary schools. Since there were no specific questions on the matter — a checklist would probably have been best for that — the seven cases should be regarded as a minimum estimate of the problem and as giving moderate support to the post-primary teachers' complaints about the difficulty of finding a suitable common starting point for pupils arriving at different stages.

There was a slight difference of emphasis between the teachers' and the pupils' evidence. For the teachers, Algebra and Shape and Space were the ATs on which pupils' prior experience was most varied. The pupils, however, most often disagreed about their previous study of algebra and of the multiplication and division of fractions (4 cases each). There were also two references by pupils to decimals and one each to long division and to sums involving the measurement of time but none of topics within Shape and Space. The following illustration was provided by an upper-stream group from a secondary high school, who had just been discussing algebra, a topic new to two of them but rather more familiar (though previously not well understood) by the other three:

So what else have you been doing in maths besides algebra?

- Fractions.
- Dividing. *And is this new or different?*
- They are sort of new because we never spent time in multiplying and dividing fractions before.
- Oh, we did.
- We did.

Processes in Mathematics: Pupil Evidence

Evidence from both the primary and post-primary teachers suggested that the Processes in Mathematics AT had not always received as much attention as the NI programmes of study indicated that it should and, indeed, it did not appear to fit in easily with some informants' well-established classroom approaches. Confirmation for these suspicions were sought in the transcripts of the interviews with Year 8 pupils. These were scoured for references not only to investigative work, but to other practical experiences in mathematics in KS2 and Year 8 and to the ways in which pupils had communicated about mathematics in the classroom. Was there, for example, any evidence that the pupils had been, as laid down in the KS2 programme of study in mathematics, "talking and listening, discussing and asking questions, reflecting" or that they had been asked to "discuss, describe, compare and explain all aspects of their mathematics..." (NICC, 1992b, p5)? Similarly, were there signs that in Year 8 they were "talking and listening, discussing with other pupils and the teacher, reflecting" or "talking about work in progress and asking questions" or "presenting results in an intelligible way to others" (ibid., p8)? Although

the short but broadly-ranging interviews could not explore such issues in any depth, the three prompts on 'talking in maths classes', 'writing in maths classes' and 'books and other things used in mathematics' were considered to be very relevant here.

Investigations: Only in seven groups from four schools (2GS, 1SH, 1NS) was reference made to anything that might be regarded as an investigation and three of these cases were doubtful. One reference was to a primary school which had maths games every Wednesday when a different teacher came round. The clearest examples in post-primary schools came from an upper stream group in a secondary high school who had been gathering information and presenting data for a cross-curricular healthy eating project and from the two groups from the girls' grammar school who neatly confirmed what their head of department had said about the topics of their investigations (area, perimeter and symmetry), the pupils' enjoyment of such activities and their total lack of previous experience in primary school:

- And we've done this new course-work thing in maths. We'd never done course-work in primary school. *Did anybody do course-work in primary school?* (*Nobody had*)
- We hadn't even heard of it in primary school.
- We did two course work pieces, so we did, in this school. Area and perimeter, and symmetry.

While it was not expected that pupils would remember and refer to every aspect of the syllabus, comparisons can be made with the numbers of groups mentioning other mathematical topics: twelve for algebra, twelve for aspects of Shape and Space, ten for fractions and seven for long division. In none of these cases were the prompts as relevant as they were for investigations.

Equipment: When asked about the "books and other things" they had used in mathematics, about a third of the groups could name only textbooks, jotters, worksheets, pens and perhaps graph paper and calculators. Use of equipment which could facilitate learning in an experiential way was mentioned in about two-thirds of the groups. In the haste of the interviews it was not, however, always possible to determine exactly how the equipment had been used— whether in an investigative or a teacher-directed way — or indeed, in the case of such equipment as multilink, whether it had been used beyond KS1. For example, although some pupils had certainly used multilink only for the early stages of number work, in four of the groups multilink or 'cubes' were reported to have been used either in Year 8 or in the upper primary school to help pupils to visualise work in area or symmetry; in four other groups its use was unclear. Two findings, both of which run counter to the idea of smooth curricular continuity, were, however, evident.

First, in many instances only one or two members of a group could recall using a particular piece of equipment in primary school; this would suggest differences in the practices of neighbouring primary schools. Secondly, there were no clear patterns of progression between the primary and secondary sectors. Thus, of the four groups mentioning protractors, only one reported their use in both sectors; another group recalled using them only in their primary schools while in a grammar and a non-selective school they were new to the pupils in Year 8. Similarly, depending on the schools they had attended, Year 8 pupils might find the use of calculators to be new, familiar, more restricted than formerly or forbidden.

Talking in Mathematics: Only in four groups was there any sign of the kinds of discussion indicated in the programmes of study, i.e. discussions among pupils or between pupils and teachers, in which all were expected to participate, as an integral part of the lesson plan, rather than pupils just answering specific closed questions from teachers or asking help when in

difficulties. In each of the four groups pupils were contrasting their primary and post-primary classrooms. Both groups from the girls' grammar school reported considerably more discussion, especially in connection with investigations (known as coursework in that school), than had been allowed in primary school:

What about you talking to each other?

- We would, if we had symmetry, we would talk about how we would set it out because we had to make posters on symmetry.
- We discuss it here and in my old school it was really just the teacher who was talking - telling us what to do and then we did it. There was no real discussion about the topic.
- We wouldn't have groups in primary school. We would just work on our own.
- One of the best things about coursework is that you can talk to your friends about it.

In the other two cases — one from a grammar school and the other from a secondary high school some 70 miles apart — discussion had been a feature of KS2 but not KS3 mathematics for at least one member of the group:

- We don't really talk much here. *In primary did you?* • Yes.
- We had to talk a lot about it to see if you could understand it. (Grammar school)

- Well, we used to talk a lot in primary school like, we didn't do as much written stuff. *You used to talk about your maths?* Yes, just used to explain it and stuff...*Anybody else do more talking about maths in primary school?*
- Yeah, we did. • We did.
- (*The interviewer checks out that they were not chatting about TV programmes etc.*)
- Here you are expected to get on with your work without talking.(Lower stream group, secondary high school)

The pupils' main concerns raised by the prompt on 'talking in mathematics' were whether they were allowed to confer with one another about how to tackle set work, the protocols for seeking help from the teacher and the extent and clarity of the teacher's explanations. On none of these issues did any very clear pattern emerge. Some pupils could go up to the teacher's desk if they were in difficulties with their work while others had to learn to raise a hand and wait for attention. Pupils might have been allowed to confer in primary school only, in post-primary school only, in both schools or in neither. Not only might the members of a group have experienced different regulations about talking in primary school; if they were in different classes, they might be coping with dissimilar rules within the one school. The acceptance or indeed the encouragement of pupil talk in mathematics seemed to be a matter about which decisions were made by individual teachers:

If you're stuck, the teacher would call over a person who knows it and they would explain it to you. *So you help each other?* Yes *And would that have been the same in primary school?* Yes. (Lower stream group, secondary high school)

- You're expected to get on with your work. Because if you talked they'd think you were cheating. • Copying or something. *So in PS did you talk to each other about your maths?*
- Yeah.
- Sometimes.(Lower stream group in another secondary high school) (*Silence, then a sort of gasp.*)

- Well .. humm you're not allowed. (*giggles*)
- You're not allowed in primary school either.(Upper stream group, non-selective school)

Some pupils interpreted the question on 'talking in mathematics' in terms of teacher explanations to the class. Although it was normal practice for teachers to give a formal introduction to a new topic, teaching styles obviously varied:

> "In primary school he talked to us a lot about doing the sum but here he only talks to us about what to do at the start of the chapter. And if you are stuck in the middle and you are working on, you can go up to him. He would speak more with you rather than with all the class" (Grammar school pupil).
>
> "In the primary school Mr A__ used to explain everything but Mr F__ just makes us get our books and get on with it" (Upper stream pupil, non-selective school)..
>
> "In high school you can understand it much better. The teacher just explains it to you and you know straight away what to do. And if you don't understand you just ask the teacher" (Upper stream, secondary high school). .

Writing in Mathematics: It had been hoped that the prompt on 'writing in mathematics' would lead to useful pupil perspectives on recording investigations and whether this was found to be difficult. However, only four groups (1GS, 2SH, 1NS) mentioned this type of writing. These answers showed a lack of continuity between primary and post-primary experiences; the question remains as to exactly how (if at all) investigations were recorded in the secondary high school cited below:

In the investigations in our course-work (GS) we have to do the maths and then we have to explain how we worked out the thing. *Did you do that in PS?* No (Grammar school group)

- We did a lot of written work in primary school.
- We used to do a lot of problems and problem-solving but we just do the same ..
- We had to write it out in a sentence, and how we .... *Now or then?* • Then. *But not now?*
- No • No we didn't do that either.(Lower stream group, secondary high school)

Equally revealing were the ten groups who stated that they did very little or no writing in mathematics. If they were reporting accurately, this would be another pointer to the scant attention which appeared to be given to investigations in some schools as well as to a limited use of the means of communication in the programme of study.

- You don't really write. You just do sums.
- You just write figures and there's only ten different figures. And you are always using the same ones (Grammar school).

In about a third of the groups pupils explained that in their new schools they had to set out their sums clearly, showing all their working, whereas in primary school it had been sufficient just to write the answer. In five schools there was mention of copying down notes when a new topic was introduced although two pupils in a non-selective school said they had to write more notes in primary school and had less writing to do in their new schools.

Most and Least Popular Aspects of Mathematics

It will be recalled that there was a high level of consensus among the primary school teachers that the practical aspects of mathematics were the ones which their pupils most enjoyed, although a substantial number also mentioned data handling. The post-primary teachers also named data handling and investigations/practical work as the two best liked aspects of mathematics but mentioned them with almost equal frequency. The mathematical topics which teachers from both sectors identified as unpopular were fractions, decimals and routine work on the four rules of number.

When the Year 8 pupils were asked what they liked most and least about mathematics a different order of priorities emerged (Table 4.1). Teachers and their classroom styles were more often named as the best thing about mathematics than was any individual topic. Three of the seven groups who spoke of their teachers here emphasised how helpful they were, while a grammar school group were particularly appreciative of the systematic notes they were given and a lower-band group in a girls' secondary high school, some of whose members had previously been rather frightened of mathematics in primary school, appreciated the improvement in the classroom atmosphere:

> You enjoy seeing the teacher you get 'cos they're not rowdy and they don't really shout at you.

Two other teachers were, however, criticised, the one for going too fast and the other for boring anecdotes! It is also noticeable in Table 4.1 that the most common pupil response to the question on the least liked aspects of mathematics was to say that nothing was disliked. Eight groups gave such replies, of whom two also said that they enjoyed all or almost all their mathematics. Essentially negative attitudes seemed to be held in only two groups, both in non-selective areas, and by one grammar school girl.

Table 4.1 Numbers of Groups of Year 8 Pupils Mentioning Aspects of Mathematics as Most and Least Liked

Aspect of Mathematics	Most Liked	Least Liked
Simple Arith on 4 rules	4 (1GS#, 3SH)	1 (1SH)
Long multiplication	1 (1SH)	1 (1GS)
Long division	1 (1SH)	2 (1GS, 1SH)
Fractions	5 (1GS#, 3SH#, 1NS)	3 (2GS#, 1SH#)
Decimals	2 (2SH#)	2 (2SH#)
Algebra	2 (2GS#)	3 (2GS#, 1SH)
Data handling/ Probability	3 (1SH, 2NS)	1 (1GS)
Shape and Space	5 (2GS, 2SH, 1NS)	2 (2SH)
Investigations	3 (2GS, 1SH)	1 (1SH)
Computers/ Calculators	4 (2GS, 1SH, 1NS)	1 (1SH)
Homework	0	3 (2GS, 1NS)
Tests	0	3 (2GS, 1NS)
Mathematics now easier	3 (2SH, 1NS)	0
teacher/ teacher Style	7 (2GS, 3SH, 2NS)	2 (1SH, 1NS)
(Almost) everything	2 (1GS, 1SH)	1 (1 GS pupil)
Little or Nothing	2 (2NS)	8 (1GS, 5SH, 2NS)

= Disagreement within at least one of the groups.

Even among those pupils who answered in terms of mathematical topics, the pattern of replies was different from what the teachers had suggested. Perhaps it was because of the emphasis on number work in the early part of Year 8 in most schools that pupils more often mentioned topics on that AT than on any other. The balance of opinion here was more favourable than the teacher evidence would have suggested. Fractions and decimals aroused mixed reactions rather than general antipathy, while straightforward arithmetical calculations seemed to be more liked than disliked. The view of the primary school teacher, cited in Section 3.3.5 and who said that "good old sums" could be a very acceptable activity once pupils had gained competence, would seem to be corroborated. Algebra, however, was obviously a controversial topic for the pupils.

There were only four references each to investigations and to Data Handling; in each case one opinion was negative. In marked contrast to the findings on Number, these figures seem to indicate lower levels of interest and enjoyment than would have been predicted from the teachers' responses. The attainment target with the highest number of mentions, apart from Number, was Shape and Space. Three of the five favourable references here were to lessons involving symmetry; the two negative references were to area and triangles. Although four groups said they liked working with calculators, computers or having "more instruments", some pupils in a lower stream group in a secondary high school were "not too keen on computers".

It was not surprising that three groups found tests the least enjoyable part of mathematics, while three groups complained about the increase in homework. Of the three groups which liked mathematics because they were easier than before, two were in the schools where there seemed to be most repetition of the KS2 curriculum and the third claimed that they had now to do "less writing"; in these last three cases questions could be raised about the degree of curriculum progression that had taken place since transfer.

Favourite aspects of mathematics classes which were mentioned in just one pupil interview — all four cases being in grammar schools — were approximations, co-ordinates, hard questions which are a real (but manageable) challenge and discussing mathematical problems in small groups. Disliked aspects of mathematics lessons which were mentioned just once were co-ordinates, standard form, function machines, desks that were too small, having to climb up to the top floor and constant regrouping of the classes on the basis of test results.

Ease of Transition in Mathematics: Difficulty Levels and Availability of Help

Although a teacher's ability to give a clear exposition to the whole class was sometimes seen as a form of helpfulness, pupils most often thought of help in terms of extra personal contact when they had a problem with classwork.

In nine of the 23 groups pupils felt that they were getting more help with their mathematics in their post-primary schools than they had received in their primary schools. In five of these groups the post-primary teachers were said to be better at explaining mathematics and in three they were described as more patient:

> "In primary school the teacher might have said 'Right, I'm only going to say this once so listen carefully', whereas with our maths teacher she'd say 'If you can't make it out just put your hand up and I'll go over it again.' (Upper stream group, secondary high school)

In seven other groups the amount of help they were currently getting was regarded as perfectly satisfactory but either no comparison was made with the primary school or the primary school teachers had been equally helpful. In two further groups opinions were divided, probably because the members of these groups had different primary school experiences. There were, however, five groups from three schools (1GS, 1SH, 1NS) who found their mathematics teachers to be less helpful than their former primary school teachers. Among the specific foci of criticism were a secondary high school teacher who marked GCSE coursework during the Year 8 lessons and a grammar school teacher who spent much time pacing round the classroom whereas the pupils' primary school teachers would make more contact with the pupils. Two groups attributed the paucity of help to over-large classes; in one of these groups the complaint was about the current high school class and in the other about a previous P7 class where the teacher had been unable to give adequate individual attention.

In two groups — one from the lower band of a secondary high school and the other, perhaps more surprisingly from a grammar school — pupils had been afraid or embarrassed to ask for help in primary school but found it easier at post-primary level;

- Well it would tend to be that if he explained something (*in primary school*) and you put your hand up, the rest of the class would go, 'Oh no, it's him again'. *So it's easier to ask a question here?* (General agreement.)
- In primary school you would rather not ask a question because in the playground they would all be calling you names because you didn't know how to do it, like 'Stupid'. (Boys' grammar school)
- *Did they explain in primary school?* • I never used to ask them to explain. *Why?* Because I was, I was afraid. (*This remark aroused a good deal of fellow feeling amongst the others.*)
- Embarrassed. • That's the way I was, I was afraid of getting shouted at. *Afraid of being shouted at or embarrassed, which?* • Both. • Both.
- Because some girls in class were awful smart and they knew most of the stuff, so they did, and the teachers would have thought 'Why do they know it and you don't?' So you were embarrassed and frightened. (Lower stream, secondary high school).

Although most of the help described was given by teachers on a one-to-one or small group basis as part of the normal classroom lessons, in one secondary high school there was mention of an after-school class for pupils with difficulties. In three other groups (1GS, 2SH) pupils indicated that it was accepted practice to get assistance from another pupil and in two groups (1GS, 1SH) good clear notes which were useful for reference or revision were regarded as an important source of help. One grammar school pupil thought his teacher's specialist knowledge enabled him to give better guidance.

When asked to compare the difficulty levels of mathematics in their old and their new schools, fourteen groups (including all seven grammar school groups) thought that their Year 8 mathematics were at least slightly harder[35]* than what they had experienced before, four groups (from two secondary high schools) thought their mathematics were easier in Year 8 than in primary school, three groups thought the difficulty levels were about the same and in the remaining two groups opinions were divided. The word 'harder' was, however, often used to mean 'more advanced' rather than actually difficult and only in two groups both from the lower streams of secondary high schools, were there signs of any pupils already struggling with KS3

[35]Either unanimous or clear majority opinions.

mathematics. One was the group, already cited, where some pupils found the pace of work too fast; in the other there was disagreement about the helpfulness of the post-primary teacher. It was, however, also somewhat ominous if pupils said their Year 8 work was easier, since this type of answer occurred only in schools where the course so far had been almost entirely a repetition of primary school work. As one lower-stream group in a secondary high school, who had all been expecting mathematics in their new school to be 'harder' said:

> "It's easier because it is the same. Because we're learning the same thing over and over again, just adding, taking away, multiplication, dividing and long dividing."

A more usual response was, however, to see some progression in difficulty level, even if the beginning of the course had offered relatively few challenges:

- It's a little hard
- The start of the units are quite easy because you've done all that before but as you work your way through it, it gets a little harder.
- It goes into more detail here, which makes it harder. (Grammar school pupils)

Pupil Evidence On The Teachers' Concerns About Mathematics

Teachers' Concerns: In every cluster group at least one primary school informant was concerned that former pupils were spending much time in the KS3 years in needless repetition of what had been done in primary school. A number of the post-primary teachers, however, spoke of the difficulty of finding a common starting point for pupils who had different mathematical experiences in primary school. In both sectors a number of teachers feared that pupils were being rushed so fast through the KS2 syllabus that many could not keep pace and that pupil understanding was being sacrificed to the pressure of 'covering; the syllabus or of Transfer test preparation. Questions were also raised about whether investigations and the process-based aspects of mathematics were receiving adequate attention. Concerns about continuity and readiness for progression were therefore felt by both sets of teachers.

Pupil Evidence: The most common description by pupils of their first term or term-and-a-half of Year 8 mathematics was that it had begun with a recapitulation of primary school work but that they had since moved on either to more advanced work on the same topics or to new topics. There were, however, two groups in secondary high school which still seemed to be largely repeating primary school work, a grammar school group which was somewhat disappointed that there were few new topics and several other groups where the amount of progression was probably quite limited for many pupils. Only in six of the 23 groups was there mention of any type of mathematics that was new to everyone in Year 8 and in three cases this was to carrying out investigations in mathematics.

There was some support for the post-primary teachers' complaints of pupils arriving with different mathematical backgrounds in the disagreements that broke out spontaneously in seven of the groups about whether certain topics, particularly algebra and the multiplication and division of fractions, had been studied in primary school. Since the pupils were not specifically questioned on what they had and had not studied in primary school, these seven cases should be regarded as a minimum estimate of the number of cases where coverage of the KS2 syllabus had differed.

There was clear support for the teachers' fears that some primary pupils were being rushed through parts of the KS2 programme without understanding in transcripts from three secondary high schools, while pupils in another five groups spoke more generally of understanding mathematics better in their new schools. Again, since there were no questions specifically on the understanding of mathematics, these figures are another minimum estimate of occurrence.

At most seven groups, but including three doubtful cases, made any mention of investigations or process-based work in mathematics in either primary or post-primary school, as compared with the twelve groups which referred spontaneously to algebra. This was despite the inclusion in the interview schedule of questions on 'things you do' in mathematics, on equipment used, on talking in mathematics and on writing in mathematics, any of which might have been expected to prompt pupils to speak about the Processes AT rather than any other. Only four groups mentioned discussions as an integral part of mathematics lessons and only four groups described any kind of writing which appeared to be related to experiential work. On the positive side, both groups from one grammar school, none of whom could recall any investigations in primary school, showed evident enjoyment of the 'coursework' exercises which they were now sometimes given and for which their teachers said they had fast developed an aptitude.

Despite primary school teachers agreeing that their pupils most enjoyed the practical aspects of mathematics and post-primary teachers suggesting that investigations and data handling were the two most liked activities, only in three groups each were investigations and data handling identified by the pupils as among their favourite aspects of mathematics; in each case another set of pupils said they did not enjoy the activity. This may be another indication of pupils' paucity of experience of investigations. Basic number work appeared to be better liked than many teachers thought, although there were very diverse views regarding algebra and fractions. The aspect of mathematics most often named as the 'most liked' was in fact the teacher. A third of the groups could name no aspect which they particularly disliked.

In nine of the 23 groups pupils said they were now getting more help with their mathematics than when in primary school and in another seven groups teachers were also praised for their willingness to explain things again. There were, however five groups from three schools where pupils were agreed that there was less help than in primary school. In a few classrooms it was recognised that help might be received from pupils as well as the teacher.

Although 14 of the 23 groups judged that mathematics had become at least slightly harder in Year 8 than in primary school, only in two groups were there any signs that pupils might be having real difficulty with the subject. In one case the pace seemed to be too fast for a lower stream group in a secondary high school. The four groups where it was agreed that mathematics were easier in Year 8 were in the schools where there appeared to be most repetition of primary school work and least progression. Since in pupil language 'harder' appeared to mean more advanced or more adult-like rather than actually difficult, perhaps those pupils who described Year 8 mathematics were 'harder but not too hard' were indicating approximately the right amount of challenge.

4.4: Science in Year 8

4.4.1: Science Teachers' Evidence: Relationship between KS2 and KS3

Two well-known and well-documented facts recurred frequently in the science teachers' answers to several of the interview questions. Firstly, and rather obviously, most post-primary science is laboratory-based whereas most primary schools have far fewer science facilities and only fairly simple, low-technology equipment. Secondly, because primary science is a fairly recent innovation in many contributory schools but a well-established subject in others, entrants to a post-primary school tend to arrive with a wider range of previous experience in science than in either of the other two core subjects.

Continuity or Fresh Start?

The head of department in a non-selective school was the only science teacher to claim that their course was a true follow-on from Key Stage 2. She produced a departmental policy document which recognised that pupils now arrived with appreciable scientific knowledge and which recommended starting a topic by finding out what the pupils already knew; however, while that would be her own approach, even she could not guarantee that her colleagues, none of whom was interviewed, always did likewise. There were three other teachers (including two from a boys' grammar school) who would have liked to think their courses were a good follow-on from P7 work but they admitted that they did not know enough about the primary science courses in their area to be sure. Three further teachers, each from a different school, thought their courses followed on well in content but that the different skills and methodologies needed for post-primary science would make the subject seem new to entering pupils. Although the extent of the change could be disconcerting, one of the three could also see its advantages:

> "We like to think that it is a natural progression from Year 7 in science. That's not always possible. The things that we have in school, for instance the laboratory and facilities that we have make it impossible for the primary school to teach science the way we do. The pupils very much enjoy the use of the Bunsen burner, for example, and that would be the biggest change as far as they are concerned and I would tend in practice to start off with the Bunsen burner and use it as much as possible, because it does give the children the sense that this is something new. So there is a fresh start idea and they do see science as a different subject with a lot of fun attached" (Science teacher, School SHE9, secondary high, Greater Belfast).

As with mathematics, about two-thirds (15) of the science teachers saw Year 8 as mainly 'a fresh start' and, as with the mathematics teachers, they used the term in different senses. Among the science teachers, however, the sense of the term that predominated and which was found in all three types of post-primary school was that of starting the Year 8 course from a common baseline, usually set at a predetermined level of attainment. Often this was a compromise solution to the problem of pupils arriving with different science backgrounds and in some, but not all, cases it was viewed as an imperfect solution.

> "I think it's probably a fresh start. I wouldn't see that as ideal. One of our problems is the fact that we've got so many contributory primary schools, that really we feel that it's the easiest way. Because there are such differences" (Head of Science, non-selective school).

> "I really don't look at all really as a follow-on from Year 7. I mean I know we follow on as regards the curriculum, but I'm not looking to start where they left off at all... I mean, we're just straight into a new topic, probably a fresh topic to most of them. And we don't necessarily consider an awful lot what they have been doing...They haven't all done the

same thing so basically we start at level 3 in a certain topic" (Head of Science, non-selective school).

Four teachers – two from grammar and two from secondary high schools – felt that they could make no assumptions about anything been known to all class members and so for them a 'fresh start' meant starting all over again, taking nothing for granted:

> "We treat them as knowing nothing when they come in and make a fresh start. We don't assume any previous knowledge" (Head of Science, grammar school).

At least two of the four would, however, adapt their presentation of the lower levels of a topic when the pupil response indicated a good prior knowledge.

Only one science teacher used the term 'a fresh start' in the sense of trying to make the subject seem fresh and new in order to encourage disenchanted or apprehensive pupils, although this had been the most common interpretation of the term among the mathematics teachers. That one science teacher was the head of department in a secondary high school, who was repeating part of the school's philosophy about the need to remotivate pupils after possible 11+ disappointment.

Although some science teachers regretted the limited degree of continuity with KS2 which they managed to achieve, others thought that the transition to post-primary school should bring more change than it currently does. One head of department in a grammar school thought it "nonsense" to have physical science in the primary school curriculum, while three other teachers thought it would have been better if primary science had retained more of its original biological emphasis. There were also occasional fears that putting science – and especially physical science – into the primary curriculum deprived post-primary schools of what in the past had been one of their best ways of seizing the imaginations of new entrants:

> "It used to be that science was seen as being, everything was new to primary school kids coming in. They used to do nature study before. So that kind of magic is gone, which I think , well, maybe 'resent' is too strong a word but it's certainly not something that we like" (Head of Science, non-selective school).

> "I feel that the work that they do in primary schools would be better left to us and some of the work that we are almost being forced to do would be better left to the primaries. Like nature study . They come here and they're not maybe familiar with their own native trees. Though it varies from primary school to primary school.... But to me that's the ideal thing for the primary schools. The children are really interested in that sort of thing and it wouldn't clash with us. I feel that it's a bit too babyish almost for our level and yet somewhere along the line they should be taught a little bit about their own native country, plants, animals and so on... .Whereas they seem to be putting a lot of emphasis on chemistry, dissolving things,.. work that we would do all over again" (Head of Science, junior high school).

Similarities and Differences between KS2 and KS3 Science: Teacher Evidence

Two science teachers felt they knew too little about primary school science to discuss usefully how it differed from science at KS3 and another four teachers, who did reply, admitted they had little first-hand knowledge on which to base their answers.

All except two of the 20 teachers who responded spoke of major differences concerning practical work in primary and post-primary schools. Ten teachers pointed to their laboratories and their greater wealth of apparatus. Even going to a special room to do science would be something new for the entrants. An equally frequent type of reply (from ten teachers, eight of whom made no mention of the obvious physical differences of laboratories and equipment) was that secondary science is an altogether more practically-based experience whereas primary science is more theoretical or more didactic or more a case of simply learning up facts. Although preparation for the Transfer test was sometimes blamed for the latter type of difference, replies of this kind also came from two of the schools in non-selective areas.

> "The main difference is that you do it in a lab here, with more practical work instead of just learning things off, as they do in primary science" (Head of Science, non-selective area).

> "We find that primary science tends to be taught as a sort of theory exercise. Secondary science would be more practically oriented. They come with very little practical experience. Most of the work seems to have been done as a demonstration to them" (Head of Science, secondary high school in a disadvantaged area).

> "In the upper primary it's a case of rote learning: learning the structure of the body, learning the phases of the moon. .... The actual investigative part is left to the side. So when they come here we would very much in our department be working on investigations and learning through experience and through experimental work which I feel is lacking in primary school" (Science teacher, secondary high school).

Echoing some of the answers to the question on Fresh Start versus Follow-through, three teachers from secondary high schools explained that, despite the differences of methodology and approach, there were similarities of content between KS2 and KS3 science:

> "Well I think that content-wise probably we're trying to get across the same type of content as what they would be doing, I would imagine, in the upper primary school. But in a widely different fashion. We would base it very much on the practical, investigative approach, trying to get across some of the key concepts and really building for a future, building blocks" (Head of Science, secondary high school).

In one grammar school where physics, chemistry and biology were taught as separate subjects from Year 8, this was pointed out as an obvious change for the pupils, especially since each teacher saw the pupils for only a double period each week. Among the replies from individual informants, a teacher in a secondary high school believed that science was more integrated with other subjects in primary school and a grammar school teacher thought that their practice of having pupils working in groups – unlike most departments in the school – would remind pupils of their primary school days.

4.4.2: Science Teachers' Evidence: Perceptions of Entrants

Estimated Levels of Entrants in Science

The estimated entry levels suggested by the science teachers presented a less clear-cut picture than did those for mathematics.

In one of the four grammar schools, it was believed that the entering pupils were mostly level 5 on entry and that virtually all were immediately capable of level 5 and 6 work. In a second grammar school the average was thought to be level 4, with some entrants at level 5 and others – mostly from small rural schools – below 4. Science teachers in the third grammar school – the one with the highest proportion of grade A entrants – reckoned that most, but not all, pupils had reached level 4. In the fourth grammar school, where the philosophical basis of the levels was heavily queried, the levels 4 and 5 suggested on Transfer Reports by primary headteachers were greeted with total scepticism ("Whatever level 4 is, they are not there yet") unless, as one teacher suggested, much was forgotten over the summer holidays; only some of their entrants were judged to be at level 4.[36] The estimated median levels in the four grammar schools therefore ranged from 5 to under 4.

In three of the secondary high schools, the top stream class was estimated to have entered at "3 to 4", with lower stream pupils at level 3 or below. The fourth secondary high schools regarded most pupils as capable of a course beginning at level 3. In the fifth secondary high, the HOD judged the top pupils to be at level 3 but the other teacher thought that a few entered at level 6, which was a higher level than three of the grammar schools suggested for any of their pupils; both teachers were agreed, however, that there was a huge range of ability in their classes.

In the junior high schools the typical entrant was thought to be at level 3 but in the comprehensive school (in Cluster H) the suggested median level was "3 to 4"[37].

Levels in Exploring and Investigating in Science

Four science teachers said they had so far done insufficient investigative work—as opposed to straightforward practical work— to gauge their pupils' levels on AT1. All except two of the other 18 science teachers thought their pupils less advanced in AT1 on entry than on the others ATs, although only three ventured to estimate an actual level.

Pupils' initial lack of competence on AT1 was sometimes attributed to their lack of 'hands on' experience when in primary school, if their teachers relied mainly on demonstrations, and sometimes to a more general neglect of the attainment target:

> "I wouldn't say that it's not going on in the PS but it's difficult for them to get used to the way that investigations are followed here. But certainly I find that they find it difficult even to follow a list of instructions in a practical exercise" (Science teacher, secondary high school).
>
> "I'm not actually sure there's an awful lot of practical work going on in the upper primary school, like real practical work. They're being told, for example, the parts of a flower, from a diagram. They're being told that a force is measured in newtons, things like that rather than actually investigating and experimenting with that" (Head of Science, secondary high school).

The post-primary teachers obviously did not expect entrants to arrive with good laboratory skills but they often perceived their new pupils to have more limited abilities than they would have

[36]This was one of the schools which preferred to start science afresh in Year 8, assuming no existing learning.
[37]It is, of course, appreciated that with criterion-referenced testing such answers as "3 to 4" are not strictly appropriate. They were, however, given and, as they convey a distinctive flavour, they have been cited.

hoped in the other stages of carrying out their investigations: planning, presentation of findings and reporting.

The two informants who regarded their entrants as at least as advanced on AT1 as on the other ATs were both heads of department in grammar schools. Although one of them described the Year 8 girls as particularly apprehensive in their first practical lessons in a laboratory, other elements from the KS2 programme were firmly in place:

> "But, most important, all have a very good idea of fair testing, which I am delighted about. Certainly, that makes any further development very easy for us."

Effects of the New Style Transfer Tests

While three of the sixteen science teachers in selective areas had not noticed any effect on their entrants' knowledge and understanding as a result of the new style of Transfer tests, several others suggested that they had led to an increase in pupils' scientific knowledge. In further discussion, however, it sometimes emerged that the teachers had seen a steady gain over a number of years rather than a marked change in the 1994 entrants and so the cause was as likely to be the KS2 programme of study 'bedding down' as the new tests. In both post-primary schools in Cluster A, however, it was observed that for the first time all entrants had done some science in primary school. Since science did not appear to be well established in two of the three primary schools participating in the study, the tests may well have had a greater impact on primary science in that cluster than elsewhere:

> "Well, it has made them do science in primary school. They have actually had to do some, whereas before that they tried to escape from if it wasn't compulsory" (Head of Science, School SHA1, secondary high).

The science teachers were even more critical than were their colleagues in mathematics of the difficulty of many of the Transfer test questions and the implications of that for preparation. Teachers in both grammar and secondary high schools pointed to items requiring detailed factual recall but no reasoning and to questions, such as one on sound waves, which involved concepts that no pupils aged 10-11 could be expected to understand. Being unlikely to instil the necessary understanding, the primary teachers were perceived as having to rely on massive amounts of rote learning. The situation was made worse by some of the commercial test booklets available which demanded recall of even more advanced facts than did the actual Transfer tests. These science teachers' perspectives were often similar to those of some of the primary teachers quoted in Section 3.4.3:

> "I'm very conscious of.. the amount of cramming and learning that some of them have been made to do for the 11+. And I've seen the booklets... with these science diagrams and detailed drawings of the digestive system the eye the ear, things that have been taken off our GCSE course because it's too difficult.. learning these off, learning how to spell words .. like labelling an eye diagram, words like sclerotic, the cornea, and they have to learn these words at a time that is not realistic at all... I think the new curriculum, now it's streamlined, will take a lot of that away, in fact I think they've put those diagrams at a higher level" (Science teacher, secondary high school).

One science HOD had an insider's perspective on Transfer preparation:

> "My daughter was doing it this year so I know what the questions were like. Certainly, some of the practice tests they were doing, there is no way she could have understood them. I told her the answers to them and she kind of knew the answers but there is no way she could have understood them." (Head of Science, secondary high school).

In views comparable with those often voiced by primary teachers and post-primary mathematics teachers, several of the science teachers spoke of investigative work and conceptual understanding suffering under the pressure to impart factual information in P6-P7. The lack of understanding was, however, seen to have rather different consequences in mathematics and science. In mathematics the main dangers were confusion and alienation in pupils who went to secondary high schools. In science a more likely consequence was that pupils might mistake their superficial acquaintance with a topic for an understanding adequate for Key Stage 3 and fail to appreciate that they had still much to learn.

> "They've rote learned without having any conceptual understanding. They learn the structure of the flower, the parts of the body .. and no understanding behind it. And then .. when you do come to do these things it's, 'Oh we've done that already.' 'I've done that, why am I doing it again?' (Science teacher, secondary high school).

> "I would feel that perhaps in the past the science that we had was more exploratory... I think teachers are now concerned that they won't get the content covered and this may prevent them from allowing the children to do practicals... I think it's just, really, it's working the system. Because parents wouldn't thank a teacher who gave the child wonderful exploratory methods but hadn't the content and wouldn't pass the Transfer Test" (Science teacher with liaison responsibilities, grammar school)).

Entrants' Familiarity with the Year 8 Science Course Material

In eleven of the twelve schools at least one science teacher acknowledged that pupils were now arriving with an appreciable science background while in the twelfth, a school in a non-selective area where the science department preferred to 'start afresh', the principal had observed that, for the first time, in the current year all contributory primary schools had been able to include a grade for science in the record card sent to the post-primary school.

The general view among the post-primary teachers was that entrants' knowledge of science had been increasing steadily over the previous three or four years as the NI curriculum became established but that there were still very marked differences between contributory schools. However, the magnitude and sometimes even the nature of the differences was changing. Whereas once the difference had been between pupils arriving with 'some science' and 'no science', by 1995 they tended to arrive remembering about different science topics, perhaps as a reflection of the particular interests of their primary school teachers. The result was that the announcement of almost any new topic could be met by some pupils —but not always the same pupils— claiming to know about it, while it was patently new to others. Pupils' prior knowledge was often unpredictable:

> "It just depends on the school and I suppose the teacher they've had and his or her enthusiasm for science. We do find some big deficits in what they should have covered and what they're supposed to have done" (Science teacher, secondary high school).

From remarks volunteered by the teachers (rather than from any kind of checklist) it appeared that practical measurement, human biology and electrical circuits were among the topics with which pupils were most often familiar whereas the topics on the Materials AT appeared to be the least well known. In six of the schools (only one of which was a secondary high school) it was volunteered that at least some of the pupils were arriving with sound ideas about fair testing, which would not have been the case in the past.

The depth to which topics had been studied in primary school also varied. Occasionally pupils had already covered as much of a topic as was on a Year 8 or Year 9 syllabus. More often, the previous coverage was described as quite shallow, leaving pupils with a nodding acquaintance with some of the terminology but with little conceptual understanding.[38] This could happen in non-selective as well as selective areas and so was not always the result of skimming through advanced topics in the course of Transfer preparation, although the effects on pupil motivation could be equally unfortunate. It was also suggested – as would accord with most theories of learning – that only the abler pupils might recall much about the scientific principles taught in primary school, whereas the less able might be able only to recognise some of the vocabulary and to remember aspects of any experiments done in class.

> "They have touched on topics like photosynthesis, which really we wouldn't touch till Year 10. Some of them have actually done it, in preparation maybe for the 11+. And they have heard the words, and they think they know all about it but really they don't understand it...Some children come in with all these words and ideas but they have done little or no practical work on it" (Head of Science, secondary high school).

> "They are familiar with the work and that's the problem I think: because they are aware they've seen the things before or they've heard some of the words. They switch off because 'Oh I've done that' There's a lack of motivation in that.... they've heard the key words and don't realise perhaps we're trying to build on that and take it just that bit further" (Head of Science, non-selective school).

The areas where deterioration, rather than improvement, in entrants' attainments were most often recorded were not any parts of science itself but the basic skills of mathematics and writing. Two teachers – one in a grammar and the other in a secondary high school – thought that entrants' practical skills had notably failed to show any improvement in recent years:

> "There are things that I feel have been lost in the upper primary...We would encourage them in science, it's all about observing, and thinking of ideas and testing them. ...They should be doing that down in the primary school but I think they've more focused on learning off wee bits of information...The observation and the planning and the doing...they don't know any more than they did 10 years ago" (Head of Science, School SHD6, secondary high).

Perceptions of the Main Pupil Difficulties with Year 8 Science

Disappointingly low levels of pupil competence with the tool skills of mathematics and, especially, English were mentioned far more often by the science teachers than any problem in understanding the KS3 science programme of study. Aspects of language were identified as a major difficulty by 15 of the 22 science teachers from ten of the schools, although the nature of

[38] A similar response was noted by Jarman (in press) from a different sample of Northern Ireland teachers.

the difficulty varied with the ability level of the pupils. Thus, in one of the grammar schools the pupils' main problem was seen as developing an appropriate formal style for recording experimental work whereas in one non-selective and two secondary high schools it was reported that many pupils had difficulty with the basic sequencing and structuring of a report, even when simple headings, such as 'What I did' rather than 'Methodology', were used. While ten teachers spoke of various difficulties in compiling a report, five regarded their pupils' main problem as coping with – and in particular spelling – new technological terms. The most serious literacy problems were found in one of the secondary high schools:

> "In one of my classes I've got boys who .. can't read. They can copy down but they don't know what they're copying down .. it's a mechanical exercise. And I find that very hard to deal with because I don't have the time. If I was given the time I could take them through things.. making science relevant to them. They want to get on and do things but .. they're just so terribly handicapped, not able to read a simple work-sheet" (Science teacher, secondary high school in a disadvantaged area).

Five teachers were concerned about their pupils' attainments in mathematics, although, as with language, the expectations of pupil competence differed. One grammar school teacher was disappointed that many Year 8 pupils, given a formula such as M/V = D, the volume and the density, could not readily find the mass whereas in secondary high schools some pupils had not fully mastered the four basic operations.

Specific areas of content were more rarely identified as problematic than were basic skills, although measurement units—especially units of area and volume—caused considerable difficulties in three schools, while two teachers said that their pupils were confused by the terms 'mass' and 'weight'. In one grammar school a unit on states of matter was judged to be too demanding for many pupils and probably in need of revision. Four teachers[39] identified the designing of investigations—as opposed to carrying out simple instructions for practical work—as one of the hardest things for their pupils.

4.4.3: Science Teacher Evidence: Year 8 Curriculum and Strategies

Deciding Where to Start

Perhaps because science teaching demands considerable forward planning and the organisation of equipment, the science teachers were more likely than the other subject teachers to say that they "just started" at the beginning of the school's Year 8 syllabus, perhaps adding, especially if they were heads of department, that the scheme had been designed to operationalise the Northern Ireland KS3 programme of study. A typical reply was:

> "Well we start obviously from our departmental scheme and we've already worked that out from the KS3 study programme and basically we take it from there" (Science teacher, School SHA1, secondary high).

In most cases the whole year group, with the possible exception of any remedial class, appeared to start off from the same level, even where Year 8 was streamed or banded. Apart from one teacher in a secondary high school who said be began at "level 3 to 4", all science teachers in

[39]Several other teachers spoke elsewhere of the difficulties their pupils had in planning investigations but identified something else, in two cases writing up investigations, as an even greater difficulty.

secondary high and junior high schools reported beginning at level 3. In the comprehensive school – the only school claiming a true follow-on from KS2 – the starting point was "basically level 4 but maybe dipping down to level 3". There was greater variety in the replies from the grammar schools. Two gave their starting point for science as level 5 (although one of them began mathematics at "level 3 to 4") and in a third it was level 4. The fourth grammar school, where science was 'started afresh', literally began again from level 1, although the early levels would receive only rapid revision if the pupils showed that they had mastered the material in them. A Physics teacher in that school explained how he would introduce a new topic:

> "For instance, if I were teaching Sound, if I remember, in the primary school they should have learned that you need to have a vibrating object to produce a sound. And I would ask what things they had done in school to produce a sound. And they would talk about a drum, cymbals and so on and we would discuss that. And then I would introduce some of the technical language they might not have used before; they might just have called it 'hitting a drum makes a sound'. So I would introduce words like 'vibration' and things like that and we would talk that way. So it is a gradual thing but I would make sure that I relate back to what I think they might have learned in the primary school. And you get pupils who put their hands up and say, 'Oh yes, Sir, we did that ' but others say, 'No, **we** didn't'. So I have to say, 'I am sorry but you'll have to bear with me but I really have to expose everybody here to this. I have to get through this' (Physics teacher, grammar school).

The above quotation also illustrates two frequently recurring ideas in the interviews with post-primary teachers: (a) the varying levels of knowledge with which pupils arrive in a Year 8 class and (b) the belief that, unless virtually all pupils knew the material in a section of the syllabus, it has to be taught again to the whole class.

In all post-primary schools except the comprehensive school in Cluster H (where a similar unit was scheduled for rather later in the term), the Year 8 science course began by teaching practical skills and rules for laboratory safety. This might be either a small separate unit or linked to a larger unit on measurement or chemistry. Several of the science teachers spoke of their entrants eagerly anticipating lessons in a laboratory and, in particular, looking forward to using the Bunsen burner, almost as a symbol of the transition to post-primary school.

> "But certainly some of them when they come in the main thing all they want to do when they come in here is 'When are we using the Bunsen?' They see the Bunsen as being the be-all and end-all of science" (Science teacher, School SHC5, secondary high).

> "The last year or so we have moved the kids straight into chemistry. Just, setting up apparatus, separation techniques, because that would involve the use of beakers and funnels and all that, and the idea of safety ...Their expectations are very high 'We want to be doing something that's very sciency'. So we would move into that AT early on. It mightn't be the easiest one but it certainly is the one that we would feel gets them off on the right foot in secondary school" (Head of Science, School SGB3, grammar school).

Although the Head of Science in a girls' grammar school found many pupils apprehensive of the dangers of burns and broken glass, in certain other schools it was only too obvious why the science teachers put laboratory safety very high on the Year 8 agenda:

> "They don't realise the safety requirements that we need in the laboratory. Everything has to be touched. They want to play with the water taps; 'What's in that there? Is that alcohol? Can I drink it?' They've had such freedom with the low power equipment that they had in the primary school that they feel that the same standard should apply in the laboratory. So our first week with Year 8 is safety, hazard symbols, safety techniques" (Head of Science, School SHE9, co-educational secondary high school).

While there are many excellent and obvious reasons for beginning with a unit on laboratory skills, such a choice of initial unit does, however, emphasise the difference between primary and secondary science. In the selection of material from AT2 to AT5 for the first term, however, several teachers—including the Head of Science of the one school which did not begin with laboratory skills— sought to build on areas where the children were likely to have some prior knowledge :

> "Also in September we would start with either Materials or Forces and Energy. Both may have been looked at in a minor way in primary school. The general consensus of the staff was that we should get to grips initially with things they had either done or at least seen on TV" (Head of Science, School SHC5, secondary high).

> "We start with classification; the kids are very familiar with that one...It deals with mammals and reptiles and so on... We start with one that they're very comfortable, because they've seen it all before. The particle theory looks a bit difficult there but liquids, solids, gases are something familiar and we're trying to build that up into particle theory. We would tend to start from what they know" (Head of Science, School SNH12, non-selective).

Not all the early units were based on familiar topics, although the issue was not pursued in detail in every interview. For example, a science teacher in a grammar school, spoke of the increase in responsiveness from her Year 8 class when she turned from kinetic theory, a new topic which they found rather difficult, to electricity, on which they had nearly all done some work in primary school.

The Year 8 Science Curriculum

With the exception of the grammar school which taught the three sciences separately from Year 8, the post-primary schools divided their Year 8 course into units on different topics, which might last from a few weeks to half a term. All schools seemed to aim to secure a balance from the different ATs by the end of the year, although at the time of the interviews it was usual to find that they had been concentrating on the physical sciences during the winter months. It was also quite usual for there to be no fixed order in which the units had to be followed by all classes, so that fewer sets of apparatus would be required.

Exploring and Investigating in Science in Year 8

Despite the focus in every school on laboratory skills at or near the beginning of Year 8, in four schools (including two grammar schools) doubts were heard about the value for younger pupils of AT1 in comparison with straightforward practical work. The emphasis on designing investigations, drawing conclusions and careful writing up were felt to be too time-consuming or too daunting for pupils of that age:

> "It is fine if **you** are running the experiment and you say how it is going to be, then they can work reasonably happily. It's where they have to design the experiment for themselves. That is difficult. They are very young and their experience is limited. Their difficulty really does not surprise me at all. Even at Key Stage 4 pupils have major difficulties with AT1... I don't think it is the right method at all. This idea of pupils being able to design experiments the way a professional scientist would do it, I think it is asking an awful lot of pupils of their age and experience. They really are lacking in experience" (Science teacher, grammar school).

> "Now the problem with AT1, whether it's upper primary or form 1, is that it can actually have a fairly stifling effect.. Children cannot really embark anymore on intuitive practical work. 'Well come on and we'll all find out what's happening here.' which is a phrase we would have used in science. It's now like 'Take out your pens and we'll plan what might happen and hypothesise'.. Important, yes, but there has to be room in science for impromptu practical work. And it shouldn't always be this.... because at the end of the day there are very few scientists have to plan out investigations." (Head of Science, secondary high school).

> "They wouldn't have done much in PS. It is hard anyway at that stage.. Even when they come here we wouldn't give them too much of that, I think you would dishearten them. There's certain places in their booklets where they have to write down what they did. But there wouldn't be too much emphasis put on designing their own experiments... Later on in other years, certainly they could cope with that easy enough. . I myself haven't done a lot in AT1, I would gear it more to the actual content work... I mean we design our experiments or whatever and they do them at the start and then later on they design their own... I know I'm going to have to change my mind, but .." (Science teacher, non-selective area).

In all types of school, pupils were seen as needing a good deal of help and guidance with AT1 although, unsurprisingly, the less able the pupils, the more help they needed in planning their investigations:

> "It's very hard for them to get the concept of planning, the whole idea of a hypothesis. With our sort of boys I find you have to give them a lot more guidance, a lot more hints but I suppose it's only to be expected. Even our fifth year find it very hard to do that type of investigation" (Science teacher, secondary high school in disadvantaged area).

Progress was generally faster and easier in grammar schools. Indeed, one grammar school teacher reckoned that, although pupils arrived at about level 4 on AT1, by the time of interview in mid-December, the had advanced to "5 to 6" and some would be capable of level 7 by the end of the year. Another grammar school teacher used a novel way of helping pupils understand how (or how not to) design an investigation:

> "I have adopted a bizarre scheme by demonstrating an experiment badly and asking them to criticise and say why the conclusions were not valid. And that seems to work. Sloppy techniques, measuring out the wrong volumes and different volumes and shaking one but not the other and so on. So they can point out the deficiencies of my technique and that helps to hone their own."

As was evident in the section on entrants' difficulties, most pupils needed a good deal of help in recording their investigations. In some schools this was treated as a priority, even in Year 8:

> "It appears that they do not get into the idea of report writing in primary school... But we have to get on to it pretty sharp so we focus on it in September . They find that quite difficult.. It takes a long time for the idea of report writing to become second nature to them, to know the procedure, the process.... It's the structure,.. the plan, how they set it up, how they carried it out and at the end a review of the procedure, an evaluation. It's just 'what we did, what happened and why.'.. They often leave out the 'why'' (Head of Science, grammar school).

> "They have to be exposed to good models of writing and the teacher has to write up what is an appropriate example so that they can copy it at first and then develop their own style. It is not 'I did this and Dr G.. did that' or 'Dr G.. gave me 5 gm of such and such'. I tell them it is like a recipe: 'Take 4 eggs, measure out half a pound of flour' and so on and they have to do that. Set up the apparatus, do a diagram, measure out 25 cc of whatever. If they apply themselves, they can pick that up but it is not a quick process. It has to be worked on" (Head of Science, grammar school).

> "You have to instil this whole approach in them, the way in which you want them to write things out.... Some of them find that difficult. You'll see results down first and the diagram at the end... You have to remind them the order: apparatus, methods, results and conclusion. Drawing conclusions is difficult for a lot of them. Even beyond first year as well" (Science teacher, secondary high school).

Although the matter was not checked out with every informant, some other teachers required much less writing, especially from lower stream classes. These pupils might, for example, have only to complete a skeletal work-sheet. One teacher in a secondary high school would make out tables for less able classes which would require only minimal writing for completion; for instance, if describing the Bunsen flame, they had only to write the colour names in the appropriate boxes. Another teacher expected pupils to copy rather than compose:

> "They don't like doing a lot of writing, especially in first year. But we don't expect them to do a lot of writing. It's difficult enough sometimes to convince them that they have to copy things down accurately" (Head of Science, non-selective school).

The Overlap between KS2 and KS3

As already indicated, virtually every Year 8 science teacher had to face the problem of pupils arriving from the different contributory schools with varying amounts of prior knowledge of parts of the of the KS3 curriculum. Nor were the teachers always able to predict which areas of the Year 8 curriculum had been taught in primary school, let alone how thoroughly. Few, if any teachers, seemed fully comfortable with this situation.

Although pupils might be regrouped for science because their usual classes were too big for a laboratory, the possibility of grouping Year 8 pupils for science by their former primary schools did not appear to have been contemplated anywhere. Integrating pupils from different contributory schools obviously had priority over reducing the variance in previous science experience.

In the majority of schools there was evidence of teachers introducing a new topic by enquiring what the class already knew, like the grammar school Physics teacher describing his first lesson on Sound. If the whole class seemed reasonably familiar with the more elementary stages of a topic, these might be revised very rapidly, mainly to remind the pupils of the key points. However, as soon as material was reached which was unfamiliar to a sizeable proportion of the class, the usual procedure was to teach it to the whole class. Although this was sometimes (if not usually) done in a straightforward didactic manner by the teacher, the Head of Science in a secondary high school (SHE9) would try to keep the more knowledgeable pupils actively involved:

> "I start asking them questions about what they know and very quickly I discover how deep the knowledge is or how if there's any depth at all. .. If they had gone quite far with something I would pick up where they left off, and I would quickly with the rest of the class, get them to help me tell the rest of the class what they'd learned....Then I would make sure the others felt happy with that before I went any further."

A few teachers spoke of methods they had devised to prevent their early lessons from being too tedious to pupils who arrived with a basic understanding of the topic. A teacher in a secondary high school (SHC5) who mentioned extension work for those who were further ahead was, however, the only one to describe any kind of differentiation for this purpose. Two other teachers would try to take the topic a little further than any primary teacher was likely to go; for example, when teaching measurement in another secondary high school (SHB4) to a top stream class, many of whom were already competent with the measurement of regular shapes, the Head of Science would include such challenges as finding the volume of a stone or the thickness of a page of a book. The teacher with responsibility for junior science in a third secondary high school (SHE9) had revised her approach to the introduction of electricity to take account of the entrants' prior experience:

> "For batteries and setting up electrical circuits. I think a lot of children have met that. That is one area we would have changed our approach.. I would now start off that section with them bringing in a toy working on batteries and we would discuss how they put the batteries in the toy, let them tell me what they know first and then go from there. Just having batteries, a wire and a bulb is too simple now."

In two of the twelve schools – a grammar and a secondary high – the KS3 curriculum was either undergoing or about to undergo a major review in the light of the increased knowledge which most entrants were now bringing. In the secondary high school (SHC5), where the Year 8 programme had initially been felt to be overcrowded, teachers were now able to cover the easier material more rapidly and indeed had hopes of being able to drop some of it in the fairly near future.

Differentiation

The science teachers disagreed about whether differentiation was either necessary or feasible. In four schools it was thought that the general banding or streaming procedures provided sufficiently homogeneous groups to obviate the need for further differentiation. Three grammar school teachers thought differentiated work would be impossible to organise, although one of the three, who met his Year 8 pupils for only a double period each week, would have liked to try such approaches if he had more contact time.

The most frequently mentioned forms of differentiation in Year 8 science were spending extra time with weaker pupils – for example, the Head of Science in one grammar school would sometimes work as a partner with a less competent pupil – providing extension activities for abler pupils after they completed the core tasks and having material for the main course at varying levels of difficulty. The last-mentioned method was more often used to differentiate between rather than within classes. Thus, one non-selective school used an easier text-book with the lowest streams as the only form of differentiation. In one grammar school, where a few pupils were visibly struggling in unstreamed Year 8 classes, it was proposed to introduce the new Ginn science material, which includes work cards with differentiated activities, not all of which need be done by every pupil; however, the prospect of virtually encouraging pupils to move towards different level outcomes was giving pause for thought. In addition, teachers in two schools, a grammar and a secondary high, mentioned asking pupils who had completed their work early or studied a topic before, to help the others.

Another approach, used in two secondary high schools – but not the same two as for mathematics – was to provide a support teacher for lower-stream classes. In each case profitable partnerships with the specialist science teachers were described. In one of these schools (SHE9), where it was a matter of policy that all pupils should have access to the same topics, the support teacher also collaborated with the science teachers to provide suitable simplified course materials and, in particular, to avoid situations in which special needs pupils would have to spend much of their science time in struggling to write:

> "The support teachers are an extra pair of eyes, which supports our safety policy. They're quite amazed at what we try to do, and may I say that we try to teach the same thing to all pupils in first form. It may be in a diluted form. Last year for example we had a period set aside in the week for the special needs teacher and the class teacher to discuss their work for the week. The science teacher would indicate the topic and the materials to be used; the special needs teacher would modify the language and prepare a suitable worksheet..... In a way the special needs teachers are training us" (teacher with responsibility for junior science, School SHE9, secondary high).

Elsewhere, if all that was available was whatever time the class teacher could spare for the weaker pupils, the outcome could be less successful:

> "I just follow the programme that I have set out. And with the weaker classes, whatever I can do I do and then I go on to a new topic, even if I haven't it finished with the weaker students. I would still go on to a new topic" (Head of Science, secondary high school).

4.4.4: Teachers' Perceptions of Pupil Preferences in Year 8 Science

The views of the post-primary science teachers on pupils' preferences were found to resemble those of the primary school teachers more closely than did those of their colleagues in the mathematics departments.

The Most Liked Aspects: Post-primary Teachers' Evidence

Of the 20 teachers who were prepared to identify their Year 8 pupils' favourite aspects of science, 17 spoke generally of their enthusiasm for practical work or experiments, while the other three, whose answers were more topic-focused, mentioned such practical facets of these

topics as "Electricity – getting out the bulbs and batteries" or "working with chemicals". There were four specific mentions of the Bunsen burner. Three teachers (2GS, 1SH) said that their pupils enjoyed planning as well as carrying out investigations.

There was no consensus about the topics in which Year 8 pupils were most interested and it was observed that fewer answers referred to any topic than to practical work generally. Three teachers thought that their pupils liked chemistry or "working with chemicals", probably because this was new to them; three other teachers said that their pupils enjoyed electricity and the related practical work, while in three schools pupils were reported to like studying such topics in biology as reproduction or "anything on animals or wild life". Answers heard in just one or two schools included watching science videos, field trips and, in one grammar school, "getting used to the terminology".

The Least Liked Aspects: Post-primary Teachers' Evidence

Only 17 of the 22 science teachers were prepared to comment on whether Year 8 pupils disliked any aspect of their science lessons and, of these, three said they were unaware of anything being really disliked. Of the remaining 14 teachers, twelve said that writing up experiments or "making notes" was the least popular part of the course. Particular dislikes here included drawing diagrams, "meeting Sir's demands for neatness" in a grammar school and

> "Writing up reports on another day's experiments. They have to be convinced that real scientists do this too." (Science teacher, secondary high school)

No particular topics were thought to be rejected by the Year 8 pupils, although three teachers (1GS, 2SH) admitted that their pupils might show little interest in the underlying theory or "the drier bits of theory" or in such abstract concepts as 'What is a force?' In another secondary high school it was noticed that attention was likely to falter when the lesson became "too mathematical".

4.4.5 Science: Year 8 Pupils' Evidence

This part of the report adopts the same format as the corresponding sections giving the pupils' views on mathematics and English. It opens with a synopsis of the main points volunteered by pupils when asked to compare their Year 8 science with what they had done in the upper primary school, goes on to explore a number of issues raised by the teachers and ends by considering how difficult the pupils appeared to find the transition. The specific questions relating to science were as follows:

- Were the Year 8 pupils impressed with the laboratories and equipment in their new schools? Did they agree with those post-primary teachers who perceived primary science to more didactic and less based in practical work than what they themselves offered?
- Was there any evidence that in some classes pupils might be given very structured practical work to carry out but allowed few opportunities to plan their own investigations?
- To what extent, as post-primary teachers complained, were pupils arriving at their new schools with very different types of science backgrounds?

- Was there any evidence of pupils having failed to understand parts of the KS2 science syllabus in primary school, either because topics had been rushed through too fast or because they were inappropriately difficult?
- To what extent, as some primary school informants complained, were Year 8 pupils simply repeating primary school work? In particular, were they repeating primary school work to the point of boredom?
- Did pupils find writing reports on practical work and investigations as difficult and unenjoyable as their teachers often suggested?
- Were any aspects of science particularly popular or unpopular?

Pupils' Overall Impressions of Similarities and Differences in Science

When asked if science in their new schools was mainly the same or mainly different from their previous experience, only one group gave an answer of the type most commonly given for mathematics and described Year 8 science as essentially recapitulation and development of topics studied in the primary school. This group was in a grammar school where the head of department saw the Year 8 course as a progression in the content from KS2. although he suspected that the differences in facilities and methodology would be what Year 8 entrants would notice most. However, the interview transcripts show that one group from that school seemed well aware of continuity and progression.

- Well general subjects are the same but we go into a bit more detail.
- Cos like we covered a wee bit of it before in primary school but we're doing it more advanced now. (*All had covered some of the same topics in primary school. None had done them in as much detail as they were doing now*.) *Could you give me an example?*
- We've been doing Forces. *What did you do in primary school?*
- We did things like - seeing how things move (Opening of group interview, grammar school).

Elsewhere, although individual pupils in two groups mentioned some similarity of content, the focus was very much on the methodological differences between primary and secondary science. This was in keeping with the predictions of most of the post-primary teachers and with the research literature (Jarman, 1993; Griffiths and Jones, 1994). Even without further prompting, more than two-thirds (17) of the groups, including at least one from all twelve post-primary schools, said that there was more practical or experimental work in post-primary school. About a third of the groups spontaneously contrasted this with a more didactic, rote-learning approach in primary school.

> You do a lot more practical work now. In primary school you copied it all down off the blackboard (Upper stream group, secondary high school).

Appreciative comments were also volunteered in this introductory part of the interviews on the more sophisticated apparatus and laboratories in post-primary schools (13 groups), the excitement of working with chemicals (8 groups) and on being allowed to carry out experiments for themselves rather than just watching teacher demonstrations (8 groups). Other general impressions which arose unprompted in between three and five groups were that secondary science is 'harder' or more advanced, that more time was allocated to it than in primary school and that it was now more fun, partly because of a new element of danger and excitement.

Practical Work and Experimental Approaches

When pupils were given the prompts which asked them to consider 'the things you use' and 'the things you do', the perception of secondary science as more experiential than primary science was strengthened. In all, 19 groups said during the course of the interviews that they carried out more experiments in their new schools or, in some cases, that they were doing practical work for the first time. In half the groups at least one pupil claimed to have done no practical work in science in primary school and in two groups no one could recall doing any.

Facilities and Equipment. The prompt on 'things you use' in science encouraged many pupils to elaborate on their initial impressions of the facilities for science as a chief difference between primary and secondary schooling. Although only three groups (2GS, 1SH) actually used the words 'laboratory' or 'lab', two more spoke of the tables with gas taps. What had most often seized the pupils' attention as new and different, however, were the Bunsen burners ; these were mentioned by 17 groups, with an eighteenth explaining how "you feel more adult if you use flames and stuff". In that group and elsewhere there was considerable support for the idea expressed by several previous writers that lighting the Bunsen burner is an important rite of passage at the time of entry to secondary education. A grammar school group, for example, spoke proudly of the "wee certificates" each pupil received on proving that she could light the Bunsen burner safely.

After the Bunsen burner, the next most exciting things in the science laboratories for the new pupils appeared to be the chemicals, which were mentioned in about half (11) of the groups, with special reference to acids, copper sulphate and, in one secondary high school, a fume cupboard. Although several groups spoke generally of more or better science equipment in their new schools, test-tubes or other glassware were mentioned in nine groups and such ironware as tripods, G-clamps and retort stands in three groups. Some pupils were obviously still excited about the new equipment after a term and a half:

> *Did you not have measuring jugs in primary school?*
> - Yeah but ..
> - They're bigger and...
> - Yeah but these ones are big long ones and they're really thin.(Upper-stream group, secondary high school)

Those pupils who gave details of the science equipment in their primary schools, as opposed to just saying that there was less of it, most often described the wires, batteries and bulbs they had used in making circuits and simple glassware such as small beakers and bottles. There was also mention of rulers, thermometers and magnifying glasses. Sometimes familiar domestic objects and materials had been used such as (in different schools) bleach, rubber gloves, a sweet jar or a frying pan. One of the clearest memories of such improvisations came from a boys' grammar school:

> *It's different . In grammar school there are test tubes, Bunsen burners. In primary school it was just all home-made stuff like bits of wood with bits of cotton around it and all to see how durable it was* (Grammar school group)..

Among the references to more sophisticated equipment in primary school, one pupil in a secondary high school remembered "wee, small Bunsen burners". A grammar school girl in another cluster said they had used the same equipment as in grammar school when they had been

studying 'What is air?' but when they had been studying Energy they had "wee boats and saw where the wind was coming from".[40]

Previous writers, such as Jarman (1993), have stressed the importance of post-primary teachers encouraging pupils not to belittle the work done in primary science. However, the differences in facilities and equipment between the two sectors are so large that it is understandable and perhaps even inevitable that Year 8 pupils should sometimes regard their previous experiments as "wee things", as one secondary high school group did, or talk of having "proper science in this school', as a grammar school group did. A pupil in the upper band of a non-selective school made a telling point, with which the rest of the group heartily agreed, when he said:

> "When you're wee, like when you think of science, the first thing that comes into your head is test tubes and stuff, and that's what you use here."

It may well be that many pupils' first concept of 'science', learned from books, television or other media, is the conventional one of an activity for experts in well equipped laboratories. This concept has to be modified to accommodate their experiences of primary school science.

Doing Experiments or Watching Demonstrations?

While it was clear that all pupils did practical work themselves in Year 8, in nine of the 23 groups pupils contrasted this with their primary school days when most experiments had been done by the teacher, perhaps with one or two pupils helping. In six groups (2GS, 1SH and 3NS), this seemed to have been the case for all pupils in the group and not just for those from one or two feeder primaries. Although a few primary school teachers had admitted (Section 3.4.4) that pressure of time meant that they had sometimes to demonstrate rather than let pupils investigate, the pupil interviews suggested that this practice was more widespread than would have been judged from the teacher interviews.[41] What was perhaps more unexpected was that three of the groups where pupils were most adamant that they had virtually never carried out experiments themselves before were in non-selective areas, so that pressure of Transfer preparation cannot have been the sole explanation. In two groups it was suggested that the primary school teachers had conducted the experiments themselves for safety reasons, displaying a protective attitude which was not greatly appreciated by the pupils:

- Miss, it's good being in charge of your own stuff and setting it all up yourself.
- In primary school your teacher would do it and if you touched something would go 'Don't touch that.' *Why do you think she said that?*
- Because you might break it....
- In primary school they didn't think you were trustable but they trust you more now. *Do you think you would have been able to do it in PS?*
- Yes. We would be. (Lower-band group, secondary high school)

Practical Work Techniques or Investigations?

[40]This answer also implicitly raises the question of the amount of repetition of science already studied in primary school in the KS3 years

[41]A perfect match of pupil and teacher evidence would not, however have been expected since (a) only some of the Year 8 pupils had attended the primary schools where teachers were interviewed and (b) since neither the pupils' nor the teachers' interview schedules contained a specific item on who carried out experiments, not all cases where experiments were usually by demonstration would necessarily have come to light.

In some of the teacher interviews there were indications of pupils being given very pre-structured practical work to do rather than investigations. Although there is an obvious place for the some of the former in teaching basic laboratory skills, the question was raised earlier as to whether some pupils might be being taught to behave more as embryonic laboratory technicians than as embryonic scientists. Though this issue arose only in the course of analysing the teacher interviews, and was not specially raised in the Year 8 interviews, the pupil transcripts were read for any evidence of this.

There were fairly clear signs in three groups, two of which were in the same geographical cluster, of pupils just being told exactly how to carry out practical work in primary school and another group where this seemed to be happening in a class in a secondary high school. In a few other groups pupils spoke of being given more responsibility for experiments in post-primary school, of no longer always having the teacher "looking over their shoulder all the time" or of being allowed to learn from their own mistakes. There is no doubt that the Year 8 pupils preferred the more adult treatment. (The second example comes from the response to the question on what pupils liked best about science in their new school.)

- In our class the teacher's supposed to tell us what to do and we sort of have to work out ourselves how to do it. *So that wasn't the same in PS?*
- No, we were told what to do in primary school but it's sort of like a task now. You have to work it out yourself. *The problem was all solved for you in PS was it?*
- Yeah. *Which is better?* • Here. (Upper stream group, grammar school)

- Being allowed to do things on your own without the teacher always looking over your
- Yes • Over your shoulder. • All the time. *You mean your PS teacher stood behind your back the whole of the time and looked over you shoulder! .....*
- Well, most of the time.
- The teacher would always go around and say 'Are you okay there?' and say 'No, you're not doing that right' and everything and then just stand behind you and watch.
- But they don't really, now, here.
- But here they let you make your own mistakes so you can correct them. • Yeah. • Yes.
- *Do you find it good being able to make your own mistakes?* • Yeah. • Yeah. • Yes.
- You learn better. • You understand it. (Girls' grammar school)

Because the issue was not systematically investigated in the present research, no reliable estimate can be made of the proportion of schools where experimental work usually took the form of carrying out detailed instructions from the teacher, text-book or worksheet, with little opportunity for a pupil contribution to the planning. Since, however, pupils are unlikely to have had an input to the design of teacher demonstrations either, there would appear to have been a number of classes (and especially former primary school classes) represented by the pupil sample where pupils had not been given much opportunity to develop the range of investigative skills in AT1.

A Note on Some Experiments Remembered from Primary School

Although questions might be raised about the limited opportunities for investigative work which some pupils had, in 19 of the 23 groups pupils recalled, in more or less detail, experiments which they had done, or in some cases, watched with interest. Many of the experiments related to all the content-based ATs had a 'domestic' flavour.

Experiments based on wiring up circuits with light bulbs, or occasionally buzzers, were the most frequently mentioned type. Five groups (2GS, 3SH) described 'fair testing', although only the two grammar school groups used the term. In three of the five cases plants (beans or cress) had been grown under different but controlled conditions to see what was necessary for optimum growth; the other two groups had used 'fair test' methodology to study bread-making and the rusting of nails. Two groups reported filtering dirty water and being surprised at the clear water produced. Boys now in a grammar school had kept weather records, including the measurement of rainfall in "a wee bucket". Girls in a secondary high school said that burning different fabrics had been their "biggest experiment", while girls in a grammar school recalled putting "eggshells into wee egg cups and then weights on top" to see when the shells would crack. The latter group also remembered a salutary demonstration:

> We were shown this experiment with a cigarette and a plastic bottle and you squeezed it and smelled it and it showed you how black your lungs get.

Did Pupils Arrive with Different Science Backgrounds?

In thirteen groups (3GS, 7SH, 3NS), disagreements broke out about the science that had been studied in the various primary schools. This is a higher proportion of the groups than for mathematics but again, since there was no actual check on recall of the coverage of specific topics, the thirteen groups should be regarded as a minimum estimate of the number of occurrences.

In three groups (1SH, 2NS) some pupils said they had done no science in primary school, whereas other said that they had studied science and in some cases they had obviously studied a good deal of science. In three other groups (including two in the same secondary high school) pupils differed in whether they could recall any practical work. It was also evident that, whereas some pupils had experience of writing up about experiments themselves — albeit in simpler form than might be required even in Year 8 of some post-primary schools — others had just copied the teacher's notes from the blackboard.

In four groups (2GS, 2SH) some pupils' primary science seemed to have been limited to biology ("we just went out to collect leaves") whereas others might, for example, have studied crystals or done quite advanced work on electricity. Indeed, electricity emerged as a topic which might have been studied in greatly varying degrees of detail and sophistication in neighbouring primary schools, from coverage of most of the KS3 syllabus to not at all. Elsewhere, all pupils had arrived with some knowledge of circuits.

There seems, therefore, to be quite good supportive evidence from the pupils for the post-primary teachers' complaints that their entrants had very different backgrounds in science and that it was difficult to find a common starting point that was suitable for all of them.

Did Pupils Understand Science in Primary School?

The evidence from teachers, especially those in primary schools, indicated that, because of pressure to cover the KS2 syllabus, exacerbated by the pressures of Transfer preparation, pupils were sometimes being rushed through the KS2 science (as well as the KS2 mathematics) programme of study too fast for adequate understanding. This issue emerged too late to influence the design of the pupil schedule but the pupil transcripts were scrutinised for any relevant evidence.

Only in four pupil groups, however, was there any talk of not always understanding their science and in no case was this attributed to over-haste in the primary school. In contrast to mathematics, where previous difficulties in understanding were located in secondary high schools — *i.e.* among the very pupils who would have been most vulnerable to the effects of a too rapid coverage of topics in primary school in order to meet the Transfer deadline — two of the four groups reporting any difficulty with science were in grammar schools and two in non-selective schools. In two cases pupils said that they understood science better in their post-primary schools because it was now better explained and in the two other cases they said they understood it better in post-primary school because they were now learning through practical work rather than just from didactic teaching. A pupil who could recall no first-hand practical experience in primary school explained:

- I found that if I get through the work myself that I take it in better rather than listening to the teacher. *Is that the same for everybody ?..*
- Yeah. • Yes. (Non-selective school)

The only hint of difficulty with Year 8 science came from a grammar school and confirmed the growing belief of the HOD that a particular unit in their current course needed revision.

How well the pupils did actually understand their science is of course outside the scope of this study. Had they been aware of serious difficulties, one might, however, expect that the question on whether Year 8 science was harder or easier than what had gone before would have elicited more indications of courses being tough going, even in these very open-ended group interviews.

Was Year 8 Science Simply a Repetition of Primary School Work?

Science, like mathematics, was a subject in which many primary school informants thought their pupils had to endure much unnecessary repetition after transition of work already covered in primary school. In congruent vein, many of the post-primary science teachers admitted that they often went over material with which some of the class were familiar in order to bring others up to the same point. A few science teachers had even found pupils who, on arrival, had already covered as much of a topic as they would normally teach in Year 8, if not the whole of KS3. The pupil evidence was therefore examined for indications that pupils were being subjected to an undue amount of repetition and, in particular, for signs of boredom because of such repetition.

One difficulty in this analysis is that many topics appear at several attainment levels in the NI science programmes of study. In the 1992 version of the PoS, for example, electrical circuits appear at levels 3, 4, 5 and 6, with more complex understanding being required at each level. If a pupil made brief mention, for example, of 'doing' circuits in primary and post-primary school, it was not always possible to know if the post-primary experience had been one of progression or repetition.

However, in contrast to the pupil interviews on mathematics, where over three-quarters of the groups mentioned repetition of primary school work, even if only as initial revision, only about a third (8) of the science groups spoke of studying topics which they had already covered in primary school. Five of the eight were five of the seven groups from grammar schools and a sixth was a top-stream group in a non-selective school. In three cases it was stated that the topics had been taken to a more advanced or more detailed level in the post-primary school. None of the groups indicated that they had spent all their time in Year 8 to date in revision of familiar

topics without significant progression, as appeared to have been the case with mathematics in two schools. The only two pupils to express boredom with Year 8 science said they had not liked it in primary school either. In short, repetition of primary school work was not perceived as a major issue by the pupils.

In two schools — a controlled secondary high school and a Catholic grammar school — pupils spoke of primary school teachers in the months before transition deliberately introducing them to topics which they knew were on the KS3 syllabus.

Writing in Science

When asked to compare the writing they had done during science lessons in primary school with what they did in their new schools, the most common response, given by pupils in 16 of the groups (although not necessarily all pupils in the group) was that they had now to write more detailed and better structured reports on their experiments. When in primary school these pupils had written "a more story-type form" (grammar school girl) or "any old way" (secondary high school boy), perhaps just giving a brief description of the experiment and the conclusions; in post-primary school they found they had to write up their reports in a standard series of sections, either with such conventional headings as Aims, Apparatus, Method, Results and Conclusions or their more 'everyday' equivalents. This was described by girls in the lower streams of two secondary high schools as "writing in stages" and "writing like an expert". In two schools pupils appreciated that the more structured reports were a better basis for revision.

In seven of these groups the pupils spoke of being expected to produce conventional diagrams of the apparatus, rather than to draw it freehand as they had often done in primary school. This they could find quite difficult at first, although as some grammar school boys explained, "It's quicker and easier once you get used to it." In five groups, all in either grammar or the top-stream of secondary schools, pupils commented on having now to use more technical or 'harder' vocabulary, such as 'apparatus' instead of 'tools'.

By no means all pupils, however, had moved from writing narrative to structured reports on transition. In five groups at least one pupil had been accustomed to writing structured reports in primary school and in one grammar school group this had been the norm for four of the five pupils. Both groups at one junior high school recalled that when in primary school they had just filled in worksheets. At least some of the pupils in six other groups (1GS, 2SH, 3NS) said that in primary school they had normally copied notes on their experiments from the board or, in one case, tried to remember or reconstruct what their teacher had just rubbed off the board. Those pupils who lacked previous experience of writing up experiments in primary school were at an obvious disadvantage if their classmates had previous practice.

In four groups (1SH, 3NS) pupils said that in post-primary school they normally copied reports on their experiments from the board or, in one case, from the overhead projector. In one of the groups from a non-selective school, there appeared to be two classes represented, one of which normally wrote their own reports and the other of which copied down the teacher's notes. In the secondary high school, where some pupils had written their own 'story-type' reports in primary school, it might be considered that, far from any progression, there had been a regression to a more teacher-dependent form of writing. In two groups experiments were sometimes recorded by completing worksheets.

There were two other groups where pupils reckoned that they had to write less in science in Year 8 than in their primary schools. One was in a grammar school which used information sheets and other hand-outs to reduce the amount of note-taking required; sometimes, though by no means always, details of experiments could also be recorded on a pre-prepared sheet. The other group, in a secondary high school, said they now spent less time writing because they now did experiments.

It will be recalled that about two-thirds of the science teachers complained that many of their Year 8 pupils had major difficulties with the writing tasks required of them and that some spoke of attempts they made to mitigate their pupils' problems. There was fairly close agreement between pupils and teachers in the same schools about whether such easements were being made. These were generally appreciated by pupils who, as the next sub-section shows, generally did not like writing and sometimes admitted it was difficult. The most worrying example of this actually came from a boys' grammar school and supports the view of those teachers who argued that the Transfer tests have a detrimental effect on pupils' capacity for sustained writing:

- Before the 11 plus we did a pile of work . I couldn't believe it . But it was nothing compared to now.
- And you see after the 11 plus, you come here, you have to write so much. I can't any more.

Most and Least Liked Aspects of Science

Table 4.2 makes clear that, as their teachers and the research literature foretold, the practical or experimental aspects of science were what the vast majority of pupils said they most enjoyed. Indeed, there were only five dissenting voices.[42] It had also been anticipated by the researchers that several pupils might mention the excitement of using laboratory equipment or of lighting the Bunsen burner. What was perhaps less expected, as contrary to the popular stereotype of active learning methods in primary school classrooms, is the relatively high number, a full third of the groups, who identified being allowed to do experiments by themselves as one of the best things about science in Year 8. Such answers are, however, in keeping with other findings from the pupil interviews.

The written aspects of science were enjoyed by only a few individual pupils and, at best, tolerated by the others. The actual complaints were mainly about the amount of writing and the degree of detail required. One pupil in a non-selective school, for example, protested that more time was spent on writing than on the experiments. There were a number of objections, mainly from grammar schools, to the amount of homework (which was especially unpopular at week-ends) and the frequency of tests.

Table 4.2 Numbers of Groups of Year 8 Pupils Mentioning Aspects of Science as Most and Least Liked

Aspect of Science	**Most Liked**	**Least Liked**
Practicals/Experiments	23 (7GS, 10SH, 6NS)	4 (2GS†, 1SH†, 1NS†)

[42]Of the five pupils who said they disliked experiments, one was a boy who had burned his hand on a tripod the previous week and looked back fondly to the primary school days when science meant studying insects. Another was a grammar school boy who felt somewhat bewildered when asked to find apparatus. The third was a pupil who objected to wearing goggles. The remaining two were the girls in a secondary high school who had disliked science in both their primary and their secondary schools.

'Hands-on' experiments	8 (3GS, 5SH)	1 (1GS†)
Using Bunsen burners	4 (3GS, 1SH)	1 (1GS†)
Better equipment	5 (1GS, 3SH, 1NS)	0
Writing in Science	3 (1GS#, 1SH#, 1NS†)	6 (1GS, 2SH, 3NS)
Particular topics	3 (2GS, 1NS)	0
Homework	0	2 (2GS)
Tests	0	4 (3GS, 1NS)
teacher/ teaching style	6 (2GS, 2SH, 2NS)	3 (1GS, 1SH, 1NS)
All/ most Science	1 (1GS)	1 (1SH#)
Little or Nothing	1 (1SH#)	8 (2GS, 4SH, 2NS)

= Disagreement within the group.
† = A qualified answer, e.g. liking or disliking only one facet of the item.

Although two pupils in the same secondary high school group had not liked science in either their old or their new schools, in a third of the groups no pupil could think of any aspect they disliked. As with the other subjects, the personality and helpfulness of the teacher again emerged as of important to the pupils. Those teachers who were identified as a most liked aspect of science were praised, if in a grammar school, for their specialist knowledge and, if in a high school, for being helpful and, in one case, for being humane when there were breakages. The science teachers who were disliked were variously criticised for mumbling, for explaining at too great length and (in a grammar school) for expecting too much of the pupils.

Ease of Transition in Science: Difficulty Levels and Availability of Help

Ten groups thought that their post-primary science teachers were more helpful than the former primary school class teachers, seven groups thought that the levels of help were similar, four groups (including three in grammar schools) thought that the primary school teachers had given more assistance, one group, perhaps because of different primary school experiences, was unable to agree and a grammar school group had found that neither primary nor post-primary teachers were very ready to answer appeals for help. In three cases (two in primary and one in a grammar school) pupils saw less help being available because of large class numbers.

Especially in grammar schools, pupils might find that they were now expected to be more independent and work things out for themselves. Help might be available only when they were really stuck and anyone requesting the spelling of a word was usually pointed towards a dictionary. This was perhaps a consequence of the generally greater responsibility given to pupils for their experimental work in post-primary schools.

- You are expected to try to work it out for yourself....
- Because he doesn't want to have to tell us all the answers; he wants us to try and work it out for ourselves.
- But if you still don't understand it, he will explain it. • But in primary school, it you asked the teacher questions, she would just tell you the answers. (*Agreement*)
- If you didn't have a clue, you just asked her and she would give you it. (Girls' grammar school)

Two groups, one in a grammar and the other in a non-selective school, described their present teachers as more helpful than those in primary school because they were able and willing to explain science better when addressing the whole class. After that, further help was often unnecessary.

- Mr.K.. he always talks us through a lot, to give us more information and all.
- But in Primary School we didn't get nothing. We just sat down to do the work. (Lower-stream class, non-selective school)

In the majority of groups (15) science was thought to be at least a little 'harder' than in primary school but only in one grammar school was there any indication that any part of the Year 8 course was too difficult. (The Head of Department was aware of problems with the unit in question.) Pupils who gave fuller explanations variously located the greater difficulty in the increased responsibilities for carrying out experiments, the greater amount of homework, the technical vocabulary and the more advanced new concepts being tackled once the familiar material of the primary school days had been left behind.

In two groups the difficulty level was thought to have remained the same, while in four groups opinions differed as pupils compared their current courses with a variety of courses and teaching styles in their former primary schools. In the only group where it was agreed that science was easier in the post-primary school, the explanation given was that they learned more easily in the new school because of being allowed to do investigative work and experiments for themselves.

Science in Year 8 was therefore usually thought to be rather exciting and often quite challenging rather than as the cause of a difficult transition.

4.5: English in Year 8

4.5.1: English Teachers' Evidence: Relationship between KS2 and KS3

Continuity or Fresh Start?

The majority of the teachers of English (12 of the 19) saw Year 8 as both a fresh start and as a continuation of Year 7; four saw it mainly as a follow through while three perceived it as more of a fresh start. By contrast, most of the science and mathematics teachers saw their Year 8 programmes as essentially a fresh start.

When explaining how their Year 8 course was a follow-through from Year 7, English teachers frequently talked of building on foundations laid in primary school. Two recurrent ideas in the answers were, firstly, that the nature of English as a subject involves the long-term development of skills and, secondly, that there is, or ought to be, primary-secondary continuity in all three English attainment targets and especially in the basic skills they entail.

> "I am sure that the techniques involved here in the secondary school would be very similar to what they have been used to in primary school. But I think that is the very nature of English. I think English can lend itself to continuity. Because I think it is very much a recursive subject. You.... are dealing with language all of the time. You are adding to what they already know. Going back and reinforcing what you have done" (Head of English, secondary high school).

> "It would be a continuation in that we would be developing the skills that the primary school has started to teach. Obviously reading, writing and the oral work there. So continuation there. There would also be some similar activities: comprehension they are

> always very familiar with, essay writing. They would have learned grammatical constructions and punctuation and we would have been revising that. All these aspects would have been similar" (English teacher, non-selective school).

Not unexpectedly, it sometimes emerged during the interviews that the foundations could be shaky in places and that the continuity had sometimes to be from a more elementary level than might have been hoped.

Like the teachers of mathematics and science, the teachers of English used the term "a fresh start" in different senses and, indeed, sometimes different senses would appear in an answer. In two schools in particular (a junior high and a grammar school) it was thought that, even although they would be building on skills taught in primary school, their more literature-based approach would be sufficiently different from what had gone before for the subject to seem somewhat new to the entrants. More often 'a fresh start' in the English department meant some kind of fresh opportunity or the beginning of a new chapter in a pupil's life. Thus in one secondary high school (SHD6), the term was interpreted largely as a chance to rebuild the confidence of pupils, many of whom arrived with little previous experience of success. In a boys' grammar school, however, it was more a case of 'starting them up afresh' by finding a way of re-motivating pupils who were believed to have done very little serious work since the Transfer tests. In two grammar and two secondary high schools the term was used to indicate the lack of prejudice and pre-judgement with which entrants were welcomed.

> "We treat the pupils who come to us all as equals initially and we feel that there is a danger in stereotyping them" (Head of English, grammar school).

The aims in these two grammar schools were to provide stimulating material, to give the pupils every encouragement to develop their talents and to get to know them on their own terms rather than through the, possibly dated, perspectives, of a primary school teacher. In one secondary high school, where the fresh start was said to apply to the pastoral rather than the academic aspects of Year 8, it was almost a kind of absolution:

> "Everybody is starting on a new basis. And we forget passes and failures and all the rest of it from primary school." (Head of English, secondary high school).

As in the mathematics and science departments, 'a fresh start' might also imply a common starting point for the school's Year 8 programme, which had worked well enough in previous years, without much immediate heed of the particular attainments of the new cohort of pupils. In practice, this was often the classroom approach of informants who talked about 'a fresh start' in terms of fresh opportunities. As in the other subject areas, it was sometimes seen as a practicable solution to the problem of entrants arriving with different and largely unknown levels of competency:

> "We don't take that much account of what they have been doing in primary school we don't know what they have been doing so really we're basically starting afresh with them in first year... English is so repetitive in many ways, the skills remain basically the same it's just the material that's changing rather than what you're teaching them I would think" (Head of English, secondary high school).

While such an approach is theoretically incompatible with curricular continuity, in practice much depends on the appropriateness of the chosen starting point for the entrants. In one school the language component of the course began at a very elementary level:

> "I see it very much as a fresh start because... we have entrants from different primary schools and the children are all at different stages. In my group of 26 this year I have 11 or 12 primary schools represented. You might find in one school they've covered a great deal more than in another so we need to begin by revising a lot of the basics, just finding where the children are at" (English teacher, School SHE9).

A few English teachers thought of 'a fresh start' primarily in terms of assessment. All entrants were placed, as it were, on a metaphorical starting line and expected to prove themselves in the first weeks or months. This idea was most marked in the responses from a school in a non-selective area, which received only an overall grade on its entrants, without specific reference to English, and in a grammar school where the great majority of entrants had the top grade in the Transfer tests:

> "To be honest, we probably look on it as a fresh start. Because we don't know, and the first month I'd say we are assessing them" (Head of English, non-selective area).

> "Their first project lets us see the extent of their technical skills and what they can actually do on paper. While it is to a certain extent a consolidation of all they work they have done in primary school and their KS2 abilities, it is a fresh start insofar as they bring no baggage with them. I am looking at them with a completely fresh eye. I like to have a fresh attitude to them unencumbered by a lot of pre-knowledge" (English teacher, grammar school).

The last quotation helps to support a finding in Section 2, namely that an appreciable number of the English teachers had no wish for any further information from the primary schools on their pupils' capabilities, beyond the inferences that could be drawn from the placement of the child in a particular stream or band or, in the case of a grammar school, from the fact that the child had been selected. This view was expressed most forcefully in a secondary high school in Belfast:

> "I would feel we would have failed our Form 1s if we took, as it were, the judgement of 7 years that has gone before and labelled children according to what was said in the previous 7 years" (Head of English, secondary high school).

Similarities and Differences in KS2 and KS3 English: Teacher Evidence

Three teachers of English (including the heads of department in two grammar schools) said that they did not know enough about the subject in primary schools to compare it with English in KS3. Another five teachers admitted that their replies were based on limited knowledge. In keeping with their tendency to see Year 8 as combining elements of both continuity and of a fresh start, most of the English teachers pointed to both important similarities and important differences in the teaching of the subject in the two sectors. Only three English teachers spoke only of similarities and only two spoke solely of differences. Again this was a different pattern of responses from that in the mathematics and science departments.

The similarities most often mentioned were the basic literacy skills on which the KS3 programme would build: reading, spelling, punctuation, grammar, writing and comprehension.

The difference most often identified (by eight teachers) was a greater focus on literature or a more detailed study of texts:

> "We would have a different emphasis. My perception is that in primary schools they would be more concerned with comprehension and basic English, English language, whereas our emphasis would be more on literature. We would be studying novels, poetry and so on in greater depth perhaps than they would have done in primary school" (Head of English, non-selective area).

In four schools the more mechanical elements of spelling, grammar and punctuation were believed to be given less attention in their own right than in primary school; in one grammar school this was because they had been generally well covered in the feeder primary schools and in another because it was preferred to assimilate them into the teaching of writing.

> "In primary school the various elements of punctuation, vocabulary, adverbs, all the different prepositions, are treated more separately. I suspect there is a discrete sort of approach to English in P6-P7, whereas I see the process here as welding all that together and making the student aware that all these components of language are to be used to express themselves as freely as possible" (Head of English, grammar school).

In two schools having specialist teachers for English was perceived as a major difference while the teachers in one secondary high school saw the media studies course which they introduced towards the end of Year 8 as something which the pupils would find quite new.

Two activities about which there was disagreement were oral work and library skills. In two schools, where teachers were able to build on good Talking and Listening experience, the continuation of oral work was seen as a strong point of similarity but in two post-primary schools in other areas, where the attainment target was perceived to have been neglected in the feeder schools, the amount of attention given to it at secondary level was a point of difference. In another set of schools there were comparable differences in whether or not the entrants were able to make reasonably good use of the library.

4.5.2: English Teachers' Evidence: Perceptions of Entrants

Estimated Levels of Entrants in English

In selective areas the entrants' estimated attainment levels in English were more diverse than might have been expected perhaps because, as some of the teachers admitted, they did yet think naturally or easily in terms of levels. In one secondary high school most levels for English were thought to be in the range '3+ to 4'. This is an appreciably narrower range than the '3 to 5' suggested for her own upper-stream class by the head of department in another secondary high school, which had six streams with placements determined largely on the basis of standardised tests. In this second school there were reckoned to be substantial numbers of pupils on each of the levels 2 to 5. In a third secondary high school, most pupils were thought to be on level 3 or 4 with, the head of department believed, a few on 5. In a fourth secondary high school, most pupils were reported to be on 3 or 4, although the lowest stream had some on 2 or possibly less. In the fifth secondary high school, where no levels were given and where classes were not systematically streamed or set for English, the range was described as "very, very wide, which makes teaching difficult".

While the secondary high schools differed in their ranges of levels, rather than in their estimated average levels, the grammar schools varied in both. In a coeducational grammar school there was reported to be a "wide range" from 4 to 6, with very few boys reaching 6 on Writing, In a boys' grammar school the range for Writing was said to be from 3 ("and that's desperate") to 5 ("excellent quality"): similarly, while some boys were "great readers", others had read little. In a third grammar school the assistant teacher estimated that on entry most pupils had overall levels on English of 4 or 5; the head of department, who did not teach a Year 8 class himself but had looked at their early assignments, would grade an average piece of early written work at 4+ but saw a huge range from "2 to 3" to "7 or even 8". In the fourth grammar school – the one with the highest entry levels – the assistant teacher claimed that the pupils would generally be "middle-to-top 6" when they came in, with some already on 7 and very few below '5+'; the two pupils in her class whom she considered to be "definite 5s" had difficulty in keeping up with the others. The levels suggested by the head of department in that school were, however, somewhat lower: an average of 5, with some on 6 and a few still on 4 for Writing.

The estimated levels in the three non-selective schools were more predictable. In the two larger schools the top class or band averaged 5,with a minority of pupils on 6, while in the smallest of the three schools the top class had emerged on recent assessment units with levels of 4 and 5. In all three schools there was a wide range of levels, through an average of 4, to as low as 2 in remedial groups.

Given the wide range of levels sometimes found in a single class, it may at first sight seem rather surprising that quite a high proportion of the English teachers showed little interest in obtaining more information about their entrants from primary schools. Quite apart from the scepticism with which many teachers, especially in grammar schools, greet the information on Transfer Reports (see Section 2.1), there was perhaps a clue in the reply of an English teacher in a secondary high school who felt that the attainment target levels assigned to Year 7 children in some primary schools are yet always sufficiently accurate or helpful. This teacher thought the distribution of levels suggested by their contributory primary schools was accurate enough but the levels had often been assigned to the wrong pupils! Some of their best pupils, from schools where ability levels were generally high, had been awarded only a 3, whereas less able pupils, from schools that sent few children to grammar schools, had been given a 4 because they were among the brightest children in these schools.

Effects of the New Style Transfer Tests

Only five teachers of English had noticed any changes in the performance of their current Year 8 classes which might be attributable to the new style of Transfer tests, while eight said there had been no such change.[43] One head of department in a secondary high school thought that writing skills seemed more developed and that, freed from the perceived obligation to coach for verbal reasoning tests, primary teachers were covering more topics in English. Three other informants, including an assistant teacher in that head of department's school believed, on the contrary, that writing, and especially extended writing, was suffering because of the emphasis on comprehension questions which required only short answers, rarely of more than a few words in length. One of these three teachers suggested that there might be a compensatory improvement for some pupils in their ability to extract information from a passage; the comprehension

[43]Heads of department with no Year 8 pupils and teachers in non-selective areas were not in a position to comment.

exercises in the Transfer test were, however, more difficult than anything they would give their Year 8 pupils, although similar in style to what they would use.

The Head of English in a rural grammar school had been told by some entrants that they had read very few novels or other books in P6-P7 because of the focus on "these wee comprehension exercises". Along with the head of English in a Belfast grammar school, he expressed concern at the apparent lack of serious work done in many primary schools after the tests. Opportunities had been missed of giving pupils a stimulating and enjoyable reading programme of good quality books suited to their abilities. Both these heads of department feared that their pupils had regressed after the Transfer tests.

Entrants' Competencies and Familiarity with Year 8 Course Material

Since there was much overlap in the English teachers' replies to questions on the entrants' familiarity with the elements of the KS3 programme of studies and on the difficulties pupils found with the Year 8 course, the two sets of answers will be considered together.

Although several teachers described their pupils as familiar (at least in theory) with the 'basics' of writing in sentences, punctuation and grammar and although one grammar school teacher was delighted with the letters to their grandparents which her pupils had written as part of an introductory unit, more than two-thirds of the English teachers were seriously concerned about the writing capabilities of some or most of their pupils. In one extreme case in a secondary high school it was reported that some children had such difficulty in writing that all their assessments had to be done orally, while in another secondary high school the weaker pupils were described as capable only of completing the easier items on a worksheet but not of extended writing. Many Year 8 pupils, including some in at least three of the four grammar schools, were said to have great difficulty in producing a piece of sustained writing of any length:

> "You'll have some pupils in here in Year 8 who are excellent, who are able to produce a piece of extended writing, a page and a half, and you have other pupils who are grammar school material supposedly who write four lines. Literally four lines" (Head of English, rural grammar school).

As well as having to become accustomed to writing longer pieces, many Year 8 pupils in all types of school had difficulty in sequencing their ideas and in applying the rules of grammar and punctuation. The English teachers usually sounded more concerned about the application of grammar and punctuation in written work than for their own sake, although there were a few cases where pupils had a very limited knowledge of punctuation marks or did not seem to understand the differences between the various parts of speech:

> "They are fairly familiar with the.. general range of grammar. But they seem to be lacking the ability to put it into practice at the start. For many it still needs nurturing. Maybe I am disturbing them. Maybe I am leaning too hard on the next James Joyce sitting in front of me! But we have exams to think of, things like that" (English teacher, boys' grammar school).

> "They are not familiar with paragraph writing or proper punctuation like full stops and the comma. It's very rarely you'll see our kids using a comma. Full stops and the capital letter, they know that but sometimes it's inappropriate: they use a full stop when really they should have a comma....." (English teacher, secondary high school).

About a third of the English teachers included writing in paragraphs among the skills which large numbers of their pupils had not mastered and deduced that this was not being taught in many primary schools. Some went on to say that they found it best to teach paragraphing to the whole class from beginning, a response similar to that of the other subject teachers in similar circumstances where pupils arrived with uneven amounts of knowledge.

> "For some of the children setting out an essay, or paragraphing ..is totally new to them. I can see just from the amount of work they have to do in that Transfer procedure there wouldn't be time.. I mean essays didn't feature in it, actual writing didn't feature in it. It was all comprehension really, you weren't required to write, so I'm sure the teachers just didn't have time to spend on (essays)" (English teacher, secondary high school).

The last-quoted teacher was not alone in blaming the Transfer tests for the lack of attention to aspects of writing, and in particular for the insufficient amount of practice in sustained writing which many pupils had been given. However, the length and amount of detail expected in written work at the secondary stage was also cited as a problem for some pupils in two of the three post-primary schools located in non-selective areas.

Although less often raised as a major concern than pupils' difficulties with sustained writing, some of the less traditional aspects of writing in the KS2 programme of study appeared to have had patchy treatment in the contributory primary schools. Newspaper reports, keeping journals, drafting and redrafting a piece of work and the use of word processors were each reported to be unfamiliar to many pupils entering one or more of the post-primary schools.

Comprehension exercises, as might be expected from their importance in Transfer tests and pilot end-of-key-stage assessments, were often mentioned as an aspect of English with which entrants were well experienced and never as something unfamiliar. In three schools, perhaps rather curiously three girls' schools, they were, however, seen to give some pupils considerable difficulty. In one secondary high school some pupils were said to find it hard "to come to terms with an unseen text"; in a grammar school the problem was rather moving up a register from the fairly basic responses acceptable at KS2 to more the detailed answers in their own words expected in KS3.

The entrants' experience of literature varied greatly, both in quantity and quality. Some new pupils arriving at the girls' grammar school had read so widely that they were ready to move on early to the Year 9 list of recommended spare-time reading, despite the length of the Year 8 list, whereas other new pupils had read relatively little. In another grammar school, where there was also a large range of reading experience, some of the less enthusiastic readers had explained that in P6-P7 they did little reading apart from comprehension exercises.

What, if anything, the pupils had done with class novels and other literary texts besides reading them was an aspect of primary school English on which many informants wished to comment. The Head of English in a grammar school, who did not have a Year 8 class, was unusual in saying he assumed that, since pupils read books in primary school, they would be familiar with ways of dissecting a story and looking at characters. A few other teachers recognised that their entrants had some experience of discussing texts but saw this as quite superficial in comparison with the more detailed work of this type in post-primary school. Writing about texts rather than discussing them orally was thought to be new for many pupils. Book reviews were occasionally mentioned but both as a familiar and an unfamiliar activity (as indeed also was project work in

the library). One Head of English believed that the main type of follow-up work to reading a text in some of the local primary schools was a comprehension exercise.

> "My experience of them coming in from primary school would be that they would have read a book, maybe chatted a bit about it orally, they might have read it themselves or it might have been a class novel that the teacher was reading to them as a Friday afternoon activity. But they would not have done much analysis of the characters or picking information from the book to back up an argument.... We would tend to emphasise literature more. In primary school they would have read more just for enjoyment or in order to get the reading right." (English teacher, non-selective area).

> "I had a chat with my class and they told me... that they didn't compare characters or do character studies... It was more a case of 'What do you think of it?' and 'Would you recommend it to your friends?'.. (Head of English in another non-selective area).

Although poetry and drama were included by two Belfast teachers among the aspects of English with which their entrants were very familiar, several others said that their entrants had done little poetry. The Head of English in a rural grammar school had gathered that some local primary schools used poetry only for comprehension exercises as part of Transfer preparation. While drama was frequently identified as one of the most popular aspects of English, especially when pupils were allowed out of their seats to act, teachers in four schools (three grammar and one non-selective) said they found it quite hard to arouse, or in one case to maintain, pupils' interest in poetry, although in two other schools poetry was said to be popular.

The technical language used to discuss literature – terms such as simile, alliteration and dialect – were reported by several teachers to be either unfamiliar to their entrants or to have been touched upon in only some of the contributory schools. However, introducing this in Year 8 appeared to be fairly straightforward. Indeed, only two English teachers identified any aspect of literature as particularly difficult for their pupils, in marked contrast to the problems with writing. An assistant teacher in a secondary high school had observed that some pupils could barely keep pace with their programme, which did indeed include more class novels than any other of the Year 8 syllabuses discussed in detail. In a grammar school, one particular novel, which is more often used with older age groups, was perceived to be hard going for some pupils, even in the abridged version used, although certain aspects of it were believed to be highly enjoyable. (In a pupil group interview this particular novel was variously described as "good", "hard", "sad", "hard at the start" and "it gets better as the book goes on". When they were asked if English was generally easier or more difficult than in primary school, this group's verdict was, "It's more fun".)

Entrants' Levels in and Experience of Talking and Listening

In complete contrast to the estimated levels for Processes in Mathematics and Exploring and Investigating in Science, only two English teachers thought that their entrants' levels on Talking and Listening generally lagged behind those for the other two ATs in the subject, namely Reading and Writing. Seven English teachers perceived the levels for Talking and Listening as very much on a par with those for the other two ATs, while another seven teachers judged them to be higher. The remaining three English teachers said that their Year 8 pupils varied too much on Talking and Listening for a meaningful comparison with the other ATs to be made. As in the primary sector, some English teachers had difficulty in making assessments of Talking and

Listening and in one school it was admitted that this was a task on which they had only recently begun working.

Perhaps one reason for the much better showing of Talking and Listening than of Processes in Mathematics and Exploring and Investigating in Science in the comparisons with the other ATs in their respective subjects is that, within English, Talking and Listening was being compared with Writing – the AT with which most English teachers thought their pupils had the greatest difficulty – whereas, ironically, ability to record in writing forms part of both Processes in Mathematics and Exploring and Investigating in Science. In this connection it was noted that five of the seven English teachers who regarded Talking and Listening as their pupils' best AT were from secondary high schools, where Writing caused the greatest difficulty, and only one was from a grammar school:

> "They are better (on AT1). They're very good at listening, very keen and enthusiastic to talk and some of them are very articulate. I'm thinking of some pupils whose written work is quite scrappy and maybe weak but they are articulate. I would say there would be some pushing L5 in AT1" (English teacher, secondary high school).

The two teachers who considered Talking and Listening to be their entrants' weakest AT were both in non-selective areas. One of them suggested that features of the district as well as of the primary schools might be to blame:

> "This town isn't a particularly articulate part of NI. I think there's some repression, for various reasons. It's one of those places where children aren't encouraged to talk at home. And I would be always amazed at how many children, including the brighter ones, aren't familiar with even reading the first page of a newspaper or listening to a news bulletin. I think possibly more could be done in the primary schools because they are sometimes lacking things which I assume they should know they don't, and therefore we find difficulty in getting them started in the Talking and Listening. A lot of them are reticent right through to tenth year" (Head of English, non-selective area).

Elsewhere, and particularly in four schools in the Greater Belfast area, teachers spoke of their entrants' obvious familiarity with aspects of Talking and Listening, even if their skills needed to be developed considerably further:

> "The children love drama.... And they are quite used to moving the furniture around and splitting up into groups and working in groups. I think that is great. And it certainly must come from the primary schools. They can organise themselves quickly this way and, watching them, you would know that they had done it before" (English teacher, secondary high school).

> "Basically the skills are good. Mostly the content is very good but it is developing skills of presentation and maintaining eye contact and not looking down. Some are a bit shy. You do notice differences" (Head of English, grammar school).

In one secondary high school the Northern Ireland curriculum was credited with bringing about improvement in their entrants' oral skills.

> "I've found a lot of them are doing more oral work now and that's beneficial. They're very able to discuss things orally but when it comes to the writing I feel there could be

more done in primary school... Listening seems to be a skill that they have learned very well in primary school. And they know the rules, even very weak children know the rules of discussion... I think it's because English has changed because the emphasis is on oral work as well" (English teacher, School SHC5, secondary high).

The last informant was unusual in specifically praising the pupils' listening ability. Like teachers in primary schools, English teachers tended to judge their pupils to be better at talking than listening. Two aspects of Talking and Listening were identified as hard for many new pupils: giving a formal talk and group discussions. Lack of experience was the obvious cause of the problems with formal talks, as pupils had often no idea how much material they needed for even a short talk and had still to acquire presentation skills. In discussions, the pupils' difficulty in listening to and then building on each other's contributions was the main problem, although a few new pupils were said to be 'loners' and to show a reluctance for any kind of group activity. The two very different types of problem are illustrated below:

"I have just come out of a class where they are making up a modern 'Midsummer Night's Dream'... divided up into scenes. The class was alive with activity. But one group found it difficult to share their ideas. All they wanted to do was to write their own script and do it individually. Two girls in one group found it very difficult to work in a group" (English teacher, secondary high school).

"Yesterday I was talking about fox-hunting with a top Year 8 class and they were all wanting to give their thoughts on the matter. And I had to keep saying, 'Be quiet just now and then we'll come to you. But you must listen first' But it was, 'Oh but....', and everyone trying to butt in" (Head of English, non-selective area).

4.5.3: English Teachers' Evidence: Year 8 Curriculum and Strategies

Deciding Where to Start

Two main ways of beginning the Year 8 course were described. Five of the schools (three grammar, one secondary high and one junior high school) had a special introductory unit, with a title such as 'Early Days at X___ School' or 'All about Me'. This might last until about Halloween of the first term or possibly longer, although it might be allocated, say, only two periods a week. These modules aimed to serve several purposes, with the emphasis varying slightly from school to school: to help the pupils to adjust to the new environment, to introduce them gently and if possible enjoyably to the standard of work expected of them, to let the pupils get to know each other better and to feel at ease in working together and to enable the teacher to appraise their attainments on the three attainment targets:

"It is called an 'Early Days' project. We felt that in order to make this new world of (school name) meaningful to the children, our starting point should be with them. And they are able, on a more mature level, to discuss a lot of the areas which maybe they have discussed in the primary school. And that is where continuity is built in" (Head of English, secondary high school).

"They do 'Me' folders ... And it is an opportunity for me to get to know them better, for us to settle in, for the boys to get to know the new boys in the class as well. So it acts as a good ice-breaker for us all. By the end of it everybody knows what football team

everyone supports, what their hobbies are and things like that. And we share a variety of poems, all based on personal development" (English teacher, boys' grammar school).

"But to prepare the pupils for that we do an induction programme, which lasts until Halloween.... This it is very extensive. They do two projects. One is about themselves, really an autobiography of themselves, and the other is a biography of an older person: it can be a parent, a grandmother, an elderly relative or just someone they know. This relates to the overall theme for the year of Similarity and Difference. And because there is a whole range of activities in talking & listening, reading and writing based on that, we get a very good understanding of them and where they are. On their second project, we do a group project and they work together" (Head of English, grammar school).

There was usually a strong pastoral element:

"And they talk very much about starting at (SGE7) and their feelings about it because that gives them the opportunity to express any doubts or fears or hopes and expectations. They keep a diary for the first week. We emphasise that is not to be just what we did each period but it is their thoughts and feelings. We do a section on their hopes and ambitions. And we talk about their friendship groups and they do something on pets as well" (Head of English, grammar school).

In the course of the introductory module some texts would be studied, but probably not to the same depth as later texts. Poems on the themes of personal development, self-awareness and schooldays, with titles such as 'My First Day at School' or 'My Possessions', and the novel 'Grange Hill' were mentioned. In two schools there were accounts of particular efforts to ensure a sense of pupil involvement. The project in the girls' grammar school based on the biography of an older person led on to an exhibition of wall charts. In the secondary high school, the Unit booklet, which was revised each year, would include some original work from the previous Year 8. In that school too every Year 8 child, from the brightest to the weakest, contributed a page to a magazine for a Parents' Evening, which was held about Halloween.[44]

The second main approach (which was described in one grammar school, three secondary high schools and a school in a non-selective area) was to begin in the same style as the rest of the KS3 programme, with the first of a series of units based on literature, usually a modern or a fairly modern novel. Short pieces of prose and poetry on themes emerging from the novel would be studied and the themes could be further explored in oral work. In two of the five schools the first novel was Roald Dahl's 'Boy', in which a man recalls his boyhood, including entry to school, while two classes in a secondary high school had begun with 'The Diddicoi', in which a gypsy child is integrated into the community and goes to school. In another school (which might almost have been placed in the first category) a project on The Family ran alongside the serious study of the first novel, which was 'The Far Side of the Lough'. In such cases, where the related work took up the theme of going to school, the unit may have provided experiences quite similar to those of the Early Days modules in the other schools. That certainly seemed to have happened in two of the secondary high schools. One teacher explained:

"'Boy' is a good book to start with because it's a whole school experience. It's about coming into school and I use that at the start, in a pastoral care way as well, so they can

[44]This was the school where the introduction to Year 8 mathematics took the form of preparing displays of statistical data for the same Parents' Evening.

> talk about how they felt when they first came into (SHC5). And they did poems, creative writing about coming into school" (English teacher, secondary high school).

In the fifth secondary high school the main emphasis in the early weeks, as described by the one informant from the English department, appeared to be on simple language skills ("you have got to go back to basics and show them how to do it"). There was, however, also scope for imaginative writing, partly as a means of assessment, and Roald Dahl's 'Boy' was read. In the remaining school, which was located in a non-selective area, the question on how they decided where to start the course was answered in terms of the initial assessments: the banding by the principal. the administration of an NFER comprehension test and the opportunities for pieces of personal writing from which their technical skills could be judged.

No matter how pupil-centred the introductory units described, in all twelve post-primary schools there was mention of some kind of assessment of the entrants' capacities in English during their first half-term, if not their first week. A standardised test of reading comprehension was administered early in the term, if it had not already been given, in all five secondary high schools and one junior high school. Initial Talking and Listening skills were gauged from performance in class activities. Writing abilities, as in the non-selective school referred to in the last paragraph, were usually assessed through assignments which it was hoped would be of interest to the pupils:

> "Also I like to get them writing stories, particularly about themselves because their writing is actually the best thing to judge them on and I think I get it pretty accurate. If I can get a kid to write a bit of imaginative work, if I can get him into the thing then I can tell just by how well he writes, what sort of standard he's at. It's maybe very crude but it usually works with me" (English teacher, secondary high school).

> "No firm, early decision would be made. They wouldn't be given a test in the first week or anything like that. But after approximately a month, they would be given a fairly challenging, substantial piece of work and then we would see. It might be on the family, on one of the 'Me' theme" (Head of English, SGA1, grammar school).

> "But it is quite interesting because from the results of that first project plus a written biography that they do of a person of their own choice, probably a person in their own family, I can then have a fairly good idea by the end of October of the first term exactly what sort of English skills they have and I find it usually very revealing" (English teacher, SGE7, grammar school).

In contrast to the teachers of mathematics and science, only two English teachers made any mention of attainment levels when explaining how they decided where to begin. The Head of English in a secondary high school said she began at level 3, while the Head of English in a grammar school said she took into account the fact that they had generally able pupils, most of whom would be level 5 on entry.

The Year 8 Programme

The type of unit described in the last section, focusing on a twentieth-century novel and including shorter texts from other genres on themes found in the novel, was fairly typical of an important element in the Year 8 English curriculum in many of the schools. In such cases there would certainly be opportunities for written and oral work on the literature in the unit and

sometimes even the more formal lessons on the technicalities of language would be related to the texts. As the Head of English in a secondary high school with an avowedly literature-led English programme said:

> "We are very firm believers in using a text as a springboard out. And I think the children can relate to that very well. If you are doing a novel you can bring in non-literary material, you can bring in poetry to support the themes, you can bring in many other resources which tie in."

This type of approach to English, which was often described in considerable detail and with much enthusiasm, would have been new to most entrants. Although the majority would probably have had some experience of focusing on and writing about a topic through project work, some of the themes mentioned by the English teachers – such as friendship, loneliness and war – were much more abstract than the topics of a primary school project.

There were, however, a number of variants. Whereas most informants indicated that about a term would be spent on each novel and the related texts, in one secondary high school the rate from Halloween onwards was three novels a term. Indeed it was suggested in that school that their pupils had really two transitions in English: the first from primary school to a fairly relaxed and fun-filled 'Early Days' unit and the second to a much more demanding, although hopefully still enjoyable, series of literature-led units. One school had separate units on the novel, poetry and drama although the more usual plan was to include these three genres and all three attainment targets in every unit. There were differences too in how closely focused and all-inclusive the units were. Sometimes they would probably best be described as an important strand in a term's work, which might also include topical, seasonal or deliberately contrasting material. The Head of English in a boys' grammar school, for example, felt that too thematic an approach could lead to boredom. In particular, like informants in several other schools, he found that most entrants did not much enjoy poetry and that these negative attitudes could best be countered by teaching poetry mainly for enjoyment and creative work rather than by always tying it to the themes in the current novel. An English teacher in a secondary high school also liked to have a certain flexibility:

> "Creative writing, choice of poetry and literature would tend to be tied up with the theme. But that's not to say that if I come across a story for the first time that I think they will enjoy, that would be good to do, that I wouldn't break into the theme and do that. I'm not so tight or rigid on that" (English teacher, SHE9, secondary high).

Not all informants described their Year 8 programme in terms of a series of literature-led units. Most of the others, however, indicated a balance of the attainment targets and, within literature, a balance of the main genres. In one secondary high school, however, there seemed to be a greater emphasis than elsewhere on the basic skills of comprehension and writing and fewer references to reading and writing about literary texts.

Across the twelve schools there were also differences in the extent to which formal study of language was related to the literature being studied or treated separately. The minority view was expressed by the Head of English in a grammar school, who made little use of the textbook:

> "You learn grammar by seeing how it is used, and why you need to punctuate. A literature-based approach puts these things in a context."

Most teachers, however, used a basic language book. '*The Oxford Secondary English Book 2*', '*Galaxy 1*', '*Passageways*' and '*The Art of English*' were among the titles mentioned. In one secondary high school teachers had a choice of textbooks, which were in different degrees grammar-based and topic-based, serving as a stimulus to different types of writing. A few teachers spoke of special efforts to improve punctuation. One grammar school had "lively, photocopiable resources on punctuation and especially the use of the apostrophe", while an English teacher in a secondary high school in a disadvantaged area approached punctuation through drawings of cartoon characters with speech 'bubbles'.

In the course of the interviews many varied types of writing were mentioned, including autobiographies, biographies of an older person, turning a Shakespearean plot into a modern play, retelling a narrative from the point of view of a character such as the Lady of Shallot, constructing the diary of a character in a novel and scripting a trailer for a film based on a novel.

Talking and Listening in Year 8

Although the informants were not directly quizzed about what they had done on Talking and Listening, there did not appear to be any sign of opposition to this AT as there was for the corresponding attainment targets in mathematics and science. The only indication that insufficient attention had been given to Talking and Listening came in the confession of the head of English in a grammar school who admitted that he had done little group work that year with his Year 8 class "because it seemed to lead nowhere" while acknowledging that, unless the pupils had practice, they would never learn.

Elsewhere there was evidence of teachers building on the varied – and sometimes only embryonic – skills with which the pupils arrived. There were accounts of discussions both of general issues and of the texts being studied, of group tasks, of scripting and then acting a play and of short formal talks to the class. One teacher, most of whose pupils arrived with poor presentation skills and had often run out of material within a minute when attempting to give a talk the first time, was particularly pleased at their improvement by the second term:

> "They did a talk for me on a favourite film that they had seen or a special holiday or a hobby. And that was very successful. I had one very quiet boy who told the others about his hobby of painting skulls. He has a shelf just opposite his bed with all these painted skulls. It sounded terrifying to me but they were really interested. And one boy brought his lizard in, a pet lizard, and they thought this was wonderful. I think they have improved a lot" (English teacher, non-selective school).

Overlap between KS2 and KS3

Nine English teachers, each from a different school, raised the issue of possible overlap in the books, and especially the class novels, studied in primary and post-primary school. Their attitudes, however, varied. Two teachers simply stated that it was common to find that a few pupils in a class, typically three to five, had read the book in primary school. Two other teachers, both from secondary high schools, thought that such repetition was not a problem since the pupils tended to have forgotten much of the book, which would in any case be studied in more depth in secondary school. An English teacher in a non-selective area coped with the problem of six members of her class having already read the first novel on their syllabus, 'Carrie's War', by giving them the sequel, 'Rebel on the Rock', but asking them to pay some

heed to what the others in the class were doing with 'Carrie's War'. However, she felt this was only a partial solution and not only because all novels do not have sequels:

> "But I felt it spoiled it a bit for them. If the very first novel offered in secondary school is one they have already read, that gives an unfortunate impression of the subject and what they are going to be doing" (English teacher, non-selective area).

In three schools (one junior high and two grammar schools) efforts were made to avoid duplication of novels in the two sectors. The grammar school teachers found out from their pupils if they had studied any of the books before and would then remove from the syllabus any such books mentioned by significant numbers of pupils. There was a partial exception to this practice in one of the grammar schools (SGE7), where the dramatic version of Roald Dahl's 'Charlie and the Chocolate Factory', which almost all their pupils would have previously read, was used as an ice-breaker in Talking and Listening. Since another purpose of this exercise was to begin to focus attention on genre in an enjoyable way by looking at the differences between narrative and drama, the pupils' familiarity with the story was actually an advantage, although in other circumstances it would have been deplored:

> "I am sure there is nothing more awful for a Year 8 pupil coming in than finding that the text they are to concentrate on for a good proportion of their time in the first two terms is something they have already studied in primary school" (English teacher, School SGE7, grammar school).

The junior high school, SNF10, as already mentioned in section 3.2.6, tried to keep its main feeder schools informed about the books it used in order to avoid the kind of unwitting repetition "which makes both sides cross".[45]

In one rural grammar school, however, the attitude of some of the contributory primary schools made the repetition of class novels almost inevitable, as some of the primary schools would deliberately adopt books which they knew to be used in the grammar school, although it is doubtful what advantage they could seriously imagine they would gain:

> "There's a problem here with the primary schools.. Once you select novels that you think would slot into your group, like 'I am David'... and introduce them into the school, next thing you know the primary schools, because they're so competitive, are latching on to what you' are using or doing. They're then using these texts... I mean you have to change and change and change..... because we don't have... any real collaboration. There's a strong competitive element I find in the primary schools because we're dealing with a selective system here." (Head of English, grammar school).

None of the English teachers appeared to see it as a problem if entrants had already mastered any of the aspects of language work which they intended to teach to the class.

Differentiation in Year 8 English

About half the English teachers felt that the streaming or banding policy of the school or else the selection process in the Transfer Procedure had resulted in classes sufficiently homogeneous in ability to eliminate the need for much, if any, further differentiation:

[45]There was evidence from one of the primary schools in the cluster that such action was appreciated.

> "If I know which stream a class before me is, that is enough for me to begin pitching my lessons" (English teacher, non-selective area).

The two secondary high schools which used team teaching to help the lower ability classes in mathematics used it for English also. In one of these schools, where many of the pupils had low reading ages, the team teaching periods were often used to hear reading in groups, pairs or on an individual basis, as thought appropriate: obviously, with two teachers in the room, more pupils could receive attention. In the other school, which streamed systematically only for mathematics, the presence of the second teacher enabled a lesson to take place on two levels:

> "There are some very bright fellows in 1E, who are going to be bored if I make a lesson too basic. So I can give them a lesson and then the support can look after them while I go round and talk to the weaker fellows" (English teacher, secondary high school).

A grammar school teacher was the only informant to mention extension work in English in the sense of extra, more advanced work for those who had completed the basic assignments. In four schools (one grammar and three secondary high) there would sometimes be a choice of tasks, and if it were for written work on a novel or other text, pupils might be guided towards the ones considered most suitable for their ability level This was seen as a particularly appropriate strategy where (as was emphasised in several of the schools) it was believed that there are pieces of literature to which most or all of the year group should have access although the pupils may gain different things from the same text.:

> "For the weaker child you would have straightforward tasks. For the brighter child you would have more difficult tasks:" (Head of English, secondary high school).

> "For some tasks, like a big homework at the end of a novel, there would always be a choice. And. on the whole, the children themselves choose the tasks that best suit them. If anything, it is the abler ones who would need more gearing towards the more challenging tasks, a wee nudge not to task the easy way out. The weaker ones are more likely to choose the appropriate task" (English teacher, secondary high school).

Similarly, for Talking and Listening, discussion groups within a class might be set topics or questions of varying difficulty. In at least two of the schools pupils would also be guided in library classes towards books that were considered suitable for them personally.

Differentiation by outcome appeared to be used to greater or lesser extent in virtually all the schools, especially in creative writing. At the beginning of the year it was the main way of assessing pupils in grammar schools and two of the non-selective schools, while elsewhere it might complement scores on standardised reading tests.

In one grammar school there were plans to introduce an individual appraisal system whereby, on the basis of performance in previous assignments, pupils and teachers would work out targets to be reached or particular aspects of English to receive attention. It was acknowledged that this innovation, which was about to be implemented, might actually increase the differentials among pupils, although it was hoped to raise overall standards. Although this was the only informant to mention this particular approach, in three other schools teachers said that at the end of a unit there would be an opportunity for evaluation and self-assessment. It was agreed that pupils were usually refreshingly honest, not least about themselves and how they had tackled their work.

4.5.4: Teachers' Perceptions of Pupil Preferences in Year 8 English

Sixteen of the 19 English teachers identified aspects of the subject which their Year 8 children particularly enjoyed and 17 identified aspects which were less well liked. Drama and oral work were generally thought to be popular, with eleven teachers naming the former, seven the latter and thirteen naming both oral work and drama as among the favourite aspects of English. There were several references to pupils enjoying discussions, dramatising scenes from novels and writing their own scripts. No English teacher thought oral work or drama was disliked.

Reading also emerged as relatively popular in the teachers' view, although the teachers varied in whether they identified reading aloud, reading books of their own choice, empathising with a character or discussing a text orally as the most popular facet of reading. It was noticeable that most of the ten positive mentions came from teachers who had stressed the literature-led nature of their Year 8 course. Four teachers, however, thought that reading was not always enjoyable for pupils. A grammar school head of department, for example, admitted that one of their main Year 8 texts, 'A Town like Alice' by Nevil Shute, was not liked by all pupils, while a teacher in a secondary high school had found that, on entry, some of their lower-stream pupils did not associate reading with pleasure because in the past their parents had chosen books that were too difficult for them. The English teachers were divided on how much Year 8 pupils liked detailed follow-up work on their novels. Much seemed to depend on the nature of the activity; understandably, detailed comprehension questions seemed less fun to the pupils than imagining a book as a film. Four teachers spoke of their pupils' delight in a more oral tradition of story-telling, either listening to stories being read aloud to them – one teacher had himself written stories based on the local area and local characters – or themselves telling stories that were part of their family traditions. Poetry, with four negative and two qualified positive mentions, was, however, not thought to be very popular with Year 8 pupils, who seemed to prefer humorous verse to poetry about the emotions. The teachers differed in whether they thought pupils' attitudes to poetry improved or deteriorated as they went up the school.

Although three English teachers (2GS, 1SH) believed that Year 8 pupils could enjoy creative writing or writing about themselves and four other teachers (1GS, 1SH, 2NS) thought that pupils enjoyed using word processors and other technology, Writing was perceived to be the least liked of the three ATs. Three teachers (1GS, 2NS) found that pupils disliked writing formal essays, as opposed to freer creative writing, while seven others spoke of pupils disliking writing in general or disliking extended writing. Redrafting and exercises in such technical matters as spelling or grammar could be seen by pupils as particular chores. Written comprehensions were thought by six teachers (2GS, 3SH, 1NS) to be one of the least enjoyed aspects of English. As the head of department in a secondary high school said, "They're a bit disillusioned by the continuation of spelling and comprehension."

In two grammar schools the induction units were thought to evoke great interest. Activities identified as popular by just one English teacher were projects, library work, videos and assessing each other's work.

4.5.5 English in Year 8 Pupils' Evidence

In parallel with the corresponding sections on the pupils' views of the other subjects, this part of the report begins by summarising the pupils' general impressions of the similarities and differences between Year 7 and Year 8 English and ends by considering whether they had

experienced serious difficulties in transition. The specific questions addressed after the analysis of the teachers' evidence were as follows:

- What evidence was there of a neglect of extended writing in the upper primary school or of a sudden increase in the demands made on pupils' writing abilities in Year 8?
- Is there any evidence that the pupils had not experienced the main Talking and Listening activities and, in particular group and class discussions, in either the KS2 or KS3 programmes of study?
- Do the pupils remember studying novels, poetry and plays in primary school? Did they experience major changes on transition in the ways in which they were expected to analyse and write about literature?
- Were pupils aware of a shift towards a more literature-led English course, especially in those schools where the teachers thought this would be a significant change for them? How did they respond to the literature offered to them in primary and post-primary school?

Pupils' Overall Impressions of Similarities and Differences in English

For eight of the 23 pupil groups, the similarities between primary and post-primary English far outweighed any differences and, indeed, one group, from the lower band of a secondary high school was at first unable to think of any differences. Resemblance was most often observed where the post-primary school was seen to concentrate on the technical matters of spelling, grammar and punctuation and on comprehension. These were aspects of English which, as virtually every group indicated, received much attention in the upper primary school. Only one group, however, actually said that much of their Year 8 English was revision of primary school work.

- It's the same. Because we done comprehension and a whole lot of things and we done apostrophes and all.
- We're going over the same stuff, seeing if we remember about it (Lower band, secondary high school, Cluster C)

Although 15 of the groups concentrated on the differences between primary and post-primary English, these were often differences of emphasis or of difficulty level rather than of fundamental change. Sometimes in the description of the differences, the idea of progression could be seen. Thus, in about a third of the schools pupils stressed that higher standards of technical accuracy were expected, that the comprehension passages were more advanced (or "harder"[46] in the usual pupil terminology)or that the work was generally more detailed. A group from a boys' grammar school wrestled to explain progression from a pupil perspective:

- You sort of really have to develop more and try to get everything sort of academically more... I can't think of a word. You just have to try and work a little bit harder. And try a little but harder with the full stops and capital letters and apostrophes and things.
- Possibly using the same vocabulary. It's just like the second stage of the primary school.....
- I think it is much the same as primary school... It is just a wee bit harder and you have to work a wee bit harder. (Belfast grammar school)

[46]As with mathematics, follow-up questioning established that the term 'harder' almost always indicated pride in being given more advanced looking work rather than difficulty.

In six groups, pupils said that English lessons were more varied at secondary than at primary level and several others named particular activities or types of literature that were new to them and which had helped to make the whole subject feel somewhat different. In approximately half the groups,[47] including at least one from each grammar school, pupils were much aware of a shift towards more reading or study of literature. Sometimes this was expressed very briefly ("Well, I think you do a lot more reading.") but the group of grammar school pupils quoted below certainly seemed to agree with their teachers that their course was literature-led.

- In grammar school we actually start with certain books that we read and then we do work on them, and in primary school we did like speech marks and things like that...
- In primary school there were wee books you were given and they gradually got harder as you moved up the school but in grammar school they are novels now.

For about a third of the groups, a major change after transition was the requirement to produce longer or more frequent pieces of writing, often as homework. Although most answers in this category were fairly short, an upper-band group in a non-selective school, between them, described in some detail a trend away from working on the separate components of English language to sustained writing in a variety of forms and the reading of novels:

- English was easier. English was just learning spellings and stuff.
- English was just writing down nouns and adverbs and you just had to do sentences with them.
- English in my primary school was just focusing on vocabulary and in secondary school you get doing a lot more things like essays and trailers for novels.
- In primary school you just did stuff like spellings and adverbs and nouns and you didn't do much novels or essays.
- In primary school we just did a book with nouns and verbs in it. And we wrote stories every Thursday (Upper band class, non-selective school).

For four groups one of the most important features of English in Year 8 was the greater variety of oral work and drama. Like the perceived changes in the study of literature and writing, this will be discussed more fully in one of the following sub-sections.

Literature and Other Reading

The main conclusions from Year 8 pupils' accounts of their reading was that the great majority had encountered some literature in primary school but that both the amount of reading and the extent to which it had been followed up with other activities tended to be less than in post-primary school. Most pupils could, especially if directly asked, name novels they had read in both primary and post-primary school, although a pupil in a non-selective school declared that, "The only books we used to read in primary school was our Reading 360". Perhaps more surprisingly, one grammar school group stated, in January, that they had read no novels in their new school, although they were accustomed to novels in primary school; the other pupil group from that grammar school did make two fleeting references to an unnamed novel they were currently reading. At the other extreme, pupils in three schools (1GS and 2SH) spoke proudly of

[47]Figures and fractions in this sub-section are based on answers to the general question on similarities and differences. Quite often, more pupil groups would make similar points after being prompted about the aspect of the subject in question.

their achievements in recent readathons and some pupils in a secondary high school (SHB4) had also participated in readathons in their primary schools.

Although the matter was unfortunately not followed through systematically in every group, pupils in three schools had been given novels which they had already read in primary school, while in two other schools such repetition had apparently been avoided. From the titles mentioned it was evident that there are a number of novels considered appropriate for the 10-12 age range that are quite commonly read in both primary and post-primary schools in Northern Ireland. Titles include: *The Borrowers, Midnight Fox, Tyke Tyler, The Twelfth Day of July* and *Under the Hawthorn Tree*. One grammar school boy — from a different school than the one where the head of English reported similar practices — explained that when in primary school they were given secondary school books "so that we could get used to what we were going to do."

Treatment of the novels varied. In both primary and post-primary schools novels might be read by the teacher to the class, read round the class, read by pupils to each other in groups or read silently. On transition, some pupils experienced a change from reading aloud to private reading, while for others the change was in the opposite direction.

In about a third of the groups pupils recalled doing some written work on their novels in primary school, although in several cases this appeared to be limited to comprehension exercises or commercial workbooks:

> "Whenever we had a book or something we were given a sheet and we had to fill in the blanks or just read the story and then answer the questions" (Upper stream class, secondary high school).

Pupils in two schools, however, remembered writing freer essay-type answers on their novels in primary school, while a boy in the upper stream of a secondary high school had been asked to write an adventure story, imagining he was one of Enid Blyton's Famous Five. Several pupils recalled either writing book reports in primary school or telling their classmates about books they had recently read, although in some cases they were making a contrast with the longer and more systematic book reports expected of them in their post-primary schools.

Even if some pupils may have forgotten some of their primary school activities, the increase in literature-based written work at secondary level can be illustrated by the fact that over two-thirds of the groups mentioned such work without specific prompting and in three cases at most was this restricted to worksheets or comprehension exercises. Among the varied activities relating to a more detailed study of literature in post-primary schools were dramatising a novel or a short story, retelling a story from the viewpoint of a character such as the Lady of Shallott, retelling a story in the form of a character's diary, character studies, chapter summaries, thinking of an alternative ending, newspaper articles based on events in a novel, planning a trailer for a film based on a novel and scripting a 'This is Your Life' television programme based on the achievements of a fictitious character. One grammar school group described each group in the class taking it in turn to 'teach' a chapter of their novel to the others by talking about the characters, the plot and the style of writing. Many of these activities, including character studies, were said by the pupils to be new to them. Also new were tests on novels or poems. By no means all the follow-up work to the reading of literature was, however, written. One grammar school group in particular spoke highly of the class discussions they had on their novels; for one

pupil this was an improvement on the primary school situation where each table had a different novel and a full discussion was impossible.

Pupils in the nine groups which mentioned poetry had very varying experiences of it in primary school, from virtually none to considerable practice in reading and even writing their own poems. One grammar school girl remembered having poems read out as the stimulus for writing either another poem or a descriptive piece. In confirmation of the teachers' evidence, the previous experience of pupils in Cluster B seemed particularly patchy. Two grammar school pupils commented on the novelty of having a poetry book while the feeder primaries of the secondary high school appeared to give different degrees of priority to poetry:

- We do a wild lot of poems here. A wild lot of poems. Yeah we just do poems whenever it's Halloween or Christmas .
- We done poems all the time in PS. (Upper stream class, secondary high school)

Drama, as a literary form, was less often mentioned than poetry but tended to be more of a post-primary study:

> "We do plays, like we did 'Charlie and the Chocolate Factory' in secondary school. *And did you not do plays in PS?* No, not really, it's just like the summer, in PS, we used to have summer plays, like Oliver Twist or My Fair Lady" (Girls' grammar school).

Just over half the groups referred, never unfavourably and in eight cases very favourably, to the libraries in their new schools. One grammar school group was particularly appreciative of having been shown how to use the library facilities. Reading was often mentioned as a favourite aspect of English by pupils from all three types of school but some pupils' previous experiences had been quite restricted:

- We go to the library every two weeks and they've got a really really big selection. It's just amazing cause we didn't have a library, we just had a class thing where we could get an interest book out but it wasn't the same. *And you didn't have a library van?* We did but we only had a wee library in our class (Non-selective school)

- I like reading the library books because in my last school we read mostly set books. • I like reading as well because you didn't get very much chance to read in primary school (Belfast Grammar School).

- Our teacher lets us go into the library and get a book. • Mr H-- if you ask him you're allowed to go over and take a book and read and in our other school you just had to sit there....
- In primary school you had a minute or five minutes to get a book and get back.
- Our old school they didn't have that much good books, you know half of them had pages missing .
- It wasn't as big a library as that in there.
- In primary school there was books for P4 and P5 and most of them are a bit childish even for the primary 6 and 7 but here you go on to gooder books, more mature.
- When the library van came to our school the teachers were the only ones that were allowed to pick out the books at our school (Non-selective school)

The reading and answering of comprehension passages as an exercise apart from the detailed study of literary texts was mentioned by 13 of the groups in nine of the schools (3GS, 5SH, 1NS). Even although there was considerable criticism by the primary school teachers of the difficulty level of the comprehension passages in the Transfer tests (see Section 3), in several of the schools pupils described their present comprehension exercises as harder than what they had done in primary school. It was also observed that two groups in the lower streams of secondary high schools appeared to describe a method of doing comprehensions in their former primary schools which appeared to involve curiously little reading. As one group explained in dialect:

- There is no much writing but there's more work intil it. *How is there more work if there's not much writing?* ..
- In PS you did writing down stuff and you didn't really read much of it.... *How did you write it down if you didn't read it?* They just gave you questions and then you just answered them, you didn't read anything about it nor nothing. *You guessed the answers?* Yeah. And here they just let you read about them first.

Writing in English: Primary and Post-primary Experiences Compared

The Year 8 pupils often responded to the request to compare the writing they had done in primary and post-primary school by talking about the materials used (pencil, ink or biro) or the expected calligraphy (print versus joined-up writing). When the pupils were asked to focus on *what* rather than *how* they had written, one of the most frequent comments, heard in ten groups from nine schools (3 GS, 4SH and 2NS), was of the greater length or greater amount of writing required at the post-primary stage. The majority of these comments were concerned with essay or story writing:

- What you have to write here is really long.
- In primary school it was really short.
- The stories in primary school were small, like this (space of about 5 inches indicated)
- No, shorter. • Shorter (Upper stream, secondary high school)

It was agreed by the last group that in primary school they would not have written more than a page, whereas in the secondary school about three pages were expected. Other types of work might also require more writing. For example, girls in two schools[48] explained that they now had to answer comprehension questions in full sentences using their own words while a boy in a secondary high school found that tests were no longer based on multiple choice techniques:

> "We would be expected to try to put our answers in our own words. In primary school we were allowed to pick a couple of words and maybe copy out a sentence but here it's different" (Girls' grammar school)

> "And see, in primary school the questions were all a, b or c and you used to have to colour in the wee boxes. Here you have to write a sentence" (Secondary high school).

Contrary to the general trend, two groups (one in a grammar and the other in a secondary high school) thought that the requirements for written work were much the same as in primary school, while one group in a non-selective school said that they now wrote less than when in primary school, although the other group from that school totally disagreed. The evidence from an

[48]These were the two schools where teachers said pupils had some difficulty with comprehension.

upper-stream group in another non-selective school was equivocal: there was talk of "more projects" but one pupil's reply to the question on the most liked aspect of English was:

> "I like writing on the sheets, doing quizzes and that sort of thing. I'm not just up to writing loads and loads of sentences."

Demands by the new school for more accurate or more mature writing than what had satisfied their primary school teachers, perhaps with an extended vocabulary, greater attention to detail or the use of paragraphs, were reported by seven groups (3GS, 3SH and 1NS). Some found that their assignments now required considerable effort and thought:

- In primary school we did handwriting in English and like now they care more about the grammar and things like that than they do about the writing.
- It has to be more precise. (Non-selective school)

- It's more mature here.
- You are expected to write better sentences. And use speech marks and punctuation and full stops (Upper band, secondary high school).

- You have to use your imagination and express yourself more than in primary school. And use more difficult words than you had been using....
- I think it much the same but you have to think more.
- And concentrate more.
- Your descriptions have to be more detailed and all. 'Cos if you said, 'The man had a dark complexion', you would just have to say more than that. You can't just say. 'The man was tall' or 'The man was small'" (Belfast grammar school).

The other main change in written work in Year 8 English, was the increase in the number and types of opportunities to write about literature, as described in the previous section. In one of the grammar schools pupils saw a corresponding decrease in the frequency of writing fiction. In six schools pupils spoke of opportunities, not experienced in primary school, to write scripts, usually in groups, for acting out in front of the class. In at least two of the schools, where there were dramatisations of 'Charlie and the Chocolate Factory' and of stories from Shakespeare, the script-writing was sometimes literature-based.

Pupils in four schools, who had been free to work on a piece of writing for much of the primary school day, commented on the effect of the stricter time-tabling at secondary level; they had now either to write faster or (as in some mathematics classes) to take incomplete work home. The greater amount of written homework in English, reported by many groups could, of course, also be partly related to the more limited time available. Another sign of the more adult atmosphere of the post-primary classroom remarked upon by several pupils was that they were now expected to look up word meanings and spellings for themselves rather than ask the teacher every time, as had been the custom in even their P7 classes. One change, which was, however, genuinely welcomed in the three schools where it was mentioned, was the greater likelihood of getting some choice of topic in post-primary school.

Writing — especially "long essays" and "long homeworks"— was often identified as the least liked aspect of English, although a few pupils said they enjoyed writing stories or poems. Much more popular were the less traditional forms of writing, such as script-writing, designing a trailer for a movie and projects comparing the 1990s with an earlier decade in the century. A top-

stream group from a secondary high school described with signs of evident enjoyment an extended story-writing exercise, in which the possibilities for each section of the narrative were partly determined by the throw of a dice.

Talking and Listening in Primary and Post-primary Schools: Pupil Evidence

Most of the pupil groups indicated that more attention was given to systematic Talking and Listening activities and that there was a greater variety of such activities in their post-primary than in their primary schools. Indeed, only one post-primary transcript, from a lower stream group in a secondary high school, suggested that there might be any real neglect of the possibilities of Talking and Listening. The interviewer had just raised the issue of group discussion as a means of learning:

- We're not allowed.
- We have to get on with our work.
- Not unless she allows us.
- If we're talking to her. *I don't mean talking about football or Neighbours or anything, I mean about your work* ..
- You get put in groups sometimes to discuss work. *Would that be often?* Mmm not really.
- *Did you do that in primary school?* (*Only 1 out of 5 did not do this in primary school)* (Lower stream class, secondary high school)

Elsewhere, and even in the upper stream group from the same school, the reverse situation was more likely to be described and there were four groups where pupils agreed that the opportunities for discussion in their primary schools had been very limited.

- There is more oral work than there was in primary school.
- In primary school the teacher just gave you work and you had to get on with it. (Upper stream class, secondary high school)

- In primary school it was really just the teacher who talked to us. We didn't really say what we thought or give any real reply.
- We work it out and we really discuss it between ourselves here. (Grammar school)

Many different types of Talking and Listening were described: giving a formal talk to the class and perhaps answering questions on it, writing a story to read aloud, small groups preparing dramatic scenes to play to the class, acting out poems, improvisations, oral book reports, class discussions or debates, working on a task with a partner or a small group, questioning the teacher and teacher explanations. The first three items were very much associated with post-primary schools although one group recalled giving short talks in primary school. While 'performance-type' activities were usually described clearly enough, it was not always possible to distinguish between accounts of different types of discussion, especially in primary school. A few examples of the activities mentioned are given below:

- We do drama. *So what have you been doing in drama?*
- We have been doing problems you might have, like coming in late. *Did you do that sort of thing in primary school?* • No. (Upper stream, secondary high school)

- If we've got a poem, you have to stand up and act to it and read it out.
- And we do dialogues and all. *And you didn't do that in primary school?* • No.
- We did dialogues and poetry and things. In primary school you had loads of time to do that. *What about the rest of you?*
- I think it was sort of different because in primary school you went up and acted out but it feels better to act out what you've written down. (Belfast grammar school)

- We talk more in class. We talked about what was good in each other's stories in this school. (Upper stream, non-selective school)

- In P7 we were split into groups and we had to make up a story for either P1s or P2s and we had to go down and read it to them, with pictures and things. (Grammar school)

- And if you're doing something like, and you don't agree with it you get to discuss it, like and say what you think about it. *To your group?* • Yes, and to the class too. *And not in PS?* • Not as much
- You were just told what to do.
- Yeah you didn't really get an opinion on it you just were sort of told that that's right and that's wrong.
- The odd time like you were asked, 'What do you think?' but not much.(Lower stream group, non-selective school)

Oral work was one of the most popular aspects of English and, although some of the activities in post-primary school may have been new to the pupils, those who were interviewed seem to have adapted readily.

Most and Least Liked Aspects of English

Table 4.3, which summarises the Year 8 pupils' preferences for aspects of English, confirms their teachers' perceptions that reading, drama and talking and listening activities were generally popular but that there was less enthusiasm for extended writing, comprehension, grammar or other formal language exercises. Indeed, the last three types of work received no favourable mentions from the pupils.

Table 4.3 Numbers of Groups of Year 8 Pupils Mentioning Aspects of English as Most and Least Liked.

Aspect of English	**Most Liked**	**Least Liked**
Talking & Listening (gen.)	6 (1GS, 2SH, 3NS)	1 (1SH)
Drama	7 (2GS, 3SH, 2NS)	0
Reading	12 (4GS, 5SH, 3NS)	4 (2GS#†, 1SH†, 1NS#)
Library	6 (2GS, 2SH, 2NS)	0
Poetry	3 (2GS, 1SH)	0
Essays/ Stories	3 (1GS, 1SH#, 1NS#)	8 (2GS, 4SH, 2NS)
Writing: other	4 (1SH, 3NS)†	1 (GS)
Comprehensions	0	4 (2GS, 2SH)
Language Exercises	0	5 (1GS, 3SH, 1NS)
Projects	2 (2GS)	0

Homework	2 (1GS, 1NS)	0
Tests	1 (1SH)	0
Teacher/ Teacher style	4 (2GS, 1SH, 1NS)	0
More fun/more varied	4 (1GS, 1SH, 2NS)	0
(Almost) everything	2 (1SH, 1NS)	0
Little or nothing	0	9 (2GS#, 4SH#, 3NS#)

Disagreement within at least one group.
† A qualified answer, e.g. liking or disliking only one facet of the item.

Twelve groups expressed enjoyment of either drama or discussion, with one group mentioning both. Particular activities mentioned included talks to the class, hearing what other pupils thought about a book being studied and dramatising parts of a novel. The only negative view came from a pupil who felt embarrassed when asked to read out a piece of work to the class.

In the twelve groups where reading was a favourite activity, some pupils mentioned particular novels (such as 'The Far Side of the Lough'), some spoke of their class novels generally, while in six groups pupils relished the opportunities to go to the library to choose additional novels to read. The four negative votes for reading were all in some way qualified, none representing complete rejection by a whole group. Two were from individual boys in different schools who either did not like reading much or disliked having so much to read, one was from a grammar school class which disliked a particular text[49] and one was from a class in a secondary high school which liked reading their novels but not having to summarise them. Poetry, with three positive and no negative mentions, appeared to be rather better liked than the balance of teacher evidence had suggested.

Having to write essays, stories or 'long stories" was often disliked (or at least liked less than reading), with only three individual pupils saying that they got pleasure from writing stories. The other kinds of writing, which were occasionally said to be enjoyable were "short pieces of writing, quizzes and so on, not long writing" and such activities as planning a trailer for a film of a novel. Two pupils (1SH, 1NS) said that they preferred writing in their new school because they were asked to do less than in primary school; this was very much a minority view, since it was much commoner for pupils to speak of increased demands to write more. Of the two favourable mentions of homework, one was from a grammar school girl who had enjoyed completing a project at home and the other was from a group in a non-selective school who said they had now less homework than before.

As with science, in fully a third of the groups, all or most of the pupils could think of no aspect of the subject they disliked. Four groups gave special praise to their teachers – in two cases for their helpfulness – and four groups said that English was more varied or "more fun" than in primary school.

Ease of Transition in English: Difficulty Levels and Availability of Help

Only in two groups was there anything that could be termed a complaint about lack of help by English teachers in post-primary schools. One was the group where there seemed to be fewest opportunities for Talking and Listening. The other was a grammar school group where, because of the constantly changing classes, teachers were felt to be less accessible for consultation, say about a project, than in primary school. The latter view was unusual in the survey in implying,

[49]This was *not* the grammar school where 'A Town Like Alice' was admitted to be hard going for some pupils.

however mildly, a criticism of post-primary structures based on subject specialisms; it was much commoner for the Year 8 pupils to express appreciation of being taught by experts.

In eleven of the groups the post-primary teachers were judged to have given more help than those in primary schools to pupils in difficulty and in another two cases it was said that, since post-primary teachers explained things better in the first place, help was less often needed; a pupil from one of these groups said that it was less often necessary to seek help at home now that matters were better explained at school.

Pupils had sometimes had to adjust to a different set of conventions about asking for help. In particular, whereas they had often been free in primary school to walk up to the teacher with a query, they might now have to raise a hand for attention. Post-primary teachers might also expect pupils to show more independence, for example, by looking up a dictionary rather than asking for spellings and by bringing the right books to class. Interestingly, two groups from schools in non-selective areas, which had also liked being given some choice of topics, preferred their new teachers' approach because it was less interventionist. One group explained the difference thus:

- It's different. The teacher doesn't come round as much.
- See, in our primary school, Mr C-- always used to come round to check what yous were doing but in English now in the high school you just get on with it. *Which do you prefer?*
- The high school, because she expects you to be able to do it.
- You get more of a chance to get on with it.
- In primary school the teacher was <u>always</u> coming round, watching your work. You didn't get much done.

Usually, however, helpfulness was interpreted in terms of being willing to spend time with the pupil in difficulties, although help did not always come from the teacher:

- In primary school the teacher just set you to do the work but here he talks about it and says 'has anybody got problems' and if anybody has any problems, he helps them to do it. (Grammar school)

- You get a lot more help here. *Does the teacher spend more time with you or do you help each other?*
- Sometimes we help each other. *Did that happen in primary school?*
- Very little. In primary school you would maybe have to work it out yourself but here you are allowed to work in twos or fours. (Upper band, secondary high school)

In two other groups — one in a grammar and the other in the upper band of a secondary high school — pupils saw certain merits in the selective system, since their teachers no longer had to devote much of their attention to pupils of a different ability level from theirs. There could also be less fear of asking for help in a post-primary school:

> "In grammar school the teacher will actually ask you if you are having any problems. In primary school you were afraid to ask because you would think that all the other boys and your friends would laugh at you." (Belfast grammar school)

Of the 23 pupil groups, 14 thought English was more difficult in post-primary school (whether unanimously or as a majority vote), four thought it was easier, two thought the difficulty levels much the same and in three groups opinion was sharply divided. The four groups in which English was thought to be easier in Year 8 included the one group which claimed they had less written work than in primary school and a lower-band group in a secondary high school which said English was easier because the teachers were more helpful. This latter group included the pupil (cited above) who admitted having previously tried to guess her way through comprehension exercises without reading the passages and another who had found that teachers in the two schools behaved differently when she had a query; those in primary school would just give her the answer, whereas those in the secondary school would show her how to tackle the question so that she might be able to solve similar questions by herself in future.

Although there were 14 groups where English was felt to be 'harder' than in post-primary school, in only one was there a sense that the transition might well been something of an unhappy experience. This was the lower-band group in a secondary high school which reported the least group discussion, the least teacher help, the most revision of primary school work and the least interesting class novels.[50] In one of the other groups, in a non-selective area, pupils calculated that the KS3 course must be more difficult since they had sometimes been given 100% for a piece of work in primary school but not in their new school. Of the other twelve groups, three said that although English was 'harder' it was certainly not too difficult for them, three groups said that sufficient help was available to enable them to overcome the difficulties, three further groups said that they were pleased that the work was more advanced than in primary school and the remaining three groups said that although English was now 'harder' it was also more enjoyable.

[50]When discussing mathematics, some of this group found the pace too fast and again there was little talking allowed but the teacher was considered to be quite helpful.

SECTION 5: CURRICULUM LIAISON

5.1: Introduction

This section focuses on those cross-phase initiatives with a definite curricular element and makes no attempt to cover those that seemed mainly administrative or pastoral in nature, however commendable the latter may have been in their own right. Thus, meetings organised by post-primary schools in order to discuss with the heads of local primary schools the information wanted on transferring pupils or arrangements for children to meet their prospective Year 8 form teachers before they left primary school will not normally be mentioned. Inevitably, there were some marginal cases, as, for instance, where members of Y8 and P7 classes became pen-friends in an exchange of letters about their schools. While one effect of the project may well have been to ease the transition of the P7 participants at the end of the year, both sets of pupils had opportunities to produce pieces of sustained writing for a real audience, something which the programmes of study regard as appropriate for pupils in that age range. The initiatives described in this section include group meetings within 'clusters' of neighbouring schools, the implementation of ideas put forward at inservice courses and links between pairs of schools that were forged on an individual basis.

It will be observed that a high proportion of the cross-sector contacts occurred some years ago and so the reports are subject to the limitations of human memory. Several initiatives were, however, confirmed independently by informants from different schools, although there was more likely to be agreement about the general nature of the initiative than its date or the specific details. Staffing changes could reduce the likelihood of obtaining confirmatory evidence, since, for example, a current head of department was not necessarily the person who had attended a series of meetings some three years previously.

This remainder of the section on curriculum liaison falls into four main parts. The first of these reports on the liaison activities already undertaken in each of the three core subjects. Only some of these had been successful. The second part summarises the findings about obstacles to liaison, while the third part reviews the evidence on attitudes to further curriculum liaison. The final part looks at the amount and nature of liaison activity in the different cluster groups. An important question here is the relative feasibility of curriculum liaison in areas where there was and was not a definite 'pyramid' structure to pupil movement at transition (i.e. whether or not there was a well-defined group of primary schools sending virtually all their leavers to the same post-primary school).

5.2: Curriculum Liaison to Date in the Three Core Subjects

Mathematics

Teachers in five post-primary (2GS, 1SH, 2NS) and five primary schools (including three in non-selective areas) recalled participating in cross-sector activities in mathematics. It was noted, however, that the cross-sector contacts mentioned by informants in post-primary schools – apart from a head of mathematics' membership of a CCEA working party on Key Stages 1-3 – had all taken place several years earlier.

In one non-selective area (Cluster H), which had a clearly defined group of main contributory primary schools, mathematics at the transition stage had been one topic discussed during a series

of meetings organised by the high school on varied curricular themes and it was evident from other parts of the interviews that there had been some useful clarification regarding competing methodologies in arithmetic. However, although there had previously been two or three meetings each year, there had been no meetings – let alone any on mathematics at transition – for about a year.

In a second non-selective area mathematics teachers from the high school had sat down with senior members of staff from local primary schools in the early days of the NI curriculum to work out "agreed notional cut-off points for the average child" to mark the boundaries on the various ATs of what would be taught in the primary and in the post-primary schools of the cluster, while accepting that able children would have progressed further by P7 and less able ones not so far. It was agreed by informants from both sectors that the decisions reached had been generally ignored. The vice-principal of the high school, who recalled that only three primary schools took part in the meetings, reckoned that the non-involvement of the other 11-12 primary schools had reduced the likelihood of schools heeding the outcomes, which there was, of course, no legal obligation to obey. An effort by a Belfast grammar school "several years" before the present survey to "formulate some kind of policy with feeders regarding maths" (about which no further details were given) had proved equally unproductive.

In an attempt to reduce the amount of unnecessary repetition of primary school work in Year 8, another grammar school (SGE8) had "a few years " before invited primary principals to two afternoon meetings, at which their Year 8 syllabuses in mathematics and English were explained. A plan for curriculum links in mathematics between that school and an individual primary school had, however, fallen into abeyance after a single meeting.

Two other small-scale initiatives were mentioned by primary school teachers in selective areas. One Belfast primary school had sent its mathematics schemes, on request, to a post-primary school but had waited in vain for any reciprocation or follow-up. Two informants in a second primary school, which was particularly concerned about the amount of unnecessary repetition of primary school work after transition, were pleased at having made contact with the head of mathematics in a local grammar school and had hopes that the (currently slim) link would strengthen into something more substantial.

Science

Teachers in six primary schools (including both schools in the 'non-selective' Cluster H) and seven post-primary schools (1GS, 4SH, 2NS) spoke of various cross-sector links in science, granted that those in one junior high school were still at an early planning stage.

The principal of a rural primary school (PB2) recalled "a useful exchange of opinions" at a meeting held the previous year in a local grammar school about the science that might best be taught in the upper primary school and in Year 8. A more sustained discussion of the boundaries between KS2 and KS3 science had been attempted some years before in Cluster H but this had ground to a halt when some primary schools claimed to teach material up to level 7 and major differences emerged in the amount of time which primary schools wished to devote to science ("from an hour a day to an hour a week"). However, during the period between the visits to the high school and to the primary schools in Cluster H, a new initiative had been launched. Not only were there to be meetings to discuss the expectations of the high school and the progress made in primary school but there were also plans for both primary and secondary teachers to

observe science lessons in the other sector. In School SNF10, where previous attempts at cross-phase liaison had collapsed, the Head of Science as on a newly reconstituted Liaison Committee.

Assistance by individual post-primary schools to local primary schools in the form of loans of equipment, access to science laboratories – especially in the summer term when examination classes had completed their practical work – or help with the content of 'difficult' topics was recorded in three primary and four post-primary (1GS, 3SH) schools. (Although comparable help with information technology and French was mentioned by a few curriculum co-ordinators, there was nothing equivalent for mathematics or English.) Particular examples included a technician in a grammar school making a video-copy of televised schools science programmes which a primary school had no other means of accessing, a head of department going to a primary school to discuss how teachers might tackle AT1, a much appreciated series of weekly lessons to P7 by a teacher from a secondary high school and advice on "tools and equipment" to a newly-promoted full-time science co-ordinator. In addition, the head of department in a secondary high school had run two half-day sessions, mainly on AT4, at the request of local primary teachers during which he demonstrated possible practical work and explained some of the underlying theory; although he had offered to run further sessions ("because it was wild difficult for them") the primary teachers thought they had learned enough to be able to cope in class and did not ask to return.

Other forms of cross-sector contact, each considered useful by one post-primary teacher, were discussions at the local branch of the Association for Science Education (ASE) and a Saturday morning presentation by local education board field officers who had been working across the KS2-KS3 divide.

English

Teachers in six primary schools (including four in non-selective areas) and seven in post-primary schools (2GS, 2SH, 3NS) described curriculum links in English.

Meetings of representatives of contributory primary schools – whether principals or English co-ordinators – had been hosted by all three non-selective post-primary schools and by two grammar schools. In one grammar school (SGE8) a meeting some years before to explain the Year 8 English syllabus to primary school principals paralleled one already described for mathematics. In the other grammar school (SGE7) there was some doubt, however, whether the meetings being referred to were really about curriculum liaison in the researchers' terms. In all three non-selective areas, items on the agenda over the years had included the repetition of novels in primary and post-primary schools and the standards which the high schools expected of entrants. Meetings with similar topics to those discussed in the non-selective areas were anticipated by a primary principal in Cluster A, whose school had recently been included in the Raising School Standards Initiative (RSSI), in which the secondary high school (SHA1) was already a participant; yet again the issue of the unfortunate repetition of books in primary and secondary schools was raised as a likely item for discussion

A distinctive feature of curriculum liaison in English were the initiatives in four schools which had originated in inservice courses. In three cases these were confirmed by at least one primary school in the same cluster. All three non-selective schools referred to courses run by the English Advisor in their local education board, the Southern Education and Library Board (SELB). Two Heads of English and a principal from a contributory primary school recalled a course on assessment in which primary and post-primary teachers from the same geographical areas had

worked together in groups to agree standards for attainment levels.[51] Topics at other SELB courses included suitable reading material for the years round transition and the expectations which post-primary schools have of their entrants. In Cluster G primary teachers had expressed concern during a course about the punctuation and lay-out of letters. The Head of English in the high school had subsequently provided examples of the format of letter writing which they taught and which the primary schools might follow if they wished.

Another inservice course, run several years before by two members of the Inspectorate, had encouraged correspondence between recent entrants to post-primary schools and pupils about to transfer. It had been followed up by a junior high school (SNG11) and a secondary high school in Belfast (SHD6). In the secondary high school letters had been exchanged between a Year 8 class and a P7 class in School PD1, where the initiative was also remembered. Pupils in the two classes had become pen friends and visited each others' sports days but the experiment, although successful, had not been repeated in subsequent years. In the junior high school, where the project was still continuing, pupils wrote back to their own former primary schools, either to a teacher or to a Year 7 pupil whom they knew. Although the level of response from the primary schools varied greatly, at the very least the Year 8 pupils had the opportunity to write a 'real' letter rather than just to carry out an exercise in letter-writing for the teacher to mark.

A different type of pupil contact occurred in a grammar school (SGE7), where Year 8 pupils were taken across to the Preparatory Department to show some of their project work to pupils there and to read them extracts. In School SGE7 brief reference was also made to a previous 'Across the Transition' project during which the head of Department had been able to see the English syllabus at School PE1; this was found to be highly congruent in its approach to their own.

The only other cross-sector project mentioned in English was a Paired Reading scheme initiated in the secondary high school in Cluster A (SHA1) in response to falling reading standards and the high literacy demands of the Transfer tests. This had already been adopted in PA1 for P3-P6 classes and was likely, under RSSI, to spread to other primary schools in the area. Although P7 pupils were not involved, teachers in the two sectors were having the experience of collaborating in a practical way on curriculum matters.

5.3: Perceived Obstacles to Curriculum Liaison

Twenty-one of the primary school informants mentioned a total of 29 obstacles to curriculum development, while 27 of the post-primary informants mentioned 39 obstacles. The main reason why only about a third of the sample mentioned such obstacles was not that curriculum liaison was usually problem-free but that most teachers had not personally been sufficiently involved in curriculum liaison to have actually encountered any problems and so did not volunteer any. A focused question in every interview on what the informant reckoned to be the main obstacles would probably have resulted in a longer list.

Almost all the obstacles mentioned could be placed in one of ten categories, some of which are related. Table 5.1 shows the percentage breakdown separately for informants from primary and post-primary schools.

[51] See the suggestions in Part 2.1 of SCAA (1996)

Table 5.1 Obstacles to Curriculum Liaison (expressed as percentages of the total number of obstacles)

	Primary	Post-Primary
Time: other commitments and changes taking priority	24.1	41.0
Too many feeder primary schools	6.9	15.4
'Feeding' too many post-primary schools	13.8	2.6
Meso-political considerations	10.3	10.3
Incompatibility with selection	6.9	0
Inability to agree suitable primary/ secondary 'boundaries'	6.9	2.6
teacher attitudes	17.2	15.4
Resources needed	10.3	5.1
Location of meetings	0	5.1
Temporary local factors (e.g. new principal)	6.9	0
Other	0	2.6

In both sectors, but especially the post-primary, where more than half (16) the teachers who mentioned any obstacle included it, shortage of time was perceived to be the main reason why curriculum liaison was not further advanced than it was. Lack of time was in fact mentioned in all eight cluster groups and by teachers of all three core subjects. Two types of explanation were given by those teachers who gave fuller answers. Either no time was available for curriculum liaison because it had relatively low priority in comparison with developing the school's own programmes of study or implementing the other requirements of the Education Reform Order or else it was seen as very time-consuming, especially for primary school teachers. Several teachers from both sectors pointed out that principals and P7 teachers might have to attend meetings on all three subjects, whereas post-primary teachers would normally be needed only for meetings on their own subject and also that teacher release is harder to obtain in the primary sector.

The difficulties of liaising with a large number of primary schools were strongly felt in six post-primary schools (4GS, 2SH), all of which had at least 20 and in two cases over 40 contributory schools. It was noted that this type of answer was not heard in the non-selective schools, where the custom had been to host group meetings of representatives of all feeder primaries, and that some of the those who gave it were science teachers thinking of the difficulty of finding time to provide help on an individual basis to more than a few primary schools. A reciprocal problem – that of liaising with the large number of post-primary schools to which they sent pupils – was seen in the three primary schools in Cluster E, the area with the most open enrolment. A few informants were able to envisage the difficulties of maintaining multiple contacts which were faced by the other sector; thus, the liaison teacher in School SGB3 could appreciate that, if curriculum liaison were to become normal practice, their, mainly coeducational, contributory schools would have to liaise with the two single-sex grammar schools and two single-sex secondary high schools in the town.

Three of the seven responses categorised as 'meso-political' were in fact related to the difficulty of maintaining multiple cross-sector contacts. These three teachers – a primary school teacher and two vice-principals of secondary high schools, all working in Belfast – felt that strong cross-phase contacts with just one or two schools could be dangerous in a political climate which aimed to foster open enrolment. The primary school teacher wondered whether, if they were to do that, parents might then think they were trying to signal to which post-primary schools they

should apply for admission, while the two secondary vice-principals feared that too energetic liaison activities in any school might be misinterpreted as a recruitment drive. In such circumstances it is understandable that some teachers in the sample preferred the idea of small-scale liaison initiatives with a number of schools ("we are curriculum mavericks in this school") rather than of a coherent and sustained curriculum liaison programme with a group of schools.

Of the other answers classed as 'meso-political' one raised questions of accountability, if secondary teachers were to attempt any teaching in primary schools, while the other three (1PS, 2GS) expressed concern that curriculum liaison should be experienced as a meeting of equals and that staff in post-primary schools must not, whether deliberately or inadvertently, come across as the senior partners or as trying to dictate to the primary schools on matters on which they were entitled to behave autonomously. There was recognition here of the principle of subsidiarity. Situations where primary-secondary 'boundaries' could not be agreed and where the upper primary curriculum was perceived as too much determined by the demands of the Transfer tests for meaningful progression at the start of KS3 might be regarded as giving other kinds of 'political' reply.

Of the eleven informants whose answers were classed as 'teacher attitudes' five were talking about other teachers' attitudes, doubting whether they would be willing to give up time or to share openly what they were doing in their programmes of study. The other six were expressing their own reservations as to whether curriculum liaison was really worthwhile or whether the gains were all for the other side (an idea expressed in both a post-primary and two primary schools) or whether any real change would ensue:

> You don't really change that much. You do for a while but you get back into what you did before. (Pastoral teacher, non-selective area)

Specific resources without which cross-sector curriculum liaison would be difficult or unsatisfactory included substitute teachers to release staff to attend meetings and transport to enable pupils to make occasional visits to post-primary schools to use the facilities. Of the two grammar school teachers who identified problems of location for meetings, one was thinking of his own too-cramped premises while the other feared that their hosting the meetings, which they were physically able to do, would serve to reinforce the undesirable idea that they were the senior partners. The temporary local factors which informants hoped would not delay curriculum liaison too long in their areas were the arrival of new principals, who were currently surveying the situation before commencing any initiatives, and a fire in the local high school.

5.4: Hopes for Future Curriculum Liaison

Primary School Perspectives

Two main aims for cross-sector curriculum liaison emerged from the interviews in primary schools. Thirteen informants from seven schools had hopes that better liaison would reduce what they saw as the present amount of unnecessary repetition of primary school work after transition. Although one mathematics co-ordinator thought that it would be sufficient to send post-primary schools information on the attainment targets reached by pupils, other informants believed that full and frank discussions of their schemes of work and how far pupils progressed would be necessary.

> "I think it would be a very good idea if there were links, if you were to sit down with your form one, form two teachers, and actually look at your notes together and see what you actually do, where you overlap". (Science co-ordinator, Cluster D)

A second non-overlapping group of thirteen informants saw the main potential benefits of cross-sector liaison as obtaining a better understanding of what the post-primary schools expected of their entrants in order to prepare their pupils better for what lay ahead and, in some cases, to ensure that they were subsequently good ambassadors for their primary schools. It was noted that seven of these 13 informants were in Cluster A, where the highest levels of disadvantage in the sample were found and where the realistic aim for most pupils was to have them acceptable to the secondary high school of their first preference.

> "I think there ought to be far higher levels of cross-phase liaison, for example in English, the agreement of appropriate reading material for P7. But not only that – much further – the agreement of appropriate reading activities: what sort of approaches to reading are adopted in first form and therefore how can we be working towards that". (Primary principal, non-selective area)

> "There should be regular meetings, say October/November with the first form teachers when we would ask, "How do you find our children?" And if they wanted improved handwriting or something done in mathematics or English, that's OK. We would want our children to be acceptable to the local schools". (Primary principal, Cluster A)

Although most primary school principals and teachers were thinking of curriculum liaison in terms of meetings, the proposal for cross-sector observations in science was welcomed in Cluster H and similar suggestions were made by two science co-ordinators in selective areas and a principal in Cluster F. School PA1 was looking forward to being able to use the sports facilities of the local secondary high school, SHA1.

A vice-principal was the only primary school informant to think that cross-phase curriculum liaison was now unnecessary, believing that the NI Curriculum made the starting points for KS3 obvious. Several other primary school informants were apparently visualising such liaison in terms of attending a meeting for an update every few years rather than as a task to which they might be expected to devote an appreciable amount of time and effort. In this connection it might be mentioned that a survey of primary teachers in one of the cluster areas (undertaken as part of an advanced diploma course) revealed no great enthusiasm for the idea of a primary-secondary science forum. Most of the primary school teachers in the present sample were, however, hoping for an increase in the present amount of liaison, in at least some subjects.

Post-primary School Perspectives

Although four post-primary teachers, including two English teachers from the same secondary high school, hoped that cross-phase curriculum liaison would make it easier for them to avoid unnecessary repetition in their Year 8 courses and although two mathematics teachers (1GS, 1SH) hoped that it would lead to better prepared entrants, it was more usual for the post-primary teachers to speak of the main aim of liaison as a better understanding of what is taught in primary schools. Several of the 14 teachers who gave that type of answer seemed interested in learning about classroom practices rather than just about the attainment levels reached. Post-primary teachers were also more likely to speak generally about building on previous work rather

than of specifically avoiding overlap and many simply expressed a potential interest in becoming involved.

> "I would be interested at some stage in talking with P6, P7 teachers, finding out what they are doing with the pupils who will eventually come through to us, what work they have done with them, how the pupils have taken it, what differences they have found since the Northern Ireland curriculum has come in". (Head of Mathematics, another grammar school)

Even although their interviews took place before the decision in Cluster H to have cross-sector observations in science, more of the post-primary than of the primary teachers recommended this form of contact.

> "I think it would be useful .. possibly to actually go into primary schools and work. Maybe one week could be set aside and you could maybe visit 3 primary schools and do some sort of lesson work and get a chance to chat to the teachers involved. I think it would be really useful. It would be useful for the children as well because then when they do arrive at the school there's a familiar face". (English teacher, secondary high school)

A mathematics teacher in the same school had a similar plan to observe and help at the same time. Among the other ideas for liaison by post-primary teachers, the Head of Science in a secondary high school who had not previously helped neighbouring primary schools with specialised equipment thought it time that he should. Teachers in two other secondary high schools suggested having check-lists of topics covered for primary school teachers to complete, although one suggested face-to-face meetings as an alternative.

Although the great majority of post-primary informants believed that cross-phase liaison should be developed and a few had active plans to implement such ideas, three teachers, each in a different grammar school, saw no need for it and some other teachers would obviously accord it only limited time. A Head of Mathematics regarded attempts at liaison as "not worth the effort", while two teachers of English regarded their present policy of meeting their (selected) new pupils without pre-judgement as working well. One of the English teachers, however, conceded that it worked well because of the high quality of work in their main contributory schools.

The Organisation of Meetings on Curriculum Liaison

Since time was often running short by the end of the interviews, it was rarely possible to explore in any detail how the liaison should be organised but the following points were made and seem worth considering. Some are similar to the recommendations in Stillman and Maychell (1984).

- There is an important place for face to face meeting of those who actually plan and teach the subjects in P6/P7 and Y8 in addition to any meetings at more senior management levels. While regular meetings (perhaps twice a year and perhaps with lunch) of the principals of the contributory schools can serve important functions, including providing an opportunity for participants from both sectors to update the other on curriculum changes in their schools, actual curriculum development is unlikely to take place in such circumstances.

- The frequency of revisiting topics on the agenda should take into account the level of staff turnover in the area.

- The location of the meetings is important. Always having them in the post-primary school could mitigate against attempts to promote the idea of equal partnerships between the sectors. There were suggestions that local education board premises might be better because more neutral. No informant proposed the idea recommended in Stillman and Maychell (1984) of rotating the venue among the participating schools, both primary and post-primary.

- There were two suggestions that curriculum liaison should be mainly organised at local education board level, rather than have each post-primary school trying to initiate its own programme ("reinventing the wheel"), often with the same group of primary schools.

5.5: Curriculum Liaison in the Eight Clusters

As has also been shown in a number of previous studies from the time of the Primary Survey by the Inspectorate in England (DES, 1978) onwards, curriculum liaison between the primary and secondary sectors was less well developed than pastoral and administrative liaison. Although nowhere did there appear to have been efforts to parallel the exemplars in the English Inspectorate survey published in 1989 (DES, 1989), there appeared to be noticeably different patterns of liaison in different of clusters.

Only in the three non-selective areas (F, G and H), where primary and post-primary schools were organised in a close approximation to the traditional 'pyramid' structure[52], had sustained attempts been made to develop common understandings and compatible practices in the three core subjects for the education of pupils on either side of primary-secondary transition. Success had been limited. For example, in one, and possibly two, of the clusters the repetition of novels already studied in primary schools appeared to have ceased. Other problems, such as undue repetition in mathematics, remained unsolved. By 1994-95, cross-phase liaison within the cluster groups had gradually ceased for a variety of reasons: major school reorganisation, teacher attitudes, inability to reach shared perspectives and changes of principals and other key staff. In one cluster, however, plans were well advanced for a new major initiative on liaison in the three core subjects and in a second cluster a preliminary meeting was held during the field-work stage of the project to resume liaison in science. In the third cluster in a non-selective area, cross-phase liaison had been identified as a priority for attention in the near, if not the immediate, future.

The extent to which the fairly high levels of liaison in English reported in clusters F, G and H can be attributed to the 'pyramid' structure or to the interest aroused by the local education board's inservice courses is impossible to determine since the sample of schools did not include any from selective areas of the SELB. It is generally agreed, however, that curriculum liaison is more difficult where there is no 'pyramid' structure (see, for example, SCAA, 1996).

The five clusters in selective areas had all more complex patterns of transfer than the three clusters in non-selective areas, the most complex being found in Cluster E, which is sited a part of Greater Belfast within range of many grammar and secondary high schools. Here the most

[52]i.e. where almost all children from a designated group of primary schools proceed to the same post-primary school.

appropriate geometric model is not a 'pyramid' or triangle but a low trapezoid[53], since the primary schools sent pupils to and the post-primary schools received pupils from a wide range of schools. Although one of the grammar schools had special links (although not extensive curricular links) with its Preparatory Department, none of the three post-primary schools – not even the secondary high school – regarded themselves as neighbourhood schools. Informants in all six schools in the cluster raised the problem of 'so many feeder schools' or of 'feeding so many schools' as a major obstacle to curriculum liaison, the three primary schools in Cluster E being the only primary schools in the whole sample to raise this difficulty.

Both grammar schools in Cluster E held regular meetings with the principals of regularly contributing primary schools but informants suggested that when such meetings turned to curricular matters it was more for the purpose of updating than actual curriculum development. As of the vice-principals said:

> "It is 'institutional', rather than one actually influencing what the other is doing. It is an exchange of information rather than a deeper exchange. We inform each other about each other's agenda, I suppose, rather than working on a common agenda".

As the previous pages have shown, however, the post-primary schools in Cluster E were by no means the least active in 'real' cross-phase curriculum liaison but their previous efforts were typically small-scale, involving only one primary school and one post-primary department at a time, and were usually temporary. Quite often they were in response to requests for help from a primary school. Thus, the science departments of both Schools SGE8 and SHE9 had helped various schools by lending equipment and clarifying parts of the NI programmes of study. School SGE8 had also given several primary schools the opportunity of using their computer suite in the summer term and had also helped a primary school which wanted to introduce French. The Head of English in School SGE7 recalled collaborating with School PE1 on a previous project. Several teachers who had not been directly involved expressed an interest in the area or believed that more ought to be done.

Although Cluster D was in an area of Greater Belfast where the choice of grammar and secondary schools was rather narrower than in Cluster E if parents did not wish to cross the denominational divide, the pattern of curriculum liaison was essentially similar, typically taking the form of small-scale initiatives between pairs of schools. The 'across-transition' letter-writing project, described above, was with School PD1 but an annual Physical Education and fitness survey was with a contributory school not in the present project. School PD2 had been approached by teachers in a secondary high school asking to see how they taught less able children in P6-P7, since they were having great difficulty in coping with their poorest readers. The only liaison activity mentioned in the cluster which involved a number of schools was the brief science course on AT4 offered some years before by the head of department in School SHD6.

In the other three clusters – A, B and C – the pattern at transfer was again trapezoidal rather than pyramidal, although Schools PA1 and PC1 sent the great majority of their pupils to SHA1 and SHC5 respectively and in much of the area on which the Cluster B schools were situated, the post-primary schools which children attended was virtually determined by the their sex and ability and their families' denominational affiliation. There was therefore relatively little open

[53]Admittedly, this is moving from a 3-D to 2-D model.

enrolment in the Cluster B area although the coeducational primary schools in the district would have served four post-primaries.

In Cluster A a main talking point in Schools SHA1 and PA1 was the Paired Reading scheme, which had spread from the secondary high to the primary school and was likely to be disseminated further. However, in that cluster there were other complaints that the pastoral support given by the post-primary schools to pupils about to transfer (in the form of sending anyone to talk to them in advanced or letting them visit the school) had dwindled away, although stronger criticisms were levied against a neighbouring school, than about those in the sample.

Levels of curriculum liaison in the remaining schools – SGB3, SHB4 and SHC5 – were currently low, although SHC5 had helped local primary schools with science before the ELB support in the area became fully established and SHB4 was (justifiably) proud of its pastoral liaison. All three schools had, in various ways made cross-phase curriculum liaison part of their development plans. If such plans develop, it will be interesting to see whether in these areas of limited parental choice the 'whole curriculum' model attempted in the non-selective areas or the small-scale initiatives preferred in Belfast will prevail. The situation in 1995, however, suggested that open enrolment and serious cross-phase curriculum liaison on the scale suggested in DES (1989) and SCAA (1996) are not fully compatible.

SECTION 6: SOME MATTERS FOR CONSIDERATION

For a number of reasons, it is not intended to conclude this report with a list of recommendations. Firstly, some of the curricular problems which emerged in the study are linked to major governmental policy decisions and, indeed, may be seen as part of the 'downside' of these policies. Thus, the more open the enrolment for secondary education in an area, the less easy it was to have serious and sustained curricular liaison between second-level and contributory primary schools since, where choices at 11+ were wide, primary schools had little sense of belonging to any one post-primary school. Also if, as a number of primary teachers admitted, many pupils are being coached for the new style of Transfer tests beyond their understanding, there are obvious negative implications for curriculum continuity. Some of the issues raised are therefore fundamental, involving value judgements on the part of policy makers, and so cannot be resolved by a few practical suggestions.

Other reasons that constrain the researchers from making sweeping recommendations concern the relatively small-scale nature of the study. The sample was limited to eighteen primary and twelve post-primary schools, although care was taken to include examples of all the main types of school in Northern Ireland. If there was any bias, it was that the schools in the sample may have been more interested and active than average in trying to secure curriculum continuity and so it might be surmised that the problems that emerged and the not infrequent signs of discontinuity or of limited liaison between the sectors are unlikely to be any less in Northern Ireland schools as a whole. Constraints of funding limited the field-work to one round of visits to the post-primary followed by the primary schools. However, during the visits to the primary schools several important issues emerged which it would have been good to explore in the post-primary sector, in several cases with the pupils as well as with their new teachers. Another limitation is that the research was never intended to be or aimed to be other than an survey of opinions but at several points serious implicit questions arose about pupil competencies and understanding, which only reliable assessment data could have answered. As yet, however, there has been no end-of-Key-Stage testing at 8, 11 or 14 in Northern Ireland. To answer most of the questions raised by the research published 'league tables' of scores would have been unnecessary and the type of data produced by the former Assessment of Performance Unit would have sufficed.

Another reason for hesitating to set out straightforward recommendations is that changes, signalled in the *Key Stage 2 Proposals for Revised Subject Requirements* (CCEA, 1995), are now under way and may well reduce the scale of some of the problems reported. The survey was fortunately recent enough to capture the generally favourable reaction of primary principals and teachers to these proposals but the effects of the changes on pupil learning and attainment remain to be seen.

Despite these caveats, the following issues raised by the research appear to merit attention:

- In Scotland the information on pupils sent to post-primary schools was described as an "underused resource" (Harlen, 1995). In view of (a) the scepticism surrounding the information on Transfer Reports by post-primary teachers and the doubts of primary teachers that much attention was paid to them, (b) the suspicions in selective areas that even when other information on pupils was forwarded to post-primary schools it lay unread, (c) the rarity with which information from primary schools was consulted, either in selective or non-selective areas, once pupils had been assigned to Year 8 classes and (d) the generally fairly low level of interest among subject teachers at the prospect of records of achievement from

primary schools, how can it be ensured that information sent to post-primary schools is not an underused resource or even an unused resource – in Northern Ireland also?

- There has often been an assumption that in future information forwarded to post-primary schools on their entrants will be based on attainment target levels. There was, however, a noticeable lack of agreement in the survey about the form and level of detail in which pupils attainments should be reported: suggestions included overall levels for subjects, levels on each AT, verbal reports on competencies, reading and mathematical 'ages' or some other form. The question must be addressed of whether attainment levels may, as a number of teachers in both sectors said, be too broad to be useful when dealing with individual eleven-year-old pupils, especially in selective areas. In some grammar schools where the entrants all (or nearly all) scored top grade in the Transfer tests the vast majority might well be awarded level 5 in English and mathematics; in secondary high schools in selective areas the majority would be expected to be on level 3 or 4 (with those who had not reached level 3 being fairly easy to identify). Such circumstances would allow no margin of error or of inconsistency between primary schools if the levels are to be of any practical use to post-primary schools. It might also be noted that whereas an attainment level represents about two years' work for the 'average' child, secondary high schools were using not Assessment Units but standardised tests with their much finer age-related divisions (e.g. 'reading ages') for initial placement.

- As several informants appreciated, more detailed information on entrants would imply an expectation that post-primary schools would give greater attention to the stage which the individual entrant has reached and would use more differentiated teaching approaches than many do at present. Many post-primary teachers in the survey, especially teachers of mathematics and science, were seemed to be aiming at whole-class methods alone; if even a few pupils had not thoroughly covered a topic, the whole class would often be retaught it. How can schools and teachers be helped to use more differentiated approaches when appropriate?

- There were a number of indications, especially from children in the upper streams of secondary high schools, that the algebra taught in primary schools was often not well understood. Although the revisions to the KS2 PoS may ameliorate this problem, algebra at KS2 would seem to be a topic to be kept under review.

- Some teachers in both the primary and post-primary sectors were clearly unenthusiastic about investigations and other process-based work in mathematics at KS2 or KS3, while the pupil evidence suggested that many had done few if any investigations in mathematics. To what extent are the types of learning experiences implicit in the NI programmes of study in mathematics being eroded?

- Despite the stereotype of primary schools as places of active learning, many Year 8 pupils appeared to have done little previous practical work in science, even with the low-technology equipment which can easily be provided by primary schools. Although some primary science teachers in selective areas blamed the pressures of Transfer preparation for their neglect of practical science, some of the Year 8 pupils who had done least practical science were found in non-selective areas. What was the basis of their teachers' reluctance to adopt a more process-based approach?

- The range of practical experiences in primary science indicated in the sample, from virtually none to successfully designing experiments that show an understanding of the principle of a 'fair test' was one aspect of the very varied science backgrounds with which pupils arrived at post-primary school. Although many of the science teachers appreciated the improvement in recent years of their entrants' knowledge of science, most of them found that there were still marked differences between feeder schools. Such situations could cause very real practical difficulties for Year 8 science teachers, and for many the only response was to teach any topic again from the beginning, unless the whole class had already thoroughly covered it. The alternative solutions suggested by a few teachers deserve wider publicity, perhaps in publications designed for inservice applications.

- Extended writing in English, including the sequencing of ideas in a piece of prose, was identified as the main pupil difficulty in English by both primary teachers and post-primary teachers of English, while the majority of post-primary science teachers regarded poor mastery of the tool skills of English as a much more serious difficulty for their pupils than any actual science concepts. Many Year 8 pupils commented the much greater demands for written work in their new schools. It would seem that written work in KS2 is a topic deserving further investigation.

- A number of upper primary teachers, in both selective and non-selective areas of the Province, were having some difficulty in treating Talking and Listening as an AT in its own right, as well as with its assessment. It was observed – as with Investigations in Science – that the teachers who were most satisfied with their pupils' progress in Talking and Listening tended to be the ones who had worked systematically to improve these skills through training and practice. This seems be an area with which some teachers still need inservice support.

- Despite the concerns of some of the pastoral and administrative staff, the vast majority of pupils in the interview sample seemed to have transferred happily to their new schools, even if some of them voiced specific criticisms. They seemed to have adapted readily to such new learning methods as laboratory work in science and to the more literature-led nature of post-primary English. A number of them spoke appreciatively of being taught now by subject specialists and there were only minor criticisms of the inconvenience of frequent changes of classroom or of perhaps not seeing a teacher again for some days. Unless the pupils in the sample were seriously unrepresentative of Year 8 pupils in general, the amount of change – or of 'planned discontinuity' in Stillman and Maychell's (1984) terms – which is beneficial and stimulating for pupils of that age may sometimes be underestimated.

- The section on curriculum liaison indicated the difficulties which schools in areas of open enrolment faced in sustaining more than small cross-phase initiatives and even in the non-selective areas (where the great majority of pupil transferred to the nearest high school) it was admitted that previous attempts to agree primary-secondary 'boundaries' had only sometimes been successful. At the same time, there was in many of the schools a genuine wish for improved liaison. Questions might be asked as to how – if curriculum liaison is not totally incompatible with open enrolment – schools might be helped to work together for the benefit of their pupils at a critical point in their education.

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APPENDIX

Interview Instruments

1. **Group Interviews with Year 8 Pupils: English**
2. **Interviews with Primary 6/7 Teachers and Co-ordinators**
3. **Interviews with Primary Principals**
4. **Interviews with Post-Primary Heads of Department and Subject Teachers**
5. **Overview Interviews: VPs with Curriculum Responsibilities and Pastoral Teachers**

1. Group Interviews with Year 8 Pupils: English[54]

i) Introduce self and find out names of pupils.
ii) You have been in this school for ..... months now but do you still have a clear picture in your mind about what your primary school was like?

That's good because I would like you to help me to understand what is the same and what is different about learning English and maths in primary school and in this school.

Main Questions for English

1. Can you tell me what is the same and what is different about learning English in primary school and in grammar/secondary/junior high school? Is it mainly the same or mainly different?

P*rompts (when initial impetus runs out)*

(a) What about the books and other things you use in class?

(b) What about the sort of things you do in an English class?

(c) How are you seated in an English class?

(d) What about the sort of writing you do in English?

(e) What about talking in English classes?

(f) What sorts of tests do you get in English?

(g) What about getting help with your work?

If pupils concentrate exclusively on similarities OR differences, encourage then to think of the other, using the most appropriate categories:
*e.g. "Do you use **any** of the same things in your English lessons here as in primary school?"*

2. I am going to ask you now about what you like or dislike most in English since you have changed schools.

(a) What do you like most about English in your new school?
(b) Is there anything you dislike about it?

3. Is English easier or harder of much the same as in PS?

4. Did you learn anything about the sort of work you would be doing here in English before you came to this school?

[54] Similar questions were asked about mathematics and science, with such minor adjustments in the wording as was considered necessary.

2. Interviews with Primary 6/7 Teachers and Co-ordinators[55]

School:..... Date:.....

Name and Position:.....

A) Continuity-Discontinuity

1. Did the introduction of the NI curriculum require any major changes in the schemes of work in the core (or your) subjects?

2 (i) *(Co-ordinators)*
What topics are most time spent on in Year 6 and Year 7?

OR *(P7 Teachers)*
What topics do you concentrate on in (subject) in Year 7? Is there any major difference before and after the Transfer Test?

(ii) Do any topics in the KS2 Programme of Study tend to be left out (or skimped through lack of time? If so, which topics?

3. What aspects of (subject) do P7 pupils like best and least?

4 (i) What things do P7 pupils find easy to do and difficult to do in (subject)?

(ii) Approximately what levels have your pupils reached in (subject), when they leave primary school?

(iii) How well do the P7 pupils cope with AT1 (translate) in (subject) in comparison with the other Attainment Targets?

5 (i) What impact, if any, has the new form of the Transfer Test on schemes of work in (subject)?

(ii) Do you think the new Transfer Tests have had any effect on children's knowledge and understanding in (subject)?

6 (i) *(Co-ordinators)*
Are there any aspects of the KS2 programme in (subject) that you feel your colleagues would welcome further help with?
(If so, what aspects? And what kinds of help?)

OR *(P7 Teachers)*
Are there any aspects of the three core subjects with which you would welcome further inservice or other help? (If so, details)

(ii) *(Both P7 Teachers and Co-ordinators)*
How satisfied are you with the inservice support provided in the core subjects?

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[55] Teachers of P6 and P7 classes who were not co-ordinators of a core subject were usually given the option of focusing on one of the subjects. Subject co-ordinators were also given the opportunity of making any statement which they considered important about the other two subjects.

B) Information to Post-Primary Schools

7 (i) What are the main ways in which information about children's progress in the core subjects (or subject) is passed on to post-primary schools?

(ii) How do you think this information is used by post-primary teachers?

(a) Transfer Report

(b) Other information

8. ***Records of Achievement***

(i) What is it important to include in a RoA for P7 children?

(ii) Have you any views on (a) the form they should take?
(b) the length they should be?

(iii) In what ways do you think the Records of Achievement will be useful to post-primaries?

C) Curricular Liaison

9 (i) What experience, if any, have you had of curricular liaison with post- primary schools?

(a) meetings/ discussions
(b) classroom observation
(c) teaching with a post-primary teacher
(d) help from a post-primary teacher

Prompts

(ii) Usefulness

(iii) Any difficulties or obstacles?

10. Is there any kind of new/additional liaison with post-primary schools which you would like to see?

11. Are there any other curricular issues which you see as relevant to transition between KS2 and KS3?

3. Interviews with Primary Principals[56]

BACKGROUND INFORMATION ON THE SCHOOL

School: .....

Name: .....

Date: .....

Number of Pupils: .....

Number of P7 classes: .....

Main Post-Primaries to which the School contributes:.....

.....

Any Special Factors.....:

.....

.....

A) Curriculum Continuity

1 (i) Did the introduction of the NI curriculum require any major changes in the schemes of work in the core subjects?

(ii) Would you wish to make any comment on the KS2 programmes of study in the three core subjects as regards their appropriateness for pupils of that age?

2. What things do pupils find easy to do and difficult to do in the three core subjects?

3. Approximately what levels do your pupils reach in English, Mathematics and Science when they leave primary school?

4 (i) What impact, if any, has the new Transfer Test had on schemes of work in the core subjects?

(ii) Do you think that the new Transfer Tests have had any effect on children's knowledge and understanding in the core subjects?

5 (i) Are there any aspects of the KS2 programmes in the three subjects where further inservice or other help would be beneficial to your colleagues? If so, what aspects?

[56]This is the version of the schedule designed for principals of large primary schools giving an overview of the curriculum in the three core subjects. For principals of small schools or those who were the main informant on a subject, appropriate questions from the primary teacher's schedule were added.

(ii) How satisfied are you with the inservice support provided in the core subjects?

B) Information to Post-Primary Schools

6 (i) What are the main ways in which information about children's progress is passed on to post-primary schools?

(ii) How do you think this information is used by post-primary teachers?

(a) Transfer Report

(b) Other Information

7. *Records of Achievement*

(i) What is it important to include in a RoA for P7 children?

(ii) Have you any views on (a) the form it should take?
(b) the length it should be?

(iii) In what ways do you think that Records of Achievement will be useful to post-primary schools?

C) Curriculum Liaison

8 (i) What experience, if any, have you had of curricular liaison with post-primary schools?

(a) meetings/ discussions
(b) classroom observation
(c) teaching with a post-primary teacher
(d) help from a post-primary school?

Prompts

(ii) Usefulness?

(iii) Any difficulties or obstacles?

9. Is there any kind of new/additional liaison with post-primary schools which you would like to see?

10. Are there any other curricular issues which you see as relevant to transition between KS2 and KS3?

4. Interviews with Post-Primary Heads of Department and Subject Teachers

School:..... Date:.....

Name and Position:.....

A) *Continuity- Discontinuity*

1. To what extent do you see Year 8 as a follow-through from Year 7 and to what extent do you look upon it as a fresh start?

2. What do you consider to be the main similarities and differences in learning and teaching of your subject (E, M or S) between upper primary school and the first year of secondary/ grammar/ junior high school?

3. How do you decide where to start with a new Year 8 class?

4 (i) What topics have you been concentrating on since September?

(ii) How familiar do the pupils seem to be with the various aspects of this sort of work?

5 (i) What would you estimate to be the (overall) level of the pupils' work in the subject when they came to this school?

(ii) How high would you estimate them to be in AT1 (translate) in comparison with the other attainment targets?

6. *(If a wide range of levels)*
Is the school's organisational structure (e.g. streaming) sufficient to cope with the range of abilities on entry or are other strategies needed?

7 (i) What aspects of (subject) do you think your Year 8 pupils like best and least?

(ii) Are there any particular difficulties that children find in the subject on entry to junior high/ grammar/ secondary school?

8. What impact, if any, do you think the new form of the Transfer Test has had any effect on children's learning and understanding in (subject)?

B) Information from Primary Schools about Pupils

9 (i) What curricular information do you get from the primary schools about your Year 8 children?

(ii) What information would be available if you wanted it?

10. If available, how useful, or otherwise, do you consider these to be?

(a) Transfer Report

(b) any Other Information about children's attainments

11. Would you like any other curricular information about children entering the school? (If so, details.)

12. If/when you receive information from primary schools, how do you use it?

Records of Achievement

13 (i) Would you find some kind of primary school RoA useful? If so:-

(ii) What information should it contain?

(iii) What format and length would you prefer?

C) Curricular Liaison (modify according to level of activity)

14 (i) Can you tell me about your/ your department's attempts to establish curriculum liaison with your neighbouring or contributory schools?

Possible activities:

(a) meetings or discussions with primary school teachers;
(b) helping primary schools with schemes of work or materials:
(c) observation of PS children at work;
(d) teaching in a primary school;
(e) primary school children observing or doing work in post-primary school.

(ii) *If positive reply to any of first part*
How useful and effective has this liaison been?

15. Have there been any difficulties or obstacles to liaison?

16. Is there any kind of new/additional liaison with primary schools which you would like to see? (If so, details)

D) ***Conclusion***

17. Are there any other curricular issues which you see as relevant to transition between Key Stage 2 and Key Stage 3?

5. Overview Interviews: VPs with Curriculum Responsibilities and Pastoral Teachers

School:..... Date:.....

Name and Position:.....

A) Preliminary

1. Are there any special factors in this school/area affecting transition from one school to another?

2 (i) How many contributory primary schools do you have in a typical year?

(ii) Which are the main contributory schools?

B) Continuity- Discontinuity

3. To what extent do you see Year 8 as a follow-through from Year 7 and to what extent do you look upon it as a fresh start?

4. What do you consider to be the main similarities and differences in learning and teaching between upper primary school and the first year of secondary/ grammar/ junior high school?

5 (i) What is the basis for deciding where to start with a new Year 8?

(ii) Is this worked out at departmental, individual or school level?

6. What sort of strategies are used for coping with different levels of ability in Year 8?

7. What impact, if any, do you think the new form of the Transfer Test has had any effect on children's learning and understanding?

C) Curricular Liaison (modify according to level of activity)

8 (i) Have there been any attempts to establish curriculum liaison with neighbouring / contributory schools?

Possible activities:

(a) meetings or discussions with primary school teachers;
(b) helping primary schools with schemes of work or materials:
(c) observation of PS children at work;
(d) teaching in a primary school;
(e) primary school children observing or doing work in post-primary school.

(ii) *If any curricular liaison already*
How useful and effective has this liaison been?

(iii) Have there been any difficulties or obstacles to liaison?

9. Is there any kind of new/additional liaison with primary schools which you would like to see? (If so, details)

D) Information from Primary Schools about Pupils

10. What are the main ways in which information about children's progress is passed on from the primary schools?

11. Would you like to comment on the usefulness, or otherwise, of:

(a) Transfer Report

(b) any Other Information about children's attainments

12. Would you like any other curricular information about children entering the school? (If so, details.)

13. How is the information from primary schools used and who has access to it?

Records of Achievement

Records of Achievement are planned for Primary Schools.

14 (i) How useful would you find this kind of information on entrants If so:-

(ii) What information should it contain?

(iii) What format and length would you prefer?

E) Conclusion

15. Are there any other curricular issues which you see as relevant to transition between Key Stage 2 and Key Stage 3?