OPENING THE PRIMARY CLASSROOM
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JOHN RAVEN

with
JILL JOHNSTONE
and
TIMOTHY VARLEY

The Scottish Council for Research in Education
# CONTENTS

<table>
<thead>
<tr>
<th>Acknowledgments</th>
<th>vii</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Mrs McCullen and her Class</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>2 The Benefits</strong></td>
<td>31</td>
</tr>
<tr>
<td>From the Standpoint of</td>
<td></td>
</tr>
<tr>
<td>Environmental Education</td>
<td>32</td>
</tr>
<tr>
<td>Subject Specialisms</td>
<td>35</td>
</tr>
<tr>
<td>Personal Growth</td>
<td>39</td>
</tr>
<tr>
<td>Conclusion</td>
<td>43</td>
</tr>
<tr>
<td><strong>3 Some Other Outstanding Work</strong></td>
<td>44</td>
</tr>
<tr>
<td><strong>4 The Context</strong></td>
<td>65</td>
</tr>
<tr>
<td>Some Findings from the Postal Survey</td>
<td>65</td>
</tr>
<tr>
<td>The Goals Teachers Said They Tried to Achieve</td>
<td>69</td>
</tr>
<tr>
<td>Analysis of Findings from</td>
<td></td>
</tr>
<tr>
<td>The Zoo Feedback Sheets</td>
<td>71</td>
</tr>
<tr>
<td>The HMI's Survey</td>
<td>73</td>
</tr>
<tr>
<td>The Practice of Non-Formal Education</td>
<td></td>
</tr>
<tr>
<td>Inferred from the Zoo Exhibition</td>
<td>74</td>
</tr>
<tr>
<td>The Place of Out-of-School Visits,</td>
<td></td>
</tr>
<tr>
<td>Environmental Studies, and Project-Based</td>
<td></td>
</tr>
<tr>
<td>Education in the Curriculum</td>
<td>77</td>
</tr>
<tr>
<td><strong>5 Competencies as Goals</strong></td>
<td>90</td>
</tr>
<tr>
<td>The Objectives of Non-Formal Education,</td>
<td></td>
</tr>
<tr>
<td>Environmental Studies, and Zoos and</td>
<td></td>
</tr>
<tr>
<td>Museums Education</td>
<td>95</td>
</tr>
<tr>
<td>Competency-Oriented Education</td>
<td>103</td>
</tr>
<tr>
<td>The Components of Competence—A Summary</td>
<td>115</td>
</tr>
<tr>
<td>Summary and Conclusion</td>
<td>118</td>
</tr>
</tbody>
</table>
6 Barriers
   The School Climate 123
   Clarity 123
   Recognition 127
   Resources 130
   Management Activities 131
      Creation of a Climate Conducive to Innovation 132
      Involvement of Staff in Management and Decision-taking 133
   Establishment of a Review Mechanism 135
   Delegation of Responsibility 137
   Confrontation with Conflict 138
   Mechanisms to Promote Appropriate Contacts Outside the School 139
   Ability to Identify and Influence Wider Social Constraints 140
   Summary 141

7 Facilitation 143
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AUTHOR'S NOTE

The 'Mrs McCullen' of this book is a composite. She closely resembles a particular teacher who was studied but episodes of the work attributed to 'Mrs McCullen' were actually undertaken by a number of other teachers. In this way it was possible to present a variety of aspects of teaching in a direct way. All the examples of teaching and learning we describe occurred, but not all in one class.
CHAPTER 1

MRS McCULLEN AND HER CLASS

We visited Laneton School at the suggestion of the Regional Primary Adviser in social and museum studies. It was small, with only two teachers, in a rural area. The head, Joan McCullen, who taught Primaries 4-7, welcomed us in the small staffroom, which also served as an office. It had that slight air of disarray which communicates that there are more important things in life than keeping everything tidy.

We soon got down to business. Mrs McCullen observed that many important human qualities (which, she felt, educational institutions could and should be concerned with fostering) seemed to be scarcely, if at all, related to academic ability. These other qualities included leadership, the ability to work with others, creativity, the ability to communicate, and the ability to muster an argument. They also included the ability to pursue an interest single-mindedly, the ability to follow effectively, and the ability to contribute to group processes. They included self-reliance and confidence in dealing with others. They included self-discipline and willingness to contribute to activities in which the well-being of others was dependent on what one did. They included willingness to take responsibility for doing what was necessary to ensure the well-being of the community. They included artistic and aesthetic skills and sensitivities, and sensitivity to the overall effects of materials intended to communicate effectively.

Not only did she feel that these abilities were scarcely, if at all, related to academic ability; she also thought that they were scarcely related to each other. She thought that such qualities would only be released, practised, developed and identified (by both the pupils concerned and their teachers) if the pupils were keenly pursuing topics in which they were personally interested, and about which they cared. She felt that by pursuing activities of this sort and fostering the talents she had mentioned, teachers could help pupils to identify and develop their most important strengths and abilities.

Mrs McCullen also spoke about the damage which, she felt, many schools did to children. She suggested that they often alienated pupils from education and even cramped reading and
writing ability by, for example, concentrating on defining parts of speech, instead of teaching reading and writing skills. She felt that the educational tests used to measure such abilities left much to be desired. They did not assess such things as the ability to find one’s own information, the ability to scan material to locate things which were of interest, and the ability to communicate personal meanings effectively. She really wanted to encourage a love of reading, an interest in finding out, and excitement in communicating. The need to teach to the tests deterred teachers from pursuing such goals.

Moving from the staffroom, we became aware that we were entering a most unusual educational world. For a start, displays of pupils’ work covered every available nook and cranny—and a great deal of space which was not available as well. With a remarkable sensitivity to the potential of the architecture they surrounded and surmounted the coatracks, they covered windows, they hung from the rafters, they covered the space where one might have expected to find a blackboard. (There was a cooker where the teacher’s desk would usually be.)

This profusion of outstanding display material conveyed a number of important messages: pupils’ work was important—and it was expected to be of interest to others. This was primarily because the pupils had something new to say—something which neither we, nor the other parents and children to whom the displays were addressed, already knew. And the saying of it was not to be confined to words.

But the displays communicated messages about the teacher, too. It was clear that she was concerned with aesthetics. It was clear that she felt that the activities involved in producing them were, in themselves, of fundamental educational importance, meriting time in the primary school curriculum. More fundamentally, she was herself not the sort of person who would allow conventional beliefs about what could or should be done to stand in her way.

This second message was repeatedly underlined in the course of our subsequent work with her. It became abundantly clear that, if one set of resources which had previously been considered desirable could not be obtained, then other resources—which most teachers would not perceive as such—would be transformed, as if by magic, to become critical ‘building blocks’ in the educational process. The message was that, with a little ingenuity, nothing is impossible—and that message was not lost on the pupils.

It was some time before we were able to articulate, even to ourselves, the reasons why we felt ourselves to be in the presence of
someone unusual. Among those which eventually occurred to us were the following:

• First, there was no teacher's desk or blackboard. We believe that the significance of this was, in part, that it signalled the existence of a different kind of relationship, and different expectations, between Mrs McCullen and her pupils. We believe that part of its significance was that it reinforced the impression created by the displays. If resources (in this case space for organising class work on a group basis and generating displays) were not 'available', then they could simply be made available by re-arranging one's priorities.

• Second, the displays were themselves quite unusual, and the more carefully we examined them, the more we became aware of just how unusual they were. Most children seemed to have had a hand in producing them. They had not been produced by one or two 'outstanding' pupils, still less by the teacher, or even through work orchestrated by the teacher. Nevertheless, great care had been taken with the presentation of the material. Outstanding written work and models, taken together with the overall layout of the displays, were combined to have a cumulative, communicative, impact. Unlike most of the displays we saw in other schools (which were, at best, designed to exhibit work done) these displays were designed to intrigue, inform, and influence the viewer! They were designed to communicate the children's own ideas, thoughts and feelings. Incorrect deductions and conclusions, and unacceptable thoughts, had not been censored out; yet neither had they been passively accepted. The pupils had been engaged in activities which were designed to lead them to re-formulate and test their ideas, assumptions and deductions. Furthermore, it became apparent that these primary school pupils had read, and understood, original research reports prepared by professional archaeologists, historians and scientists. They had read, and been prepared to try to come to terms with, advanced material on aerodynamics, despite not being familiar with the 'necessary' background information. They had tried to replicate the experiments they read about, and had devised their own ways of testing the principles which had been put to them. They were prepared to report the results of their own experiments, and explore their implications, without, seemingly, feeling obliged to get the answers obtained
by the authorities. They were prepared to report their struggles to understand aerodynamics in a way which indicated that they were willing to talk and write about things which they did not yet understand, with a view to arriving at an understanding which they could call their own. They had visited ancient archaeological sites, and the scenes of recent historic events. They had read authoritative accounts of these events, but were prepared to challenge them. They were prepared to generate rival theories. They were prepared to ask their own questions, and expect to get sensible answers from visitors, lecturers and the general environment. They were experienced at becoming experts on complex problems and at talking to outsiders from an informed base.

Mrs McCullen spoke about her achievements with enthusiasm. But she spent most of the time speaking about, and seeking to answer, problems she had not yet solved. She did not discuss these in a negative manner, but with the air of one who hoped that, by talking about them, she would stumble on a solution. She spoke about the difficulty of integrating mathematics with the rest of the curriculum — this despite the fact that she had got further down this road than any other teacher we met. She spoke of the difficulty of reconciling her work with the conflicting expectations of advisers, parents and secondary schools. She spoke of the bureaucratic obstacles placed in the way of organising a canvas-camping expedition, and of the help which she was getting from regional resource personnel.

The projects her pupils had undertaken during the past year included making a study of the local village; building a model of it; compiling a history of many of the buildings and the people who had, in the past, lived there and their occupations; and of the people who lived there now, and their occupations and geographical origins. Original historical sources had been used: tombstones, church records, and articles prepared by other members of the community. Local people, including the authors of the existing historical records, were interviewed.

Another of the year's projects still on display was on flight. Pictures and models of birds and aeroplanes abounded. Scientific studies of aerodynamics had been made. Models based on aerodynamic principles had been built, and trial flights conducted. Visits had been made to the Royal Scottish Museum to look at birds, to the Royal Scottish Museum's outpost — the Museum of...
Flight—to look at the development of aircraft, and to the airport. Historical studies had been made of Hess and his role in the last war.

In all cases, the projects cast pupils in multiple roles—as leaders, inventors, 'ideas men', interviewers, artists, writers, decision-takers, forecasters, and harmonisers of working relationships. In all cases, they provided opportunities for pupils with very different interests to find something within the project which would make them enthusiastic—historical studies, sociological studies, studies of personal interests and concerns, studies of personal needs and how they could be satisfied, botanical studies, zoological studies, studies in physics, drama and role-playing, imaginative storytelling, and creative science. The pupils did not sit still all day. They moved about. They were engaged in a worthwhile enterprise. They worked with others. They could use their own particular talents and abilities. They could communicate with each other and with others outside the school. They could obtain their knowledge by talking to adults outwith the school, as well as from books. They could relay what they had learned to others, not through an 'orchestrated event' but on a day-to-day basis. They could take responsibility for the work of others.

We studied one phase of ‘The Village’ project as it developed and evolved into something else.

When we went into the classroom, the pupils were working on their project books. Some were writing, some were drawing, some were reading, some were discussing their work, some were reading their writing aloud to other pupils (who were taking notes) and some were adding to the displays. The pupils worked individually, in pairs, or co-operatively in small groups. At times Mrs McCullen would address the whole class; at other times she would speak to particular groups. More often than not, she would relate to two or three children at a time. As has been mentioned, she herself had no desk at which to sit, and no blackboard. In general, all the children (who ranged from 8 to 12 years of age) would be doing similar things (like carrying out experiments, working on their SPMG books, reading, or writing stories) at the same time—but each group would be doing different things. Thus, for example, on one occasion all were working on triangulation, but one group was working with a ‘Treasure Island’ map—a map with a person in the centre and five arrows for north, west, east, south-west and north-east, and to which the children were asked to add arrows for south, south-east and north-west. Another group was estimating the sizes
of angles by eye and measuring the angles in shapes in their SPMG books. A third group was making its own maps. And a fourth was working on equilateral triangles, congruence and tiling.

This diversity of activity can also be illustrated from observations made in the course of a later visit. On this occasion, all were doing experiments, but one group made compasses out of magnets and cardboard, using Banda sheets as a guide. Another was conducting experiments as a result of magnetising a knitting needle and sticking it to a cork, to see in which direction it pointed. Another conducted a magnet, apple, and rubber-band simulation of the earth's magnetic field. Mrs McCullen worked with those doing the second, asking what they were doing, what they had observed, and for explanations of their conclusions. The groups rotated between activities, and discussed among themselves the significance of their observations. In due course, a general class discussion was held to see whether it were possible to draw any more fundamental conclusions than that the knitting needle pointed at the local pub. Through all these activities, the pupils came to value the contributions of others.

As we have seen, Mrs McCullen's philosophy and practice of education was unusual in that she set out to foster areas of competence that are overlooked in many schools. But there is another important way in which they were unusual. The knowledge which the pupils were expected to gain, and the competencies they were expected to develop, were to be of interest and use to them now and not only (as would have been the case in many schools) in the future.

For this reason (among others) much of the pupils' work was based in the local environment. They would thereby learn things which would be of direct interest and value to them in leading their lives effectively as children. But, unlike the activities described in the classical accounts of progressive education (eg by Flexner, 1923, Cremin, 1961, and van der Eyken and Turner, 1969) the object of the exercise was not primarily to convey knowledge. It was to foster skills, abilities, dispositions and habits of thought.

The Overall Project: Preparation of a Book on Laneton

The phase of the school's work which we will describe here represents one stage in the development of a larger project.

According to the researchers' notes, in introducing this phase of the project:
Mrs McCullen gathered the children in the ‘wee hous’ and began to talk about the village. She was talking about the major landmarks in the village and the surrounding area. All the time she was drawing directly on the children’s knowledge, involving all of them by name in the discussion, and labelling houses by the names of the people who lived in them.

Before showing the children the books she had collected, she drew from the children the various methods by which they could discover what the village would have been like 100 years ago. They decided that the best ways of finding out about the village were by talking to people, asking questions of older people, looking for old pictures and photographs of people, places and occupations of 100 years ago, finding out about their own homes and putting this information together, looking for old articles and looking at the school log books.

Mrs McCullen did not attach much importance to books in this context, and actually said at one point that she did not think that using books was one of the best ways to find out about their village. After they had talked about ways of finding out about their village, Mrs McCullen began to show them her books about Lothian, East Lothian and their village, and showed the children the appropriate sections in the books, pointing out why she valued these books. The books about the village were produced locally; one, by the ‘Rural’, included articles by some of the children’s parents and one by the teacher herself.

When they had finished looking at her books, Mrs McCullen talked with the children about the Centenary of the school (when many of the children took part in the celebrations—some of their older brothers and sisters had dressed as the tradesmen and craftsmen who would have worked in the village a hundred years ago). The teacher said to the children that she would like them, all together, to produce a book about their village for children, as well as a book each.

The pupils followed through on this plan. They interviewed the present occupants of some of the houses. They traced records of previous occupants of their own houses, and studied their occupations. They noted the occupations inscribed on tombstones in the graveyard. They examined church records and earlier school rolls. Parents and other members of the community were invited into the school to talk about, and be questioned about, the past.

The pupils developed skills of inquiry. They developed recording
skills. They became more articulate. They developed confidence in their ability to talk to adults and confidence in adults' willingness to take them seriously. They learned that they had a right to ask questions. They learned to capitalise on unexpected information, such as that on tombstones. They learned to make use of multiple and imperfect sources of evidence. They learned to work together, and that each contributed in different ways to the overall process—an observation which Mrs McCullen helped them to articulate, thereby encouraging them to esteem more highly the contributions of their colleagues, and to develop multiple-ability concepts of talent. This ability to identify and capitalise upon the talents of their peers would stand them in good stead when working with others in the future. They learned that 'ordinary' people—and not only experts in the university—are sources of expertise.

Not only did they make these historical and social studies: they also studied the distribution of local flora and fauna. They studied the distribution of different types of tree and different types of butterfly.

Although all pupils participated in these studies, there was a degree of specialisation. Thus, one pupil had become an expert on the distribution of butterflies, another on the social structure of the area, and another on the history of a particular agricultural implement. In the process, these pupils developed far more than a knowledge of these particular areas of science, sociology and history. They developed the complex set of skills, abilities and motivational dispositions which go to make up the repertoire of the scientist, sociologist or historian.

Not only did they develop these areas of unique, specialist, knowledge and competence: Mrs McCullen specifically encouraged them to think about each other's special interests and areas of competence. Thus, when one pupil was disrupting group activity, Mrs McCullen encouraged the other pupils to think about what he might be interested in and good at, and how he could be got to do this. In this way, she both promoted more harmonious working relationships in the present, and led her pupils to develop strategies which would be of great value when working with others in the future.

One final topic must be introduced by way of setting the stage for what is to follow. As we have seen, much of the educational programme of the school was based in the community. But parents were also involved in the school and its activities. They accompanied school parties on visits; they organised fund-raising
activities to enable the pupils to make visits; they came to the school to share their expertise with pupils; they joined in the Centenary celebrations, role-playing personalities from the village of the past.

Mrs McCullen took the parents into her confidence. She shared her philosophy of education with them. She encouraged them to note the multiple qualities which their children were developing through the educational process provided in the school. All was not, of course, 'sweetness and light': many parents were still very anxious that their children should learn the things they needed to know for secondary school; many still wanted them to acquire the more Calvinistic virtues of working hard at tasks which others had set instead of following their own interests, arguing that, if their children did not learn to do this, society would fall apart. But there can be no doubt that the enormous amount of energy which Mrs McCullen devoted to cultivating parental support paid off—not just in terms of financial support and help, but also in terms of the quality of the educational programme she was able to offer the pupils. It therefore emerges that, in teaching, as in other occupations, one of the most important sets of competencies which people need to develop if they are to be able to do their jobs effectively is the ability to understand and influence the wider social forces which otherwise so much limit what they can do.

A Chapter on ‘Laneton at the time of the Celts’

The phase of the production of the book on Laneton with which we will mainly be concerned here was concerned with Laneton at the time of the Celts.

Mrs McCullen got together a collection of books about Lothian and its history. One of them (the only one she could find on the Celts) to Mrs McCullen’s surprise (for it seemed an old-fashioned and boring book) took hold of the pupils’ imagination. They were fascinated by its content and by the pictures it contained. So Mrs McCullen tore it up so that each child could have a picture to guide his or her own drawing. But each picture was accompanied by some text—a fact which, as we shall see, Mrs McCullen turned to good advantage.

The drawings stimulated by the pictures often bore little relationship to those on the pages the children had been given. These were simply used as a stimulus to trigger children’s reactions. The pupils developed their own drawings from the stimuli in the
light of what they already knew about the Celts, their own interests, and what fired their imagination.

This use of pictures and text was unusual. Both were to be used as a basis for writing a story (itself an uncommon activity in primary schools). Mrs McCullen spent most of one morning talking individually to each child about what he or she might write. Themes were discussed, depending on the child’s interest and knowledge. Passages which the child found difficult in the section of text accompanying his picture were circled. He was to translate these into his own words and use them in his story. Other sentences were underlined. These were often key sentences of paragraphs, or contained vocabulary which it was appropriate for the child to master. These sentences and vocabulary were to be used in appropriate ways in the children’s stories.

Mrs McCullen said that this activity had several different objectives:

1. It helped the children to develop effective comprehension skills by leading them to attend to the structure of written material, and to pay close attention to key sentences.

2. It helped the children to develop a feel for the structure of written material—such as, for example, the value of incorporating key sentences summarising arguments, or presenting ideas which would later be elaborated.

3. It helped the children to infer the meaning of words from their context and to learn their meanings by using them in a context.

4. Although key phrases and words were to be used in the first draft of their stories, it was accepted that, based on discussion with other pupils and the teacher, and perhaps having read their stories to others and revised them on the basis of the adequacy of the notes taken by the other children, the stories would be re-written. At that time, the pupils would be free to change the words (but with the expectation that the children would continue to use new words when they were appropriate in the situation).

5. The process encouraged retrieval of information from books, without copying it out—and the reader’s right both to select from, and elaborate upon, that information in order to make it his own.

The whole attitude to books revealed in this episode is extraordinary: books are to be used, torn up, and written on—but torn up and written on for a purpose. They are a cheap resource,
not something which is sacrosanct, to be preserved in pristine condition.

From the beginning it was accepted that all the pictures the children drew, and all their accounts and stories, would eventually form part of a communal display—just as had the original pictures and text from which the work of each child was drawn.

In practice, following through on her initial discussion of the quality of the paper on which the book had been printed, the relevance and aesthetics of the pictures and the production of the text, Mrs McCullen encouraged the pupils to take pride in the display of their work: they were involved in creating a pleasant environment for all. Thus, concern with aesthetics and the environment was not abstract and detached from life, but actually part of the process of living—a process to which one could contribute for the benefit of all.

In the course of discussions stimulated by this multi-faceted activity, the children discussed the customs of the Celts, their dress, their battles, their religions, the role of the churches, the jewellery worn at the time, the community structure, patterns of defence, and the pre-occupation of the people with food and security. All of these had been touched on in the book from which the children’s pictures and sections of text had been torn. But each was elaborated in general discussion and individual work as children drew, according to their own inclinations, from the books which Mrs McCullen had collected together and others from the library. Information was solicited from parents and others. Druids’ wands were made, and their purposes demonstrated to others.

Somewhere along this route, Mrs McCullen discovered that there had not only been a Celtic fort on a nearby hill, but also that there had been an archaeological dig and a find of treasure at the site.

A copy of the original report on the dig and the treasure was obtained from the library. Mrs McCullen summarised this report for the children, and the children made Banda sheets from some of the pictures. Some of them read the book. In this way the first steps were taken to set the stage for a visit to the National Museum of Antiquities in Edinburgh, and a visit to the hilltop.

On their arrival at the Museum, the Guide Lecturer took the role of director of an archaeological excavation and gave the pupils various roles to act out during the visit. Pupils were divided into groups of volunteers supervised by a site assistant, who had to report back on finds to the director, four illustrators to make drawings to record the finds, finds researchers and finds assistants.
As might be the case on an excavation, work was to be done in different areas of the Museum, one group working on the area in which the material came from the last few centuries BC to the first few centuries AD (the First Floor in the Museum), and another group working on the area where the Traprain treasure was to be found (the Roman Room in the Museum). Each worker was issued with several ‘finds cards’ (see card below) and suggestions of objects to look for, ranging from pottery, metalwork, jewellery and weapons through moulds, tools, quernstones and games, to silver flagons and cups.

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<th>Site</th>
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<tr>
<td>Location</td>
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<td>Width</td>
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<tr>
<td>Description</td>
<td>Colour</td>
<td>Texture</td>
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Before work began on the excavation there was much discussion between the director and her workers on how the work was to be carried out, the tools that the archaeologists would need, the care with which they would work, the drawings that would be made of each find, and the decisions about conservation work. Agreeing to meet together on Site B (the Roman Room) the two teams went to their appropriate trenches and began to find the objects that suggested the Votadini had occupied the site at Traprain. The group working on Site A found many examples of evidence of a native craft centre using jet, glass and metal. Moulds and crucibles were noted and sketched, so that copies of the objects made from these moulds might be made back at school. There was some discussion on what had survived and what had not survived. The wooden handles of tools had obviously disintegrated and there were no bones, but this did not mean there were no animals. It was noted that many of the tools used by the Celts at Traprain were very similar to tools used today—for example files, hammers, hooks and spades—and this made it easier to identify the functions
of the tools. It was also noted that there was indirect evidence of domestic life—for example, the fact that there was some evidence of spinning showed that there must have been sheep, which would not only provide wool but also food; the quernstones implied that there must have been crops, in particular grain, to be ground down.

The value of comparison began to be understood: chains had been discovered at Traprain, but not cauldrons; however, cauldrons from other sites were looked at, and this helped in understanding the domestic life of the Celts. Comparisons were again useful when the two groups of archaeologists met. While the group working on the Traprain treasure had noted that the treasure was of a much later date, and that there were many signs of Christian symbols on the treasure, suggesting that the Romans had brought Christianity into this country and that it was beginning to ‘catch on’ locally in the fourth century, both groups realised it was important to understand the relationship between the Romans and the Votadini. The objects helped to explain this: the very fact that the hilltop settlement existed and flourished showed that the Votadini did not pose any kind of threat to the Romans, who tolerated their presence and probably soon traded busily with them. The group working on Site A had noted some examples of pottery similar to the Roman pottery found by the other group; perhaps the more important members of the Votadini could afford to buy Roman Samian ware. Comparisons were made between the rough native pottery and the smooth Samian ware, and there was much discussion on how the different pots were made and decorated. The group who had worked on Site A also commented that there were no weapons. Did that mean that the Votadini had not fought the Romans? The director of the excavation mentioned written sources for the period and said that there did not seem to be written evidence of the Votadini fighting the Romans. The group working on Site B pointed out that they had found some native swords with the Roman swords, but the director suggested that these probably belonged to natives from the parts of England that the Roman army already had under its control; natives might then have joined the Roman army. Particular discussion centred on the treasure: careful drawings were made, and the participants learned that a new theory of its origin had been propagated since Curle’s book had been written.

The ‘finds cards’ and the drawings were compared, and seen as useful records which were an essential part of the archaeologist’s work, particularly helpful for study after the excavation. It was
agreed that a report must be produced at school, covering the site, its location, and what evidence there was of houses etc, with descriptions of the finds and extensive drawings of the treasure.

Following the visit, the children made models of the treasure using the sketches they had made at the time, and also wrote about it. They spoke further about the jewellery, the swords, and the shields. They spoke about the Romans, trade at that time, and the Roman chariot they had seen in the Museum. The teacher and the children decided to follow the usual pattern after a visit and make a vast mural to display and write about the treasure, the jewellery, the swords and the shields.

The researcher's notes read:

This is my first visit to the school after the class visited the National Museum of Antiquities of Scotland to see the Treasure of Traprain. The children are making their own versions of the treasure. Two boys are making goblets from detailed sketches they have drawn. They are using dowelling, card, plasticine and silver foil. The remainder of the group are four children who are making beaded bowls. They are using card, silver foil, plasticine and pins. The other group are making drawings and paintings. When one boy finishes his painting, he begins to experiment with ways of representing a vase, using card, silver foil and plasticine.

The pupils who are drawing don't talk much except to ask for rubbers, etc, and to identify each other's pictures. One girl draws a cartoon-type Celt and then adds glasses. The first child to spot this draws attention to it at least five minutes afterwards. They are all too busy with their own work.

The modelling group are much noisier. They are discussing how to get the plasticine to stick out, how to get it to stick to the silver foil, the size of the beads and other practical problems of their work. The teacher comes and works with the children for quite a while. She keeps referring the children back to the treasure: did it look like this or that, why not try to find a photo and check, and then go back to work? Most discussion is about the task and the display. It is very difficult to inject other conversational topics, even those concerned with the visit. As the children add finishing touches to their models, the teacher pins them up. Children and teacher admire them and sometimes move and change the display.

Some of the stories the pupils wrote are reproduced below.
The Treasure of Traprain

What is it?

The Treasure of Traprain Law was a hoard of silver. It was found on the Law in 1919. It consists of nearly 160 separate pieces.

There is lots of table silver and things from a woman’s dressing table.

The hoard has a small group of vessels decorated with Christian scenes which make it likely that they were part of the Church plate of an early Christian community. Three of the pieces, two flasks and a strainer, are the same as some silver found in England.

Primary 4 girl

The Treasure of Traprain

How did it get there?

We can only guess at the origin of the treasure.

The first theory was that it was plunder because of the state it was in when found.

At first people thought the plunder was the property of a Roman family. Living in Europe or south of Hadrians Wall before it was stolen by Anglo-Saxon pirates who cut it up for division.

In the 1940s a new theory came about because another hoard of silver was found in England.

The new theory was that it was pay for native helpers of spies. This new theory is the most supported one.
I myself think that a traitor from the Votidini informed on a siege or raid and was rewarded with table silved. The tribe found out and killed him but never found the treasure he buried.

Primary 7 boy

Traprain has a treasure

Traprain Law, of course, has a treasure. It was not expected to be found. In 1914 archaeologists were digging for clues they found a few things but by 1915 the war was getting to bad and they had to go away and fight. When Britan had one the war in 1918 they started digging again and in 1919 they found the treasure.

The Romans were in Scotland

The water bottle was made of Stone. It is like a cowboy water bottle.

The silver cups were very clever because you could have a drink and then turn the glass over and you had a plate.

The Romans lived around Traprain for 100s of years and they used to attack the people that lived on Traprain law. But the people on Traprain always won because the Romans could’nt get up the steep side and when they tried to get up the easy side they were always seen.
We went to visit the treasure

We went to visit the treasure at the National Museum of Antiquities of Scotland Queen Street, Edinburgh and it is a very big place. When we got there we found out that the treasure was right at the top, we climbed and climbed and climbed but soon we Reached the top. It was full of things. There was a waterbottle, a leg off a Statue from the Roman age they even had a chariot but they built it. We had a quiz to do. There was pictures of things on your quiz and you to find them find out what they are. Me and somebody called David were first. We had a brilliant time.

The children discussed many of the discoveries and ideas presented by the archaeologists. This informal activity began before the original visit to Traprain Law, and was still continuing some eight weeks later, when the researchers’ visits to the class ended.

Certain aspects of the burial of the treasure encouraged the formulation of theories; they encouraged the children to act as historians and social scientists, and speculate as they would. For example, the children could speculate on reasons to explain the burial of the treasure, without a container, in a shallow hole, or some of the silver packages containing pewter. There are many potential explanations: a Roman paymaster didn’t have enough silver to pay the mercenaries—or he was ‘on the fiddle’—or it was Army policy to defraud non-Roman mercenaries (hence the pewter). The treasure was buried hastily to avoid its falling into other hands, until it was safe to reclaim it, or as an insurance to be reclaimed later.

In order to speculate in this way we need a knowledge of our own society’s social, political and economic systems. Thus, such speculations led the children to examine our social, political and economic systems.
A Visit to the Environment

As we have seen, the visit to the Museum was followed by a visit to the hill where the treasure was buried.

Mrs McCullen wanted to make the visit early in the term, because she particularly wanted to use the visit to encourage the development of the children's map-reading skills. She encouraged the children to use these map-reading skills in relation to using compasses, in conjunction with both hand-drawn and O.S. maps.

When I arrived at the school this morning I was greeted by several children riding around the playground or showing their bikes to each other. They showed me the bike that I was going to ride. One of the children showed me how to use the gears on the bike and I tried them out. We were cycling to the Law from the school, about four miles of hilly country roads.

Then I went into the classroom. Some of the children showed me banda maps of the hill, based on one in The Treasure of Traprain (Curle, 1923), the original archaeological text. One of the boys had run them off yesterday afternoon on a duplicator which the pupils had themselves assembled. There was an 'X' marking the position where the treasure was discovered and an arrow pointing towards North. After she had checked the dinner money (left for her secretary, who comes one afternoon a week), the teacher asked the children to sit quietly and told them a story. It is the story of King Loth's daughter, the legend associated with the Law.

THE LEGEND

King Loth was the king after whom Lothian is named. He ruled the tribe which had the fort on the hill and controlled much of the land around. King Loth had a daughter named Thenew. He wanted her to marry a prince or king of another tribe, but he couldn't find anyone suitable who was agreeable to both himself and Thenew. Eventually, Thenew told her father that she was in love with a shepherd and wanted to marry him. Loth was very angry, and said that he could not allow Thenew, the daughter of a king, to marry a shepherd. Thenew was ordered to marry someone else, but she refused. This meant she had refused the king's order. The punishment for such an offence was to be thrown down from the cliffs of the Law. Thenew was taken up the hill and then forced over the edge.

At night some of her friends crept to where her body lay.
Miraculously, she was alive, but only just. They carried her to the coast and put her in a boat. The boat took her across the the Forth to Culross in Fife, away from Loth’s rage. She fled from Loth all around the coast of Scotland. She had a son, who later became St. Mungo and founded Glasgow.

The shepherd continued to look after his flock on the banks of Traprain. One day he saw King Loth, alone, hunting. The shepherd took his bow and arrow and aimed at Loth. He fired. Loth fell from this horse, dead. The people of the hill fort came and buried Loth at the foot of the Law.

There’s a farm there now, called ‘Standing Stones Farm’. A few years ago, a man’s skeleton was discovered in a field. It had been buried during the Iron Age.

GETTING THERE

The teacher then checked that someone was carrying the Banda maps, compasses and O.S. sheets. The children sorted out whether they were going to cycle with the first group or among the ‘tail-enders’. The teacher asked the children to think about the hill fort on the top of the hill, the pirates and their buried treasure, and the story of King Loth’s daughter. The children were asked to try to imagine what it must have been like to live on the hill, while they were climbing up it.

Then we set off for the Law. We had to walk up the hills, but we could cycle on the short, infrequent ‘flats’ and freewheel down the hills. It took us about 40 minutes to reach Traprain Law. Some children were much faster, but others took a longer time. We waited, off the road in a field, for the stragglers.

The ‘tail-enders’ were the teacher, who had held back with a girl who didn’t have her own cycle and had had to borrow one for the expedition, and a boy who had fallen off a number of times and was quite frightened of cycling. We left the cycles in a field, just off the road and at the foot of the hill.

THE SUMMIT

We began to climb the hill. Some of the children climbed very quickly; others took their time and were much slower. The hill was very steep and the paths weren’t always easy to pick out. It was a very windy day and we were really blown about. At the summit it was even worse. Because it was too exposed there wasn’t really shelter except in hollows. The wind tended to whistle even in those.
There was a white painted pillar at the summit (actually a triangulation pillar). The children were intrigued by it. Someone said they had seen another nearby, they thought, on another hilltop. Other children remembered seeing one there, too. The teacher said they would find out about them when they returned to school (she said she didn't know much about them). We hadn't noticed the pillar before—we only saw it when we got to the summit.

**EXPLORING**

The children found the nearest thing to a sheltered place for lunch. It was just above some cliffs. Some of them finished lunch quickly, came over for their Banda maps and compasses, and went off in pairs or threes to find where the treasure had been buried.

Other children worked out the positions of several of the villages and landmarks and one boy got out an O.S. map to use. As he opened it a gust of wind tore it, so the teacher decided that using O.S. maps was not feasible. Instead, she asked the children to explore the hilltop and then to return to her. The children asked for some Banda maps and compasses and departed.

Three or four children returned, having found the treasure spot, and took the teacher to show her. Others had worked out, approximately, the settlement edges, and others had looked at the views and the triangulation pillar. Then the teacher drew all the children together.

**LANDMARKS**

They sat at the edge of the cliffs, looking to the east. They worked out where their village was from the landmarks they could see. Some of the children used their Banda maps and compasses to work out its direction from the Law. Then they picked out landmarks that they knew around the village. A new girl to the class had just moved from a nearby farm. They picked it out. They walked to the northerly edge of the summit, looking towards the town and the cement works. There was some excitement when someone who was turning round realised they could vaguely see Edinburgh, and could see the upper part of the Power Station, which most of the class had visited the previous term. They picked out roads, where they were visible, and identified them by checking the places they connected. The teacher used the image of a map being a view from high above: an all-round view.
THE TRIBE

Then the class talked briefly about the kind of life lived by the people on the top of the hill: how hard it must have been; where their standing stones were; King Loth’s grave; how we were sitting right above a sheer drop; the legend; why the hill was a good place for a settlement or town; where their food would have come from, etc. Not all of this was a serious discussion—sometimes just passing comment, chatting, or jokes, like the one about the sheer drop.

BACK TO SCHOOL

We made our way down the hill—much easier than going up. The children who had gone more quickly slid down a very steep part at the foot. On the way back, we stopped to look at the quarry. Many of the children noticed that the triangulation pillar could be seen as a white dot on the top of the Law, and that it could be seen from a considerable distance away.

When I arrived back at the school, more than half the children were there before me. Some were already drawing pictures of their day, and others were chatting.

FOLLOW-UP WORK

Language

The following are some of the accounts written by children on the days after the visit.

The sun was rising up in the sky on the autumn day and the wind was getting up.

It broke up after a while but it was still strong. We were hoping to cycle to Traprain Law which is about four miles from Laneton because we were doing a project on Traprain Law.

We all brought our bikes to school that day but some people did not have bikes so we had to borrow some. We had a friend called Miss Gladstone who was coming too, so we had to get bikes for Mrs McCullen, Miss Gladstone and Susan because they didn’t have bikes.
We got off to a start but when we had got round the corner and just about over the bridge, 'CRASH', Mrs McCullen had crashed in to the mudguard of Susan's bike.

After we had climbed about a quarter of Guildie most of us took a lead of about 80 metres which extended to about a mile.

Most of us had horns and bells so we decided to ring and make funny noises with our horns as we went through the Drive Arch.

When we got to the Drive Arch the first person made a noise then the second, third and on to the end.

When we got a bit further some of us were arguing about which way we should go.

When we were just about there we split up in to three groups, I was in the first group.

When we got there we were sliding down a steep, grass slope after padlocking our bikes.

We waited about half an hour then Mrs McCullen and Susan came in to sight when they came nearer they got a clap.

Right away we started to climb, right away Colin, Ewan, Graham and I were off in the lead.

When we got to the top we hid on a rocky face.

When they gave up looking for us, we crept up and gave them a surprise.

We sat down and started to eat our packed lunches, but soon finished them and so went exploring.

We went back to Mrs McCullen and asked her if we
could get one of the Ordnance Survey maps which we brought with us.

We also brought a compass and we found North.

We looked for places on our map and we found out what direction it was in.

Four of us went off to look for the place where the treasure was found, we found the place, but we didn’t show the others where it was.

When we came back to where we had our lunch, we thought what it would be like to live on the top of Traprain Law on a cold and windy day and be one of the Votadini who used to live on Traprain Law.

When we went down Traprain Law we just slid down on our backsides and took off in the lead.

By the time we got to the bottom of Guildie we just about were on our sides.

At last when we got in to the school we were all puffed out and started to take off jumpers and shirts.

We had our milk and waited for Mrs McCullen.

That day had been a very interesting day.

Primary 5 girl

Dromedary Expedition to Traprain Law

We were doing a project on Traprain Law and the legend of Traprain Law. As we were doing Traprain Law we thought that on one Autumn day we should cycle up to see where the treasure was buried. So we set off on the smooth, tarry road (with the) wind whistling behind us. The young ones were off like a shot with Mrs
Gladstone trailing behind but Mrs McCullen, Susan, Timo, and Stephen were still sorting their lunches on to their bikes.

However they had no sooner got on the road when "crash"! Mrs McCullen had not seen Susan and there was a collision.

After puffing and panting up and down hills 17 of us reached the foot of Traprain Law and 5 of us were still about half a mile back mainly because we were told to keep together. When Timo and Mrs McCullen were almost crawling up hills the others who had been with them when they were packing their lunches had to wait so when we were at the foot of Traprain Law the others were still at the old mill about half a mile back.

While we were waiting for them we were sliding down a little hill on the side until at last they came. We started up the hill which is believed to belong to a Celtic tribe called the Votodini. Puffing and panting up and up the so-called easy side. At last we came up a bend and saw the summit and sitting up along side it was a triangulation pillar. We didn’t know what a triangulation pillar was but Mrs McCullen told us about it.

"Dinner time"! called Mrs McCullen from somewhere over a hill. We all came rushing because climbing up and down hills either on foot or on bikes made us hungry so lunch was soon finished.

The bit I liked best was running down Traprain Law on the back of the hill with the wind whistling round our ears. Down and down. When we saw the bikes we grew
more and more aware of the long cycle home, mostly up hills.

Although it was a hard cycle home it was not as hard as the cycle to Traprain law. When were back (at different times but we got there!) the bikes were piled up in the most disorderly manner because we were too tired to put them away.

I had enjoyed exploring on a hill which was a village long ago, where a tragic princess was thrown to her death, where a treasure was found and is still used to make maps. There is even a quarry.

Primary 5 girl

Mathematics

One of the most productive linkages was that between the initial visit to Traprain Law, the initial work on bearings and directions, and the later study of mapping.

The teacher began to talk about mapping work to a second group. Their work was different. They began by constructing a triangle, using a ruler to draw the base line and the angle indicators to find the other vertex. They then drew an identical equilateral triangle on their atlases and identified a place within it. They began to re-plot the position of the place in the triangles they had originally drawn. They used one side as a base line and measured different angles to the chosen place from the ends of the base line. They repeated this procedure, using each side of the triangle as a base line. The children and teacher talked about: triangulation pillars, base lines and theodolites. They discussed the fact that although the measurements are different for each base line, the place is always in the same position.

The teacher said to the children that when the weather improves they can all go and make their own maps working from a base line. She reminded them that in producing O.S. maps an equilateral triangle is not used although the procedure is the same.

This extract shows clearly one occasion when several elements of the environmental studies programme were directly linked together.
by the teacher. Included among the elements are the maths involved in constructing triangles and in bearings, angles and directions, using an atlas, a reference book, the visit to Traprain Law via the triangulation pillar, and map-making theory.

However, the activity of drawing and making maps is part of a study initiated in response to stimuli encountered during the visit to Traprain Law. After seeing the triangulation pillar on the summit, many of the children wondered what it was and why it was there. Hence the study of angles, triangles, congruency, tiling and triangulation, in order to explore the principles of map-making and answer questions about the pillar. Therefore, not only were the elements of the programme unified by the visit, but the actual form of part of the study was dictated by events which took place during the visit.

The following episode from the researcher’s notes also merits comment:

*The teacher begins the initial triangle work with another group. She begins by discussing the pillar on top of the Law—why is it called a triangulation pillar? What do the series of pillars do for map makers? The children seem uncertain about ‘area’ and the area of triangles. She asks one child to get the appropriate Scottish Primary Mathematics Group texts. They find the pages with the initial work about triangles. Then they begin to discuss the area of triangles. Some children have difficulty with calculating the area of triangles so they proceed with practical work using geo-boards and then rectangles of squared paper.*

Instead of, as she had originally planned, doing the work she did with the earlier group, Mrs McCullen at this point focussed on the difficulties the pupils were having, and began to analyse the reasons for them. Each time she came up against a lack of understanding, she painstakingly worked through it with the children or, more accurately, encouraged the children to work through it for themselves. Although she later described this lesson as a ‘disaster’, it could not really be called that. Instead of telling the children the answer, she felt that it was necessary for them to discover or re-discover the working methods for themselves, thereby developing the ability to transfer this learning to another situation. She ended up re-teaching, in a quite different way, and in a more practical context, material which she initially believed the children had understood, because they were able to apply it to textbook problems.
Additional Language Work

Following their visit to Traprain, the pupils were encouraged to integrate what they had learned by writing a story about a Celtic boy. In this way they were encouraged to ‘put themselves in the shoes’, and frame of mind, of someone from a bygone age, and thereby develop the habit of seeing things from others’ points of view, in the process developing tolerance for, and the ability to understand, the viewpoints of others, as well as understanding the social constraints on behaviour.

After writing the stories the children made books of the Celts in which they collected and summarised their learning in this area of the work.

The children illustrated and re-interpreted the legend of King Loth and his daughter by making a huge mural of it. Afterwards, they collaborated in re-writing the legend.

As these new areas were explored, the study of map-reading and the mathematics underlying mapping continued. Also, as if encouraged by the integration of language, maths and art and craft work, the children linked their stories to Pigeon Post, by Arthur Ransome, and The Eagle of the Ninth, by Rosemary Sutcliffe, to spelling, dictionary and encyclopaedia work and to science, as well as making two major visits and having two visitors to their class.

The Charioteer

Kylan was 11 years old and lived in a Celtic hillfort. He was training to be a charioteer for he loved horses and the feeling of the cool rush of wind as he rode his willow chariot.

He had two sisters Cathlan and Bragon and lived with his Grandfather Irdun.

In a month Kylan would become a charioteer. His ambition would be fulfilled.

A month passed—oh so slowly. Then one morning—

‘Wake up wake up it’s your first battle said Cathlan.

Kylan got dressed and donned his new tartan cloak
which his proud sisters made for him. Then he went out and harnessed Cue his horse.

Kylan was to drive Drost, a young warrior into battle. The old warrior Irdun waved him good luck.
He then drove into battle, his heart beating like a drum.
The battle went on for hours. Drost was in hand to hand combat and Kylan fought furiously.
In the end after a seemingly endless fight Kylan's tribe, the votadini, won.
He remembered that battle, his very first battle, for ever.
Kylan felt a sensation of pride as he watched the deserted battlefield.
He was a charioteer.

Primary 6 boy

Experiments

When the children were working on the experiments dealing with aerodynamics mentioned at the beginning of this account, as in the following extract, they were not always working with friends, or children in the same age group.

Today the children have 3 experiments to do and a sheet entitled 'Air is all around us' to copy. This is the introduction to the first section. The children worked in pairs for the experiments. The first two pairs tackled either Experiment 1 then Experiments 2 and 3, or 2 and 3 and then Experiment 1. The other children joined into the sequence when there was a gap. The children were asked to write up their experiments straight away in their own words.
The first experiment was a milk bottle, about two-thirds full of water. One end of a plastic tube is put into the bottle below the water level. A syringe with the plunger out is attached to the other end of the tube. The children depress the plunger and air bubbles through the water.
Hence the children can see air when it is in water. I followed two girls, one from P4 and the other from P6. The girls did the experiments in order 1, 2 and 3. After she had tried a few times and finally managed to get the air bubbles in the water, the older girl explained to the younger one how the experiment was to be done. The younger girl then tried the experiment. She had also been using the apparatus all the time. When she realised how it worked, she repeated it a number of times and was obviously delighted with the result and kept laughing. The older girl was very amused at her antics. A pair of boys who came to this experiment later dispensed with the syringe and simply blew into the bottle using the tube. They still identified the air bubbles as well as delighting in soaking the table and splashing each other.

In the second experiment a tray was filled with water. Then two upturned glasses were put into the tray. One was full of air and the other the children filled with water. The children transferred the water from one glass to another. Again, the object was to see air in water but also to demonstrate that air does not mix with water. With this experiment the two girls experienced some difficulty in matching the instructions to the equipment. When they did understand they repeated the experiment again and again. The older girl only persuaded the younger to move because they could proceed to the third experiment, since no-one was using that apparatus. The final experiment consisted of a milk bottle two-thirds full of water. A funnel was placed in the neck of the bottle and plasticine used to make an airtight seal around it. Then water was poured into the funnel. Later, a hole was punched in the plasticine with a knitting needle. This experiment caused difficulties. The sealing bung of plasticine often did not seal. The children then just added to the bung or else when it was far too large and water leaked into the bottle when extra plasticine was added to the funnel, they took it apart and began again. They solved the problem by making a complete bung and punching the funnel through it. The children were surprised at the result and experimented with the knitting needle in place, with it out of place and with the hole it made sealed again. They also turned the bottle upside down with the knitting needle in its various positions. The teacher came over to the sink when this last experiment was being done and talked to the children about the processes that were taking place and about the effect of the hole in the plasticine.

The two girls not only had the opportunity to attempt the prescribed experiments, but were also expected to explore different
arrangements of the apparatus, and they did this. However, they
did not talk to the teacher about their observations until they had
almost finished all their experiments, and then they talked about a
specific effect which puzzled them.

This was not the only occasion when the teacher did not
intervene until the children had completed their tasks. The same
approach can be seen in the way in which she encouraged the
children to tell or remind each other about things they had already
covered or done.

The teacher took the group of P5 and 6 children together and asked
them all to make an 8-point compass. She asked one child to give
verbal instructions and the others joined in. Then she asked about
compass points and they all joined in that, too. Then the P5 group
went away to make their compasses whilst the P6 group stayed with
her and worked on the three experiments concerned with magnetism.

Thus, the children are expected to be able to use skills they have
already acquired and the teacher does not perform tasks for them
that they can already perform.

Concluding Comment

In this chapter, we have portrayed an interdisciplinary, project-
based, enquiry-oriented, programme of educational activities
grounded in out-of-school visits and the environment. Although
many of the elements of this work can also be found elsewhere, the
work in this classroom, school, and community was distinctly
unusual and thorough-going. So was the nature and degree of
community involvement in the educational process. We have also
seen that one of the most distinctive features of the work was that it
was directed towards the development of areas of competence
which few teachers explicitly acknowledge as talents which can
realistically be fostered in schools. In the next chapter we will
attempt to make more explicit what the pupils are likely to have
learnt as a result of the educational process we have described.
CHAPTER 2
THE BENEFITS

Our task in this chapter is to identify what the pupils learnt in the course of their work at Laneton. The ‘what’ includes habits, attitudes, thoughtways, values and motivational dispositions, as well as beliefs and information. A basic assumption here is that pupils will always learn something important from doing whatever they do, and from whatever they see and hear. Another is that teachers always convey their values to their pupils, even when they try to be value-free. Whatever teachers do conveys strong messages about what is important to do, and what it is important to avoid doing. Whatever pupils do, they learn to behave in certain ways and to experience and enjoy or tolerate certain emotions, and fail to learn to do, and experience, other things which it may have been important for them to have learnt to do or to experience. Thus, whatever they do, they develop particular motivational dispositions, thoughtways, and expectations.

The question we are trying to answer — “What is it that the pupils have learned?” — is very different from the question which most researchers have addressed. Their question has generally been: “How much have the children learned?” — and the “how much?” has usually been in relation to a small number of quantitative characteristics. The answer to our question, as writers like Reimer (1971), Goodman (1962), and Illich (1971) have shown, is often deeply disturbing.

To give a balanced answer to the question, three perspectives on the effects of Laneton’s work will be presented. These will be: first, a view from the standpoint of environmental education; second, from the standpoint of subject specialisms; and, third, from the point of view of the children’s personal growth*.

* The approach adopted will be primarily ‘illuminative’, rather than quantitative or ‘objective’. The effects of the educational processes described will be inferred, making use of available theory, rather than ‘documented’. The rationale for the approach, together with details of the author’s theoretical standpoint, will be found in Chapter 3 of Raven, 1980a. It would, however, be a mistake to believe that the effects could not be documented, for we were able, in a small methodological study conducted in the course of this project, to show that the educational processes observed in the classrooms we studied did have quantitatively detectable effects on pupils’ general values and priorities, on what
LANETON FROM THE STANDPOINT OF ENVIRONMENTAL EDUCATION

The use made of museums and the wider environment by Mrs McCullen’s class was striking. As far as museums were concerned, the original artefacts—the treasures of Traprain, the aeroplanes and spacecraft in the Museum of Flight—were studied in some detail. They were sketched and described. The drawings were revised and perfected. Theories of the origins of the artefacts and their workings were propounded. Original investigative reports on their origins, functioning and uses were read. The Collections were studied for clues which enabled inferences to be drawn about the social context in which the articles were used. Changes in design over time—and their causes—were noted. Materials—art, craft, and language—based on these observations, theories, and experiments, were made available for others to see, to study, and to learn from. The skills of the writer, the observer, the scientist, the leader, the theorist, the inventor, the experimenter, the historian, the social analyst, the artist, and the craftsman were all practised and developed by the pupils. Language, mathematics, art, history and geography were all used by the pupils to perform their task more effectively. The whole process was lively and the pupils enthusiastic.

In linking the pupils’ work with the wider environment, the teacher was able to achieve still other goals. She was able to set the museum artefacts in their geographical and geological context. She was able to teach her pupils important things about their local government. She was able to tap local expertise—and thereby teach the pupils that the most valuable information for their purposes is often not only not in school books, but also not in the heads of experts from prestigious institutions. In the course of these out-of-school visits, she was able to get to know each of her pupils very well—and they were able to get to know her very well. A whole host of benefits, which will be described later, stemmed from this process.

While facilities such as the Royal Scottish Museum, its outpost they wanted from their education, on the patterns of satisfaction and dissatisfaction they expressed with the educational programmes they followed, and on the consequences they anticipated if they were to undertake various types of activity in the community. Thus, although the findings reported in this book are based on a ‘qualitative’ or ‘illuminative’ approach, such effects are not ‘too intangible to measure’. Details of the methodological study have been published in Raven and Varley, 1984.

32
(the Museum of Flight) at East Fortune, and the National Museum of Antiquities of Scotland were used by the pupils, and played a crucial role in the development of the Traprain and other projects, the most striking feature of the work was the way in which the environment around the school was used. It was used as a scientific laboratory, a museum, an art gallery, a social and economic laboratory, a stage, a source of questions, a source of answers, and a source of inspiration. Its use was, however, strikingly unusual. It was used as a real laboratory and not as a teaching laboratory—for neither it nor the teacher told the pupils what questions to ask, still less how to explore them or what the answer was. The environment did not identify the resources to be used to make progress. It taught the pupils that expertise is most commonly to be found in the heads of 'ordinary' people—all of whom are experts on one topic or another. In this way, the environment was used to teach quite unusual lessons about the nature of science, scientific enquiry, the expertise of 'ordinary' people, the talents of other children, and patterns of social organisation. It was used to teach the pupils that the teacher's task is not to lay her hands on authoritative information and to relay it to her pupils, but to manage learning.

In classroom activities based on visits, Mrs McCullen encouraged her pupils to set historical material in its social and economic context. Although she might have done more to lead her pupils to develop the habit of studying the workings of social, political and economic systems, she did encourage them to find out about the way of life of peoples who lived at previous times, and, in so doing, encouraged them to focus on certain features of social and economic systems. The pupils read, and were read to, about the preoccupations, perceptions, and thoughtways of people of past ages, and heard about the social consequences of those values, preoccupations, and structures. They practised thinking in these ways themselves: they made up stories in which they tried to 'get into the skins' of people from a bygone age. They undoubtedly learned a great deal about social and economic processes: 'The Druids changed sides and became priests in the Roman temples.' (What they learned might nevertheless benefit from more systematic consideration!) The pupils practised building up a picture of a society and its structure from scraps of information, and were thereby discouraged from believing that one's first objective must always be to get an authoritative version of events.

In classroom, museum and the wider environment, Mrs McCullen shared her own thoughts and feelings with her pupils.
She shared her planning, her anticipations, her concern with excellence, innovation and efficiency, her disdain for petty regulations, her anticipation of obstacles and her search for ways round them, her concern with aesthetics, her feelings of having some control over what happened to her, her ability to utilise whatever resources were available—indeed, to tailor her purposes to those resources—rather than complain about the lack of resources. In this way she undoubtedly communicated her values to her pupils and portrayed for them a role model of effective, competent, behaviour. By eschewing the role of expert and source of wisdom—by regularly trying to do things which she did not know how to do, and tackling problems which she did not know how to solve—she showed her pupils how to be learners and how to innovate. By accepting pupils' suggestions, she showed them that authorities and leaders are not best thought of as sources of information and organisation, but that the relevant information and ideas lie in other people's heads. Her pupils, through this informal process, undoubtedly learned a great deal of value from her.

In a similar way, her pupils learned a great deal from their fellow-pupils and came to rely more on them. They developed a partnership in learning. Aided by a vocabulary for thinking about the contributions of others (which Mrs McCullen supplied), they became able to think about and value the contributions of others who had not "done as they were told". Mrs McCullen would enlist the help of her pupils in trying to find ways of tapping the energies of others—perhaps in some ways disruptive—pupils. In this way, she both made explicit the fact that not everyone contributes in the same way to a group process, and also the thought processes which contribute to effective leadership and management. By involving her pupils in this process she helped them to develop leadership and management skills.

Through this extraordinary integrated process, the out-of-school activities in which the pupils engaged were used to introduce interest and variety. They were used to enable different pupils to practise and develop different skills and motivations. They allowed a wide variety of potential sources of motivation to be tapped to fuel educational activity in any one pupil, and they allowed different sources of motivation to be tapped in different pupils.

There can be no doubt that through the process which was described, the pupils learned to value innovation and industry. They learned to value beauty and efficiency. They learned to value...
other people with different values, preoccupations and abilities. They learned to value research, and to link research with improvement in the quality of everyday life. They learned to treat bureaucratic rules as guidelines rather than requirements. They learned to exercise discretion, to lead, to investigate, to build up a picture from scraps of information, and to work out the implications for themselves. They learned to ask questions, rather than only answer them, and came to think it was appropriate for them to do so. They learned to discuss, to speak effectively, to learn from others, and to communicate through art and graphic material. They learned that they themselves were competent to learn on their own, that they were competent to invent, to have opinions, and to contribute ideas. They became less likely than other pupils to develop feelings of 'trained incapacity'—feelings of inability to do anything until one had mastered a vast array of material. The pupils learned from experience that they could become experts relatively easily in any area they chose. Learning itself was de-mystified.

It remains to be seen how well all this positive learning will stand up to the buffeting it will receive in a subject-based, content-oriented, competitive, secondary educational system. Nevertheless, we may conjecture that the experience is more likely to withstand such buffeting the more the pupils have been able to make explicit the reasons why they found it motivating.

LANeton From the Standpoint of Subject Specialisms

I Language and Communication

The language accomplishments were striking. Communication was not confined to words, but included art, graphic material and role play. Writing was drafted and re-drafted until the message got across effectively. The audience for this purpose was not just the teacher, or even just the other pupils, but included other members of the community. Discussion was used to clarify ideas and understanding of written material. Questions were asked about scientific and historical material. Experts and members of the community were interviewed. Language activity was set in an extended context of observations to be made and recorded, and results to be communicated. It was set in an extended time context—several weeks might be devoted to the production of a single piece. Teaching of the 'rules' of grammar (which was done
only to appease secondary schools anyway) was subordinated to communicative effectiveness. Language was viewed as a tool to be used, analysed, and mastered, not as a set of principles to be learned for display in examinations. The nature of language work varied over time, depending on what the pupil was trying to say. It varied from pupil to pupil, depending on the pupil's interests, talents and abilities. Books were viewed as a cheap resource to be used in the most efficient way to promote the development of the pupil's literary, artistic, scientific, and historical competencies. They were not used as bodies of information to be mastered. Neither were the books themselves, nor their content, greatly respected without evaluation. It was thought to be a waste of pupils' valuable time to copy material from books to jotters in order to avoid defacing the books. Books were to be used as a source of ideas about who might be written to, or interviewed, in order to get information which was more relevant to one's purposes than that which was in the book.

The focus in reading was on what of use could be learned by, and through, reading. What was deemed to be of use was not confined to the knowledge or theories that might be contained within the material. It also included insights into the values (eg aesthetics, innovation, conquest, and helpfulness) of the peoples described, and their thoughtways and strategies—their planning, etc. The emphasis was not on 'mastery of subject matter' but on what could be got out of particular material. In this way, it seemed, pupils would be likely to develop the habit of scanning material for that which is new and useful, marking it, and discarding the remainder, rather than attempting to master everything between the covers for fear that they might be asked to answer questions on it.

II Mathematics

Mrs McCulien found it more difficult to integrate her mathematics with her non-formal education. However, she did encourage her pupils to use what they had been taught—and gave herself a nasty shock in the process. This led her to re-teach material—on an individual basis and in an appropriate context of use.

She encouraged her pupils to use their mathematics in summarising and reporting the results of their observations, in constructing bar-diagrams, in mapping, and in working out the results of their experiments. She encouraged them to search for a form of mathematics which would be of use for the purposes for
which they wanted to use it, and, in this way, communicated the
idea that an appropriate branch of mathematics could be mastered
by the pupils if, and when, they needed it. Her way of working
demonstrated the way in which scientists, historians, archaeologists
and others actually use mathematics. Instead of conveying the
impression that mathematics consists of a linear and cumulative
sequence of techniques to be mastered before one can consider
applying them, it communicated the idea that mathematics, like
language, is something which is integral to effective living in many
walks of life.

Despite all these things, the fact that Mrs McCullen found it so
difficult to integrate her mathematics with her non-formal
educational activities would seem to indicate that there is a need for
basic re-thinking about mathematics and arithmetic in primary
education.

III Science

Pupils made their own observations in several areas of natural
history—in botany, zoology and sociology. They practised the
skills of the scientist in so doing. They practised following up
intriguing observations and problematising the previously
unproblematical. They practised observing, inventing methods,
inventing ways of summarising their observations, deriving
theories, and relating their observations to (half-understood)
theories in the literature. They practised finding information
relevant to their own concerns. The fact that they related their own
observations to (necessarily) barely understood theories is
important. This is exactly what scientists do—they develop a
nodding acquaintance with new ideas (not fully understood, and
with unfamiliar backgrounds) and only slowly evolve an integrated
and inter-connected set of concepts for thinking about them. They
guess what each other’s writings might mean, and make their
colleagues’ writings their own by imposing their own
interpretations upon them. This process is very much at variance
with the image of science communicated to children by most
schools. In these, pupils are taught that they should have no truck
with scientific ideas they do not understand, and that the way to
understand them is to study the background first. The pupils also
carried out their own experiments, on magnetism, on flight, and on
surface tension. They learned that scientific experiments are fallible
and that no one source of information is ever conclusive. Multiple
sources of information and considerable interpretation—indeed
leaps of faith and extended credulity— are always required, and the results remain tentative. Information in books is disputable, not authoritative. Yet the results of this apparently haphazard process actually turn out to be useful in day-to-day life.

These achievements, like the language achievements, go far beyond those looked for by the HMIs in their Primary 4 and 7 survey. Indeed, they would not show up in any conventional quantitative evaluation because there are no well-established measures of the ‘scientific attitudes’ which the Laneton pupils had actually acquired. Even the scientific knowledge which they had evolved and mastered was pupil- and curriculum-specific and would not have shown up on any test of general scientific knowledge.

IV History, Geography and Social Studies

In their historical, geographical and social studies, the pupils again excelled. They practised being real historians, geographers and real social analysts. They made observations and generated theories. They reviewed the observations and theories generated by others. They studied socio-economic processes. They studied the personal and social consequences of different preoccupations, values, concerns and thoughtways. In all these ways they not only acquired specific knowledge, concepts and understandings: they also developed habits and ways of thought, a tendency to focus on certain types of social process, and a tendency to attend to certain types of social consequence. They developed the ability to observe, enquire, and infer. In their historical and social studies, as in their scientific studies, pupils came to see research as something which was integral to the effective achievement of their goals, and not something divorced from life. They came to see it as something which was for them, not as a luxury to be engaged in by others. They experienced its frustrations as well as its satisfactions.

V Art, Craft and Aesthetics

The level of art and craft work produced by the pupils was again extremely high, often based on sketches made in the course of visits, or on impressions formed in the course of scientific experiments. It was designed to facilitate communication. Mrs McCullen not only encouraged her pupils to take particular care with presentation—and had herself a flair for display—she also encouraged her pupils to consider the aesthetic qualities of the paper on which books were printed, the layout of the type and the
pages, the planning of the village, and the construction of buildings. She drew attention to, and encouraged the pupils to pay attention to and depict, the craft work involved in producing artefacts found in the museums. In this way she encouraged her pupils to view aesthetic considerations as an integral part of life, and not something-divorced from it, to be pursued through study of ‘aesthetic subjects’.

VI  Expressive Arts: Role-playing, Drama, Music Making

Both in this project and others, the pupils enacted scenes from previous times whilst they were making their large murals. In this way they had an opportunity to experience the thoughts and feelings of people from a bygone age and to experience the constraints under which they lived.

VII  Moral Development

Undoubtedly one of the most important outcomes of the process of education observed at Laneton was its effect on moral development. Pupils were brought to value styles of behaviour which have the greatest long-term social implications. They came to value integrity, making the most of themselves, efficiency and innovativeness. They not only came to respect others, but developed the habit of thinking about what others might contribute, and were contributing, to group and social processes, and how to facilitate those contributions. They practised thinking about the long-term social consequences of pursuing different goals, and viewing themselves and their society in different ways.

LANETON FROM THE STANDPOINT OF THE CHILDREN’S PERSONAL GROWTH

Extensive reference has already been made to the integrated patterns of knowledge, skill, attitude, habit, thoughtways, motivation and behaviour developed through Mrs McCullen’s programme of project-based activities grounded in out-of-school activity. It remains to summarise what can be observed in her work, to suggest ways in which the growth of these components of competence might be better promoted. Given that this discussion follows our discussion of Mrs McCullen’s work from the standpoint of both environmental studies and traditional subject areas, it is inevitable that a certain amount of repetition will be involved. However, we hope that the reader will bear with us.
because we believe this to be the most fruitful—and developmental—way of appreciating the distinctive features of Mrs McCullen's approach. The discussion will be organised under three headings: creating opportunities to practise important skills and abilities; exposure to appropriate role models; and creating a developmental environment.

Creating Opportunities to Practise the Components of Competence

As has been mentioned, we observed pupils at Laneton inventing, reflecting on what people said, and asking their own questions rather than merely responding to other people's. We observed them analysing social processes, reconciling different points of view expressed by people in interviews in order to produce an understanding which was more complete than that of any one person, and building up their own understanding of a social or historical process from scraps of information (an understanding which was more complete than the sum of its parts). We found them inventing methods of getting information, generating their own information and understanding through reflection, getting help to achieve their goals and enhance their understanding, working with others, leading, following, accepting other people with different values and talents, contributing to group progress, and advising others. What needs to be stressed here is that, by practising these activities, they will have learned to do all of these important things. They also learned to monitor an evolving process of group activity, to identify their part in the whole, and they forged an area of specialisation, in the context of a picture of a whole—a whole which they in turn influenced, but did not control. They learned to accept responsibility for their part in the whole, and to rely on others for theirs. They came to realise that difficult activities may be both enjoyable and manageable. They set challenging goals and achieved them. They persisted in the face of frustration and difficulty. They communicated, listened and persuaded. They reflected on their personal strengths, and on group processes.

Exposure to Appropriate Role Models

In addition to creating opportunities for pupils to practise these skills and components of competence in a highly motivated manner in relation to goals which they personally cared about, Mrs McCullen also did a large number of other things which would be
expected to facilitate the development of motivated, competent, behaviour in pupils: she made her own values clear to her pupils and shared with them the process of resolving her own value conflicts. She shared her own thoughts and feelings with them. She shared her quest for excellence, and her commitment to high standards. She shared her concern to innovate and to do things better than they had been done before. She shared her search for new ways of achieving her goals. She shared her anticipation of obstacles and her quest for ways round or over them. She shared her tendency to monitor the effectiveness of her behaviour and use what she learned to improve her performance. She shared her respect for other people. She shared her distaste for rules—from grammar to bureaucracy. She shared her distaste for time-wasting activities such as copying from books. She shared her willingness to set out into the (relatively) unknown on the basis of hunches, confident in her ability to learn as she went along and turn the fortuitous to advantage. She shared her tolerance of the inevitability of mistakes; her recognition that what one learns from one’s mistakes is more important than the mistakes themselves. In all these ways she portrayed components of effective behaviour in a way that her pupils could understand and from which they could learn.

Creating a Developmental Environment

As we have seen, Mrs McCullen created an environment in which pupils enjoyed what they were doing and were strongly motivated to practise important skills and components of competence. She herself also portrayed components of competence in such a way that her pupils would strive to emulate her—for she achieved her goals very effectively. But there was another set of activities in which she engaged: activities which are crucial to promoting the growth of competence in others, but which we have been much less able to pin down.

She created a classroom climate in which it was unthinkable for a pupil to turn in second-rate performance. It was a climate in which there were high standards—even if these were not the standards on which many parents and teachers focus. It was a climate in which challenging, but realistic, goals were evolved and attained. It was a climate in which particular tasks and responsibilities were, through a process of informal negotiation, delegated to, and adopted by, particular pupils. But it was a climate in which pupils helped each
other with their work. It was a climate in which pupils respected each other for what they had to offer. It was a climate in which pupils monitored the quality of their own performance and sought to learn from it. All of these were crucial features of the atmosphere which pervaded the classroom and which contributed to the personal growth of the pupils. How did Mrs McCullen bring it into being?

Part of the answer, of course, lies in her exemplifying many of these concerns and behaviours herself. But just how did she manage the learning environment of the classroom?

Among other things, she got to know her pupils extremely well. She made a point of spending a lot of time with her new pupils, but she also found that trips which extended over several nights away from school were particularly useful from this point of view. She got to know her pupils' personal interests, abilities, enthusiasms and capabilities. She got to know the meanings of their gestures. She got to know when to respond to their pleas for help and when to send them away to try again. She developed a great faith in their competence to cope on their own and did not feel obliged to hem them round with restrictions. She encouraged the pupils to think of themselves as individuals who were different from others, and helped them to think about the ways in which they were different from them and each from the other. She asked few questions designed to find out if her pupils knew that which she thought they ought to know. Rather, she encouraged them to ask questions and to answer them. She asked them questions to which she did not know the answers. As a result she herself needed, and therefore valued, the contributions they made. She expected them to do "adults" work—such as to unpack, assemble, and use the duplicator. In this way she established a climate of independence and maturity, rather than a climate of dependence and immaturity, in the classroom. She followed up her pupils' interests, even if this meant that she did different things and did them in ways which differed from what she had intended. She neither abdicated leadership responsibility, nor adopted an authoritarian leadership style.

To be sure, this is an adequate answer neither to the question of how Mrs McCullen created a developmental environment in her classroom, nor to the question of how she facilitated the development of individual children. But perhaps by posing the questions in this way and struggling to answer them, we can direct attention to this important set of issues.
CONCLUSION

We have seen that the benefits of the approach adopted by Mrs McCullen were unusual, regardless of whether one viewed them from the point of view of the goals of subject specialists or from the point of view of one primarily concerned with environmental studies. The pupils were highly motivated, and their higher order attainments in all subject areas far exceeded those of pupils in many other classrooms. (One would, however, require measures of these higher order outcomes which are not currently available to demonstrate this conclusion in a statistical study.)

Nevertheless, we have suggested that this is not the most fruitful way of viewing the benefits achieved. The real benefits were in developing areas of competence which are not easily subsumed under the traditional subject headings. Neither are they easily pursued through a subject-oriented approach. It appears that the multiple areas of competence which were identified as important outcomes of the approach are best pursued through a curriculum which is unashamedly competency-oriented and which focusses on educational processes—the personal behaviour of the teacher and the quality of the developmental environment she creates—which are rarely stressed by educational theorists. Nevertheless, we will, in Chapter 5, attempt to show that, although it has rarely been made explicit, this competence-oriented approach does indeed lie at the heart of much writing on environmental studies, non-formal education, and integrated studies.
CHAPTER 3

SOME OTHER OUTSTANDING WORK

Although 'Mrs McCullen' closely resembles a particular teacher we studied, episodes of the work attributed to her were actually undertaken by other teachers. Thus, for example, the multiple competencies to be fostered, and the fact that they can only be encouraged as each child pursues his or her own interests, were actually articulated by the head of a large urban school. Mrs McCullen herself proceeded in what she called a much more 'intuitive' manner. (It is, in fact, incorrect to describe her work as intuitive: it was based on habits and procedures which, encouraged by the Primary Memorandum (SED, 1965), she had painfully developed over a period of twenty years.) Likewise, because we were unable to accompany Laneton pupils on their visit to the museum, the visit included in the portrayal was actually undertaken by pupils from another school.

Despite the fact that 'Mrs McCullen's' work was, in reality, undertaken in a number of different schools, the impression may still be given that, while work of this kind can, of course, be conducted in a nice rural area, it is not practical for city centre schools. To counteract this impression, the present chapter consists of a miscellany of examples of work, in no particular order, carried out in such schools.

A Sequential Series of Environmental Projects

One of the most striking features of the work in the first classroom to be described was the way in which the teacher (Miss Blake) gradually evolved and developed the children's skills through a series of project-based activities. The development was structured, each stage consolidating the achievements of the previous one. Such steady, paced, development seemed to give the children confidence in their abilities and confidence in their ability to learn new skills. It seemed also to have the effect of leading the children to divide tasks into stages, and to attempt one stage at a time in the pursuit of mastery.

Another noticeable feature of Miss Blake's work was that she urged the children to look at their surroundings, to reflect on people's feelings, to think and talk about what they had seen, to
come to conclusions and, most importantly, to take action such as writing letters to councillors or newspapers on the basis of their reflections. This use of the children’s thoughts, feelings and behaviour in action was unusual. It could be extended by monitoring the effects of the action to assess its effectiveness and to learn more about the initial problem. The activities were designed to improve the quality of life for everyone in the community, thereby developing a commitment to public-spirited activity. Both the specific abilities and the more general attitudes acquired in this process are likely to be of value to the children throughout their lives, enabling them to improve the quality of their lives and to contribute to the communities in which they live.

LEARNING FROM MISTAKES

The following extracts from on-the-spot notes made by one of the researchers in the school illustrate the process whereby the children were encouraged to tolerate mistakes in the course of learning, to develop a feel for the fact that frustration passes and things come right in the end. The children were seated in pairs, so the researcher’s conversations were usually with two children at a time. In this case the pupils had just been taking notes from each other, using a private form of shorthand (speedwriting).

Symon and Linda: They thought that it was hard to write in shorthand. They would find it much easier to write longhand although translating from shorthand to longhand was easy. Also they pointed out that they would be able to do it better and quicker than longhand when they were more familiar with it. At the moment they found that if the reader had moved on to the next section they tended to write the whole word not the shortened form.

Clearly, these two children were developing the habit of trying to clarify difficult and easy aspects of the task they were undertaking, and they were engaged in anticipating its benefits to them. Other children in the class also exhibited the development of these components of effective behaviour:

Mina and Parveen: Both of these girls said how difficult it was to think exactly what to write down. One said that she found it hard to always abbreviate. She pointed out a whole string of words in her notes which she ought to have abbreviated but hadn’t. She wasn’t upset or concerned, she just pointed to them as examples that she could improve on.
Louisa: Louisa told me she had just returned to school that day after being ill. She said that she wasn’t sure how to abbreviate, for instance, could you misspell? She had written ‘ruf’ for ‘rough’ and ‘lownsh’ for ‘launch’. She thought the launch abbreviation probably was too long but was not sure about ‘ruf’. She said she had to think all the time.

These two girls are isolating areas in their own work which they can improve next time. Again, they are not at all threatened by their mistakes, and are using them to guide their own feelings about their progress. Furthermore, they are actively looking for errors in order to aid this process, perhaps because they see its links to their own development. Such analysis of the barriers to improved performance is rarely encouraged in schools, although it can greatly improve motivation and performance (Alschuler, 1973).

The next extract is from two children. One of the girls had missed out a section. She describes how she approached taking down shorthand. The other girl reflects on her delight at managing the task so well.

Susan and Tracey Ann: One of the girls had missed out a section but was unconcerned. She said, “You have to think of the sounds all the time and how you’re going to write them. You have to work them out. Then the person’s gone on to the next bit and you’re left behind.” She had enjoyed the shorthand as had her partner, “I never missed a bit out!” They both said they had no time to feel anything just to think and do.

It is important to comment on the children’s lack of concern about their mistakes. If they had been concerned or upset about them, they would have been unable to learn from their errors or develop a belief in their ability to master aspects of tasks, and so gradually build up the whole skills. Likewise, it is important to note that they were enjoying the satisfactions which had come from overcoming difficulties and taking delight in their accomplishments. All of these are important in developing achievement motivation (McClelland, 1965).

The boy who wrote and read the passage on which the other children were taking notes also talked about his thoughts and reactions, which showed that Miss Blake was encouraging these self-monitoring attitudes and abilities throughout the class and not just in one section of it for one task.
“Nervous!” was how he’d felt about it, but he explained that was because it was the first time he’d done something like that. He thought that the most difficult part had been summarising his original piece. It was hard because he thought that his writing was very interesting and so he had to pick out only the most interesting parts! He commented that when he was reading the other children were fair in their reaction to him once he’d got used to the idea.

Overall, these extracts give the impression of children interested and involved in their tasks and developing self-criticism.

**LIFE IN THE COMMUNITY**

In an inner city school, where some areas are run down and others are being rebuilt, Miss Blake took the opportunity to encourage her pupils to explore people’s attitudes to change.

The following letters to a friend, on leaving one’s house, illustrate how sensitively the children had reacted to one simulation.

48 Perth Cres.  
Dundee

Dear Miss Ation

How are you? I am very sad because my house is getting knocked down. As you know I have lived in this house for fifty years and I have to move in to a horrible sky scraper. I have to leave my pussy behind, but I will sneak it out. I can remember all my family and, the day that wee Craig dropped the paint all over himself, but now I can laugh at it. Those were the days

lots of love

Mina
Dear Sue

The’ve started to knock the houses down in our street. They have already started to knock your’s down. The place looks like a rubbish dump the way the’ve torn the houses down. There putting me in one of those new flats down in Albert Road, there going to put me on the fifteenth storey and Im not allowed to take Ben because they say he won’t like it. I asked them if they could leave me hear but they said no. They only wan’t to move us because they want to build a supermarket. You ken something like Asda’s. The’ve told me I’ll move in in to days. I have to give Ben to the Cat and Dog home and they’ll probably kill him.

I don’t think it’s very fare I’ve lived in this house for fifty year’s and seen five children born hear. The’ve all gone now but, I’m sure they would be sad to see the old place go. Got to go now get my things packed but I’ll never forget this place. I have’nt got anything big enought to put all my memorys in.

LOVE

Charles
Dear Jane,

I have written a letter to you before, but you haven’t written one to me. I wanted you to know, I am moving into my new house. I am very sad, I liked my street so much I had lots of friends. All of them came to see me nearly every day. I am going to live in a big street, it has only two houses and a large church. I am in one and, the other one is empty. there will be more houses built but, it will take a long time and even longer for people to come, and I won’t have any friends for a long time. I am very sad but, I will come to visit you some time.

Love
Parveen
Akhbar

Although the thoughts and feelings expressed in the letters may appear conventional to an adult, it is likely that this process is leading the pupils to practise “feeling themselves into other people’s skins” and thus developing the habit of trying to understand how they think and feel. In this way the teacher created an incentive for the children to write at length about a topic they cared about.

Miss Blake also tried to break down the barriers between the school and the community. She invited adults into the school, encouraged the pupils to interview adults out of school, and conducted a project on the local canal.
Miss Blake hoped that she might awaken or deepen interests in the locality and its community through using a questionnaire with which the children would interview adults in the area. She was particularly pleased with the following account of an interview from a girl who had recently moved into the area.

On Tuesday 28th September I interviewed my nextdoor neighbour Mrs Warren about Leso and she gave me these answers.

I have been living in Leso for sixty years. Our schools days were quite good. My teacher was very kind at times, our punishment was the strap. We wrote on a slate, with a slate pencil. All the neighbours were very kind especially to the children. I went to South Bridge school.

There has been a lot of changes in Leso, especially housing. We did have quite a lot of homework to do at home. The streets were cleaner than nowadays.

The teacher had certainly opened up an area of talk and fascination for the children, who appreciated the expertise of their parents, as this boy’s account of his interview shows:

On the 1st October I asked my dad some questions and here are the answer.

When my dad was small he said that Leso was a far busier port then than now. Many buildings have been pulled down for sports centres and modern buildings
pot up. The Kirkgate has been one of the places that have altered greatly. My dad lived in Gordon St and he always left there doors open so that they could pop in and out to see folk. His back green was'nt much of a back green with glass and broken bottles. The house was three storeys high and the toilets were out side on the landing. Leso walk has'ent changed a bit excpet the bridge which has gone.

Easter road park has'ent changed a bit but it's new grandstand make's all the difference, my dad has seen better teams when Hibs had Smith, Reilly, Turnbull and Willie Ormond.

The Victoria baths were there before I was born said my dad, The baths had a chute, springboard and a high dive of which my dad has painfull experience (The sare still shows). Pilrig park was also there before my dad was born nothing has changed except the house which is in ruins. The only memories my dad had of Doune Primary was playing football in the biggies, he also remembered that it was an annexs of Ferranties and Telford College for a wee will.

by

Kevin White

Comparing interviews revealed different attitudes amongst the interviewees to the questions, which were designed to reveal what 'change' had occurred in the locality. The preceding interview and the two following interviews reveal substantially different views.
On the 29th September 1981 I interviewed my mum. I asked her questions that I made up in the classroom. I asked her about the transport and how it had changed. She replied, "she misted the tramcars and the buses and the old steam trains." I asked her how the value of the money and cloths has changed and coins and more valuable and prices have gone up considerably like cloths and foods. I asked my mum what the Kirkgate was like and the answered "it used to be all houses and narrow streets, and also the banana flats used to be the same as the Kirkgate." My mum also said the mills on the Water of Leso were still in operation and in working order. Leso walk was the same apart from the shops the railway bridge and the tram lines and St James Centre was just houses.

On Wednesday the thirty first of September I interviewed my mum about Leso when she was young. My mum told me that the houses were smaller when she was small and, she had one pair of good shoes and rubbers for other things. She told me she has lived in Leso for forty three years and an awful lot of things have change. She said "That we have more jobs now." The schools she went to were Peterlee road and Brown Accdamy. The games she played were rounders, kick the can, leaveahoy, skipping and diablow. She wore
plain clothes. The shops were quaint and more personal service. She had a coal fire which was warmer but dirtier.

FOLLOW-UP TO A VISIT TO THE LOCAL CANAL

Some excerpts from the researchers' notes following a visit which another class in the school made to a canal are revealing. Specimens of animals had been caught and were swimming in buckets of water, to be returned to the canal the next day.

The children were watching the animals with great interest. They were occupied from about 11 o'clock until 11.35. One boy in particular made barely contained excited comments, "Look, it's moving."
"The caddis is coming out!" etc. etc.
The other children were slightly calmer but equally engrossed. The children were calling some of the animals by name. They had identified the names by matching their specimens in the tanks with pictures in books. They had identified:

- caddis fly larva
- water spider
- May fly larva
- tubiflex worms
- flat worms.

The children think that some of the animals have laid eggs and the eggs have hatched. Then they spot a bloodworm climbing up the jar. The children aren't just looking at the specimens and talking about them. They are also using books very extensively, especially the books that they have nearby which have pictures of the small animals they have collected.

Three girls were dealing with plant specimens that have been collected. They have labelled each plant. For example, "A Stinking Groundsel from the canal" and "A piece of ivy from the canal." They had grouped all the specimens together with a large notice saying "We found these on the bank of the canal." Then they told me about the plants, for example, "We found this (Horsetail) among some weeds" and "You could get this right near the canal and on the road down". I don't think that they always named the flowers and plants correctly.
but this was possibly because they had only collected flowers and not leaf samples. This did cause them a few problems initially but they soon simply decided on one plant and called the sample that.

The teacher talks about how the children have chosen their pieces of writing. One boy has written a very general piece about the afternoon, with lots of sketches of different animals.

We were down by the canal. And the name of the place was Colthart and we caught all sorts of creepy cloolis and we caught a choodafex worm and we cot a water stoler and cot some stone men and we got this little jelly and it turns into a chodafex woram and the ston men are hatchen and they looke like they are water Betels and they have to brak out of the shell before the can get out. And they are struglen to get out of the stone but they get out avenshuly they get free and they will beedel to swim about

A girl has chosen specifically the caddis fly larvae and written only about these. She has collected not only her own observations but some information she read in a book and a conversation she had with me. The teacher said that one boy who frequently does no work at all had written a few coherent sentences forming a complete piece of prose.

I was at the Canal and I cote a diving-beetle I cote in my net then we looked at the water wheel and I cote a spayder and there was a ball it was good.

It is apparent from these episodes that these teachers were able to capitalise on the pupils' evident delight in these activities to motivate the development of observation, classification, and recording skills.
**SOME CONCLUDING COMMENTS ON THE EFFECTS OF MISS BLAKE'S WORK**

The most striking features of Miss Blake's work were the flexibility of the language skills which were developed—there was no one 'right' way of doing things. The pupils learnt that what one does is appropriate to one's purposes. A range of reading speeds and techniques—including skimming, careful reading, and putting together a picture from scraps of information—was developed. So were a variety of writing skills—'shorthand' notes for personal use, and formal writing for communicative purposes. The writing was set in an extended communicative context and an extended time context. This time context involved redrafting and improvement as a result of seeking and obtaining feedback from other pupils, including peers, and not just the teacher.

However, there are other important benefits arising from this educational programme. Through the activities which Miss Blake arranged, the pupils developed new ways of thinking about minorities, and about their needs and talents. They developed important investigative skills and confidence in dealing with adults. They came to think that it was appropriate for someone like themselves to write to 'the authorities' to complain, and to get something done about a social problem. The pupils had experience of investigative work in the community and of putting together scraps of information to form a picture of a social process which could not be observed as a totality, but in which they could intervene.

Finally, the process of analysing obstacles to improved performance, getting the help of others, experiencing the satisfactions which come from having overcome difficulties, and experiencing the feelings which are associated with accomplishment, are likely to result in the development of achievement motivation, and this, in turn, is likely to result in improved performance at other tasks in the future.

**A Visit Involving Moral Education**

After visiting Castlehill, pupils from another school were encouraged to write notes on punishment, education and pastimes in the 16th century, illustrating their answers where possible. Many of the children talked at length about how interesting they had found various aspects of the visit. They mentioned sitting in the
courts and watching the judges and lawyers walking and talking in whispers.

One boy showed the researcher where the group had sat in a picture from a book of old etchings. He said that he had found it

"...fascinating. I wouldn’t like to make a wrong decision.” Later, he spoke of Burke and Hare and said that he considered it an injustice that one had betrayed the other but only one was hung.

Another child talked about how interesting he found all the old tortures...because there were so many things for very little. Life was very different from what they had learned. He found that finding out things you didn’t know and listening to stories was scary and exciting.

Another boy said that if he could go back in time he’d like to see more of the tortures, and what sort of food was cooked and how, and about work.

Another boy talked about the Witches’ Well, how it was used to find people guilty, about the extra dangers of being left-handed and about how people thought that if you talked to yourself you were talking to the devil.

Many of the children talked about gruesome tortures inflicted for minor offences, the poverty of people’s homes, the lack of sanitation, mixing animals with people, and the cramped conditions in which people lived. The children had heard these ideas and stories during their visit, and the experience had obviously had a major impact on them even when their own interests were different.

Some of the children were more interested in the pre-history of Edinburgh, Pictish settlements, the draining of the Nor’ Loch and the extension to the New Town.

Many children discussed the conditions of people living in Edinburgh in the past, particularly

- the lack of sanitation and infestations of lice and rats etc.
- “Gardy Loo!”
- the number of people living in one room
- the use of pigs for warmth.

They discussed their previous project, in which they had also found out about the way people lived—in the Third World countries.
She said she didn’t know they only had rice and a little milk and water. It made her feel sorry. It wasn’t nice, all the money we’ve got and we need to help them.

The girl was going to have a Jumble Sale with her friends to raise money for Save the Children. She said it would be good fun as well.

The children and the teacher had made an extensive collection of books they could use, as well as having a project box from the local Teachers’ Centre. They used these books—and particularly books of old engravings and photographs, old pictures and old maps of Edinburgh—to compare with what they had actually seen of Edinburgh in the course of their visit, and with more modern street plans.

The activities undertaken by this class are of particular interest because they took the pupils into discussion of a number of moral and social issues. However, before commenting on these, it is, perhaps, worth again commenting on the evidence of the diversity and the idiosyncratic nature of pupils’ interests which were stimulated by this visit: some pupils were impressed by the architecture—the shape and construction of the buildings and the materials used; others were concerned with geological issues—the volcanic plug on which Edinburgh Castle rests, the glaciers which scoured the valleys at the sides, and the rock formations; other pupils were concerned with the geographical aspects: the site and development of the Castle, Edinburgh and the New Town; others were attracted to historical details: the Picts, battles and the past; others again were stimulated to discuss such topics as the assumptions embedded in concepts of justice, the changing conception of guilt and the role of torture and other processes for establishing guilt; yet others reflected on the quality of life in Edinburgh in times past—the conditions of living, poverty, filth, disease, vermin, and likelihood of attack.

But perhaps the most striking issue to emerge as a result of the activities undertaken in connection with this visit was the pupils’ concern (egged on by their teacher’s asking them to write essays on such topics as Punishment, Education, and Pastimes in the 16th Century) with moral and social issues: the dilemmas of judges who had to make a decision on the basis of inadequate evidence, yet who had to live with the consequences of those decisions; the validity of confessions extracted by torture; and the moral dilemmas involved in convicting one person on the basis of a confession from an accomplice (Burke and Hare).
The material vividly illustrates pupils' potential interest in such social and moral topics—an area of education about which most members of our society have become extremely ambivalent. The potential for capitalising on pupils' interests would appear to be considerable: would judges really have been concerned about the 'ordinary' issues of accuracy and justice about which the pupils assumed that they would be concerned? How could one obtain insight into what their thought processes, feelings and preoccupations really were (and are)? What processes of analysis would lead pupils to examine modern concepts of justice, trial and punishment, with the detachment with which they examined the trials of witches, thumbscrews, and spitting on prisoners in the past? And, if one did wish to see primary school pupils doing these things, can one legitimately assume that one teacher will be able to work effectively with her pupils in all these areas? If not, what alternative arrangements might be made so that pupils with different concerns and motivations could work with adults with differing concerns and motivations to develop their own particular talents and competencies?

A Visit to the Royal Scottish Museum with a Guide Lecturer

Before the Museum's Guide Lecturer began a session on Japan, the (P5) class, which had been studying Japan for some weeks previously, said "Hello" in Japanese. The class teacher then pointed out that only one had bowed with respect.

The Guide Lecturer began by saying that Japan was quite like Britain, although it might not seem so. Could the children suggest similarities and differences? A pupil said that it was mountainous, and the Guide Lecturer agreed that, like Scotland, it was mountainous. Another child suggested that Japan was quite small, and the Guide Lecturer agreed that it was over-crowded. Another child suggested that it was industrial, and this was also accepted. Pollution was mentioned, as was the fact that Japan was an island off a large continent, just as Britain is. The Guide Lecturer then discussed how Japan was often at war with nearby countries, but also traded with them in peace-time, just as Britain did. After reviewing such similarities and differences between Japan and Britain, the Guide Lecturer showed slides.

First he asked the children to imagine what people 100 years in the future would associate with the Japan of the present. The children suggested computers, cars, videos, record-players, and
The Guide Lecturer agreed that Japan was world-famous for making these things. However, he went on to say that there was a time in history when people didn’t know about Japan—a time when, to people in Europe, Japan was extremely mysterious. They knew it existed, but they didn’t know how to get there.

Then the history of Japan was sketched. The *samurai*, or warlords, and the civil wars which took place there were discussed, and likened to the fighting and raiding that took place between the clans in the Highlands. The warlords were conquered by one warlord who became much more powerful than the others. In this way, Japan was united and settled. The Guide Lecturer said that when this happens, a country is more likely to become prosperous.

Next, the respect that was given to the Shoguns was discussed in some detail, and slides of paintings of Shoguns were shown. The religions of Japan—Shintoism and Bhuddism—were also discussed, and slides were shown of a Bhuddist temple and a statue of Bhudda himself.

The remainder of the slides dealt with various aspects of life in modern Japan: firstly, the housing. This, again, was contrasted with European housing. Slides and photographs showed interiors of Japanese houses and the way they were used. The children’s attention was especially drawn to people sitting on, and using, the floor much more than European people tended to.

Several slides of paintings of Mount Fuji were shown. Its importance as a subject for artists was discussed, and the children compared the landscape of Japan with the landscape of their own country. The Guide Lecturer drew the children’s attention to how cold it could be in the north of Japan. Then slides were shown of rivers, to show how heavily rivers were used as a means of communication. Various aspects of life in old Japan, especially picnics, were also discussed.

The next group of slides had been chosen as a basis for a discussion of the influence of Japanese art and Japanese paintings on European artists. The Guide Lecturer drew the children’s attention to how different Japanese art was to that of their own culture. The media and materials, and appearance, of the paintings were contrasted with their European counterparts. Many Japanese paintings, especially animal paintings, were shown. The children were asked what the Japanese artists painted on. One suggested “wood”, and the Guide Lecturer replied: “No, they didn’t paint on wood.” Another child suggested “canvas”. The Guide Lecturer
replied that the Japanese don’t use canvas, although in this country and in Europe we do. Another child suggested that they painted on scrolls, and the Guide Lecturer agreed that the Japanese painted on scrolls of paper or silk, and said that this was one reason for the long, thin, rectangular dimensions of the traditional paintings.

The traditional clothing of the Japanese—kimonos—was next shown, and the materials used, silk and satin, were discussed. This led to a discussion of the importance of China in the development of Japan. The extent of this influence was also underlined with slides showing pottery and porcelain.

The Guide Lecturer discussed a tea ceremony in Japan. Relaxation was said to be one of the main objects of the tea ceremony. Finally, he discussed the kind of food the Japanese eat. One of the children suggested that the main food is rice. Other children suggested octopus, squid and seaweed as Japanese food. The Guide Lecturer said that the Japanese tended to eat lots of seafoods. The children were then asked what there might be that they wouldn’t like about Japanese food. One child suggested “bones”, another “eyes”, and then another boy said “raw”. The Guide Lecturer agreed the Japanese ate raw fish and seafood, and commented that it was supposed to be delicious, but it would take us some time to get used to the idea.

The final slide was of a few netsuke (beautifully carved ivory designs worn on belts).

After the slides, the children went to the galleries. On the way, they looked at the temple bell in the entrance hall, where they were asked to look for things that they recognised in the design. They especially noticed the fish.

When the children were in the gallery they looked at swords, and contrasted them with European swords. They were told that the Japanese swords were used two-handed, and were curved for slicing rather than for stabbing. They looked in great detail at the different parts of the swords and the handles, and admired the craftsmanship. Then the children looked at the other objects made by the swordsmiths after the Emperor’s decree forbidding the making of swords (1863/64). Thereafter they looked at the netsuke. They examined these to discern the features of Japanese life and Japanese interest that they illustrated. The class teacher said to the children: “Take a good look at these, because you’re going to be making one tomorrow.” The children looked very carefully. Then they looked at the pottery work, and the Guide Lecturer explained that Japanese pottery was very famous, and the Japanese pottery
of 200 years ago is still very attractive to us. This is because some British potters had gone to Japan to learn their techniques.

The children looked at the porcelain, too. They discussed the designs of some of the cups and saucers, and plates and vases. The Guide Lecturer drew the children’s attention to the delicacy of the designs. The children were asked to imagine they were painting the designs on the porcelain. They would need tiny brushes and a huge range of colours. They would have to be very, very careful to paint things so tiny and so beautiful. They looked at cups, tea-pots, figures and paintings. The children took notice of the features of Japanese art to which the class teacher particularly drew their attention: fish, birds, flowers, dragons and trees. They also talked about cherry and apple blossom with which, it transpired, they had already decorated their classroom. The teacher suggested that the trees painted by the Japanese were actually diseased pine trees, because they didn’t grow fully.

After the Guide Lecturer had completed his talk, the class teacher asked the children to pick one object that they had looked at, and to look at it very carefully. The teacher said: “Look beyond the object. Look beyond your eyes, so that you pretend you were the person who made it or the person who bought it. Look very closely at the object, and remember it.”

At the end of the talk the class teacher had arranged for the children to go and look at anything they wanted to in the museum for 15 minutes, and then to leave the museum together as a class. At the end of the session all the children turned to the Guide Lecturer and said goodbye in Japanese, bowing respectfully this time.

The Guide Lecturer drew attention particularly to the fact that these children had been prepared for the lesson, since they were already working on a project on Japan. He also emphasised that the class teacher knew exactly what he wanted the children to get out of the session. He noted that the teacher drew the children’s attention to features of Japanese life and of objects in the museum which he wanted them to remember. He mentioned that one problem was that the staff did not have enough knowledge of what the children had done at school before the visit, or of how the visit was to be used afterwards, to make it possible to capitalise fully on the visit.

The researcher noted that this teacher — unlike most others — frequently intervened to relate the Museum session to the class’s work in the school. Even Mrs McCullen was reluctant to do this — but she seized the opportunity to do so when the Guide Lecturer
was away for a few minutes. She later commented on how glad she
had been to have this opportunity to forge linkages. The whole
question of appropriate roles for class teachers and Guide
Lecturers—and most teachers’ diffidence about conducting a
visit—deserves fuller discussion.

COMMENT ON THE MUSEUM VISIT

In this and other sessions we observed in the Museum and its
outposts, facts were brought to life using multi-media approaches.
Exhibits were interpreted and given meaning. There was discussion
of the social and historical context of the exhibits. The artefacts
were examined to see what could be learned about the social and
economic context in which they were produced, and in order to
make inferences about social and economic processes operating in
the societies concerned. They were examined with a view to
discerning the values and preoccupations of the people who
produced them, and the social consequences of those values and
preoccupations. The children learned that things had been, and
could be, done differently from the way in which they are done in
our society. There was an atmosphere of excitement, wonder and
enthusiasm.

Yet the accounts given by the Guide Lecturers were still
authoritative accounts of exhibits. They did not underline the role
which interpretation plays in giving meaning to artefacts. They did
not draw attention to the fact that these interpretations could be
disputed and try to generate a number of alternative interpretations.

There was very little practical work in these sessions; there was
little active finding out, handling, or interpretation. The activities
undertaken were very verbally based and, as a result, failed to
capitalise on the potential which the institutions have to promote a
quite different kind of learning from that which goes on in schools.

There was also little evidence of an attempt to encourage the
study and analysis of contemporary social and economic processes,
or foster the disposition to examine the thought-ways, assumptions,
and values of people in different socio-economic circumstances,
and their personal and social consequences. Still less was there
evidence of the visits being used to foster, in different
pupils, divergent understandings, self-images, ways of thought,
and patterns of competence.

Yet it would not have been impossible for them to have done
these things. Use could have been made of role-playing sessions,
simulations and psychological games, to lead the pupils to
experience other ways of thinking and explore the social consequences for themselves. Original investigatory work could have been undertaken by the pupils. The visits could have focussed on what would serve to enhance the educational value of projects already going on in the schools. In this way they could have contributed to the individualisation of educational programmes, to the development of idiosyncratic interests and talents, and to the enhancement of communication skills, scientific skills and civic and aesthetic development.

Public-spirited Activity

A series of visits which we heard about but did not ourselves study, which had been undertaken in one of the schools we visited, involved removing the refuse from a nearby beach. Although the children had engaged enthusiastically in this activity over a number of weeks, the Head had become dispirited when further refuse was dumped there.

Despite its apparent failure, this project appeared to have considerable potential. We have spoken of the use of museum artefacts to generate discussion of the workings of social and economic systems, the preoccupations of the people of particular societies, and the assumptions and dysfunctional behaviours of those societies. Pursuit of anti-pollution activities, encountered in a number of schools, seems to have considerable potential to lead pupils to develop the habit of studying the workings of economic, political and social systems, and the steps which individuals need to take, individually and collectively, if they are to influence events to avoid ecological, planetary, and inter-planetary disaster on a scale unprecedented in history.

Pupils who are thus involved should find themselves asking searching questions. If others do not support public-spirited activities, why is that? What alternative arrangements could be made to meet the needs of these others? If commercial firms continue to discharge polluting effluent, why is that? What steps would need to be taken to make it easier for them not to do so? What political changes would be required? What are the barriers to introducing them? What changes in the international economic system would be required? What are the probable long-term consequences of not inducing these firms to change their behaviour? How could one mount an effective campaign? Who would oppose it? Which strategies would be more, and which less, effective?
Concluding Comment

While it is apparent that the episodes described in this chapter do not have the thorough-going quality of the activities described in Chapter 1, they do demonstrate (a) that it is possible to undertake useful environmentally-based, competency-oriented, project activities in large urban schools; (b) that small episodes embodying competency-oriented activity are to be found in very many schools, and that there is, therefore, a base on which to build more widespread and thorough-going programmes of activity of this sort; and (c) that the possible alternative programmes of activity are many and varied: there is no reason to believe that the activities observed at Laneton constitute a blueprint to be replicated elsewhere—a thought which would, in any case, send shudders down Mrs McCullen's spine!
CHAPTER 4

THE CONTEXT

It may be thought that the activities observed in the schools described earlier, and in the course of the visits the pupils undertook, were typical of modern primary education. Far from it: teachers in general make few visits with their classes, most school work is subject-oriented rather than interdisciplinary, there is little extended language work of any description, let alone language work set in the context of the total communicative context (involving charts, mathematics, drawings, imagery and role-playing) and involving science, mathematics and history. There is little writing of continuous prose, let alone the development of theories and ideas, improvement of presentation over a series of revisions, reviewed by other people, and targeted at people other than the teacher. Project work, where it exists, tends to be viewed as an expendable luxury, of no particular educational value, to be poorly organised, and to take place at the end of the day (and often available only to those children who have ‘finished their work’).

The research project which led to this book was designed to evaluate the linkages established between primary schools and agencies of non-formal education, such as zoos and museums. In order to examine these linkages, we had to examine, in some detail, the school-based work of a number of classrooms, some of which made many visits, and some of which did not. However, since classroom observation is a time-consuming process, we also collected evidence in a number of other ways: we reviewed the available evidence; we sought ‘unobtrusive’ measures (such as work displayed in exhibitions); and we conducted a postal survey among all Primary 4 and Primary 7 teachers in every second school in Lothian and Fife Regions. In this chapter we will describe the national context in which the work described earlier has to be viewed. A few of the results of the postal survey (which is published in full in Varley and Raven, 1983) will be summarised first. Thereafter, we will summarise the results of some of the other enquiries.

SOME FINDINGS FROM THE POSTAL SURVEY

17% of the 721 teachers who completed the questionnaires had neither made, nor planned to make, any visits in the course of the
year covered by the survey. 75% of those who had made visits had made three or less. This works out at less than 1 per term, a result which should be viewed in the context of the latest official advice available to teachers in the 1965 ‘Primary Memorandum’ which recommends that teachers should make two or three major visits, as well as a number of minor visits, each term.

The institutions visited, and the frequency with which they were visited, are shown in Table 1.

<table>
<thead>
<tr>
<th>Category of Institution*</th>
<th>% teachers visiting or planning to visit institutions in each category†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royal Scottish Museum</td>
<td>30</td>
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<tr>
<td>Edinburgh Zoo</td>
<td>34</td>
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<tr>
<td>Museums — General</td>
<td>9</td>
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<tr>
<td>Museums — Scientific/Technical/Industrial</td>
<td>10</td>
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<tr>
<td>Museums — Folk/Local History</td>
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</tr>
<tr>
<td>Education Centre</td>
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<td>Art Gallery/Art or Photographic Exhibition</td>
<td>3</td>
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<tr>
<td>Other Public Exhibition</td>
<td>3</td>
</tr>
<tr>
<td>Ancient Monument</td>
<td>15</td>
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<td>Historic House or Palace</td>
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<td>Castle</td>
<td>8</td>
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<tr>
<td>Church/Cathedral</td>
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<tr>
<td>Public Institution</td>
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<td>Public/Commercial Utility</td>
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<td>Agricultural/Commercial/Industrial</td>
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<td>Scientific Research Centre</td>
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<td>Countryside/Rural Environment</td>
<td>16</td>
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<tr>
<td>Village/Town/City Environment</td>
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<td>Royal Botanic Gardens, Edinburgh</td>
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<tr>
<td>Nature Trails</td>
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<tr>
<td>Wildlife Reserve/Safari Park</td>
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<td>Country Park</td>
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<td>Field Centre/Camp School</td>
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<tr>
<td>Public Entertainment</td>
<td>1</td>
</tr>
<tr>
<td>Excursion</td>
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* Most of the categories included several institutions. Details will be found in Varley and Raven (1983).
† Percentages are based on those making and/or projecting visits (n = 566).
The ways in which visits were viewed can be inferred from the fact that the majority of those who were asked to name the visit which they considered to be most useful from an educational point of view nominated Edinburgh Zoo, the Royal Scottish Museum, or another museum. Thus, despite the wide variety of institutions visited, it was those which offered well-defined facilities which were seen as educationally the most useful. Indeed, 66% of the ‘most useful’ visits to either the Royal Scottish Museum or Edinburgh Zoo involved a guide or lecturer from the institution. This suggests that it was the factual content of the visit which was sought and appreciated, and this is confirmed by the teachers’ responses to questions about the purpose and benefits of the visit. More than half of the respondents who were questioned about the benefits said that, in the course of the visit which they rated as ‘educationally most useful’, the pupils benefited by experiencing something directly:

“Facts came to life—seeing and feeling trees, barks, leaves, etc.”

“The children saw for themselves the various types of fishing, old boats, old methods, the way people used to live and dress.”

“From being there, not just pictures—they could get an idea of size, furnishing, architecture, etc.”

A quarter of the teachers noted an increased or altered understanding of the subject, whilst 1 in 10 mentioned an increase in accumulated knowledge. Increased powers of observation were noted by only about 1 teacher in 20.

Many of the experiences and activities described as beneficial—talking to unfamiliar and interesting people, seeing and touching artefacts or living things for the first time, learning, discussing and understanding new things about the way the world works, not to mention simple enjoyment—could be thought of as powerful agents of motivation, but only a few teachers specifically mentioned this.

Similarly, the idea of motivating the children was virtually not mentioned in the ‘Purpose of visit’ section of the questionnaires, or when the teachers were specifying their reasons for visiting a particular institution.

Little of the follow-up work which teachers organised after a visit allowed pupils to carry out individual investigative work which might foster skills and qualities such as initiative or perseverance.
Even project work—a term open to widely differing interpretations—did not, on the basis of the responses obtained, seem to involve directing the child’s motivation and awakened interest into channels where individual interests could be exploited. Teachers responded to the questions they were asked by specifying subjects studied and content covered rather than competencies developed.

The absence of references to motivation or the pursuit of more general competence-oriented educational objectives in teachers’ answers to these questions cannot be viewed as proof that they were unaware of these objectives or benefits because they may not be used to verbalising their goals and strategies, and the questions may simply not have led them to think of them. However, the general tenor of their responses suggests that the most likely explanation is that they gave them a low priority.

The general conclusion to be drawn from this work is, therefore, the same as that drawn by the HMIs in Learning and Teaching in Primary 4 and Primary 7 (SED, 1980). For the vast majority of teachers, out-of-school visits may bring interesting experiences and add variety to the day, but the emphasis is on knowledge to be gained rather than on skills or competencies to be developed. There is little evidence of concern with the broader goals of general education.

This conclusion is, perhaps, unsurprising. The Primary Memorandum, Primary Education in Scotland, while devoting its longest chapter to environmental studies, makes very few references to out-of-school visits (or even projects), apart from asserting that they should happen. The chapter devoted to environmental studies is mainly devoted to a discussion of the topics which are to be covered, and the chapter is, in any case, structured on a subject basis. Like the ‘Plowden Report’ Children and their Primary Schools (1966), the Primary Memorandum is enigmatic in the extreme. One of its few references to visits reads:

“Fact-gathering should not exclude other considerations. The pupils should pay heed at times to the sights and sounds of Nature for the sheer pleasure they bring...”

One might forgive teachers for interpreting such statements to mean that “fact-gathering should be the dominant consideration”, even though one does learn elsewhere that ponds, hedgerows and gardens provide opportunities for pupils to observe, think for themselves and to record their observations, and that history is worthless unless pupils have an opportunity to think and feel
themselves into the characters of the age, (although this was not, interestingly enough, an observation made in connection with a visit to a museum or an Ancient Monument). The view implicit in the report does indeed seem to reflect the most common view we have found in schools: visits are opportunities to make facts real to pupils through direct observation, not opportunities to do something different (as the authors of *Learning and Teaching in Primary 4 and Primary 7* imply).

**THE GOALS TEACHERS SAID THEY TRIED TO ACHIEVE**

At this point it may be informative to look at some data collected from 17 teachers who completed a questionnaire which asked them how hard they tried to achieve 43 potential objectives of education. The sample is very biased toward more innovative schools, and toward more innovative teachers within schools. The results (extracted from Raven and Varley, 1984) are reproduced in Table 2.

The questions included in the study have been developed and refined in the course of four other studies in which the author was involved.*

In the context of the material which has been presented, the HMIs' survey, and the more detailed observational studies which are reported below, the data collected in the course of the present project appear to merit serious consideration despite the small sample size and its bias toward more innovative teachers.

It would seem that at least this group of teachers is preoccupied with 'the basics' on the one hand, and the prevention of anti-social behaviour (theft, inconsiderateness) on the other. Classroom observations made in the course of the Leicester University

*These were: Schools' Council Enquiry 1: Young School Leavers (Morton-Williams *et al*., 1968); Sixth Form Teachers and Pupils and a survey of pupils of sixth form age studying in Colleges of Further Education (Morton-Williams, Raven and Ritchie, 1971; Ritchie and Morton-Williams, 1971; Sharp, 1972); *A Survey of the Attitudes of Irish Teachers and Pupils* (Raven, *et al*., 1975, 1976); and the evaluation of the Lothian Region Educational Home Visiting Scheme, published as *Parents, Teachers and Children* (Raven, 1980a). The questionnaires have also been used in a number of other studies (De Landsheere, 1974; Bill *et al*., 1974; McBeath *et al*., 1981; Gray, McPherson and Raffe, 1983). In these studies, however, teachers, pupils, ex-pupils, parents, employees and employers were all asked how important each objective was. In only one of them were teachers asked how hard they actually tried to achieve them, and these data were supplemental to their 'importance' ratings. The orders of priority obtained by asking teachers how hard they worked toward them and how much importance they attached to them were distinctly different.
## TABLE 2

**TEACHERS' SUBJECTIVE PRIORITIES IN PRIMARY EDUCATION**

(Figures give % saying that they “tried very hard” to do this in their own lessons)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure that they respect other people’s property</td>
<td>71</td>
</tr>
<tr>
<td>Make sure that they have really mastered the basics</td>
<td>65</td>
</tr>
<tr>
<td>Encourage them to be interested in many different things</td>
<td>65</td>
</tr>
<tr>
<td>Encourage the pupils to be considerate</td>
<td>59</td>
</tr>
<tr>
<td>Help them to be able to write well and easily</td>
<td>59</td>
</tr>
<tr>
<td>Encourage them to be independent and able to stand on their own feet</td>
<td>47</td>
</tr>
<tr>
<td>Encourage them to make their own observations and form their own opinions</td>
<td>47</td>
</tr>
<tr>
<td>Ensure that they appreciate other people’s contributions to group work,</td>
<td>47</td>
</tr>
<tr>
<td>whatever that may be</td>
<td></td>
</tr>
<tr>
<td>Encourage them to co-operate with others in doing their work</td>
<td>47</td>
</tr>
<tr>
<td>Make sure they really enjoy their education</td>
<td>47</td>
</tr>
<tr>
<td>Have discussions in which they can put forward their own points of view</td>
<td>47</td>
</tr>
<tr>
<td>Help them to develop the ability to express themselves well when speaking</td>
<td>41</td>
</tr>
<tr>
<td>Equip them to do as well as possible in secondary school</td>
<td>35</td>
</tr>
<tr>
<td>Encourage them to feel that they can and should make an active contribution to society</td>
<td>29</td>
</tr>
<tr>
<td>Help them to think about the sort of person they are and would like to be</td>
<td>29</td>
</tr>
<tr>
<td>Help them to pursue their own interests</td>
<td>24</td>
</tr>
<tr>
<td>Help them to know about what’s going on in the world now</td>
<td>24</td>
</tr>
<tr>
<td>Enable them to take an interest in topics other than the normal school subjects</td>
<td>24</td>
</tr>
<tr>
<td>Foster a sense of responsibility by involving them in the running of the class and the school</td>
<td>24</td>
</tr>
<tr>
<td>Encourage them to question and seek reasons for the things they are told</td>
<td>18</td>
</tr>
<tr>
<td>Ensure that they are able to write grammatically and spell correctly</td>
<td>18</td>
</tr>
<tr>
<td>Ensure that they are confident with people, situations, and things they have not met before</td>
<td>18</td>
</tr>
<tr>
<td>Help them to be inquisitive and adventurous</td>
<td>18</td>
</tr>
<tr>
<td>Encourage them to consider the long term social consequences of their actions and decide what to do on that basis</td>
<td>18</td>
</tr>
<tr>
<td>Teach them things which will be useful in their lives, when they are not at work</td>
<td>12</td>
</tr>
<tr>
<td>Help them to listen to others and work out what they are really saying</td>
<td>12</td>
</tr>
<tr>
<td>Give them experience of taking responsibility for other people</td>
<td>12</td>
</tr>
<tr>
<td>Ensure that they respect their teachers</td>
<td>12</td>
</tr>
<tr>
<td>Make sure that they go out into the world determined to make it a better place</td>
<td>12</td>
</tr>
<tr>
<td>Ensure that they can apply the facts and techniques they have learned to new problems</td>
<td>6</td>
</tr>
<tr>
<td>Encourage them to make their own decisions and experience the consequences for themselves</td>
<td>6</td>
</tr>
<tr>
<td>Encourage them to take action, study the effects, and change their behaviour accordingly</td>
<td>6</td>
</tr>
<tr>
<td>Help them to develop the confidence and initiative needed to introduce change</td>
<td>6</td>
</tr>
<tr>
<td>Help them to develop the ability to analyse social and economic processes</td>
<td>6</td>
</tr>
<tr>
<td>Encourage them to decide for themselves what they will do and when they will do it</td>
<td>6</td>
</tr>
<tr>
<td>Ensure that they learn to obey people in authority without question</td>
<td>0</td>
</tr>
<tr>
<td>Ensure that they know their place and who’s boss</td>
<td>0</td>
</tr>
<tr>
<td>Encourage them to be sceptical</td>
<td>0</td>
</tr>
</tbody>
</table>

Base (= 100%) (All teachers involved in the exploratory study)..............17
ORACLE project support these results. Relatively few teachers said that, in practice, they devoted much effort to fostering the qualities and abilities which the teachers whose work was described in Chapters 1 and 3, and the authorities whose writings are to be reviewed in Chapter 5, saw as lying at the heart of the educational process. These included the ability to analyse social and economic situations, the confidence and initiative required to introduce change, the ability to monitor the effects of one’s actions and modify one’s behaviour accordingly, the ability to apply facts and techniques which have been learned to new problems, the determination to go out into the world committed to making it a better place in which to live, the ability to listen to what others say and work out what lies behind what they say, the tendency to study the long term social consequences of one’s actions, the tendency to be inquisitive and adventurous, the capacity to be confident with people and situations one has not met before, the tendency to ask questions and seek reasons for things one is told, the ability to understand what is going on in the world, the ability to pursue one’s own interests, and the tendency to feel that one could and should make an active contribution to society.

In view of the small sample size and its bias toward more innovative teachers, it would seem appropriate to mention the (relatively few) divergencies between the teacher’s subjective ratings in Table 2 and the impressions we formed in the course of our own more detailed observational work. We would not ourselves have thought that teachers in general gave such a high priority to encouraging the development of a wide range of interests, encouraging independence, encouraging pupils to make their own observations, and encouraging them to appreciate other pupils’ contributions to group work. Nor do we think that, in general, teachers devote so much attention to discussion lessons. More emphasis is placed on grammar and spelling. Apart from these divergencies, however, the results accord with our own observation that little emphasis is placed on the items in the lower area of Table 2—ie those which less than a quarter of the teachers said they tried hard to achieve.

We shall now back up these comments with reports of more specific observations, by ourselves and by others.

THE ZOO FEEDBACK SHEETS

Edinburgh Zoo routinely elicits teachers’ comments on the programmes it offers. These sheets were made available to us for
analysis. The answers given to a question which asked what they intended to do, or were now doing, to follow up the visit, showed that the most common form of follow-up activity consisted of 'art' (an answer given by about half the respondents), followed by 'writing' (mentioned by about a quarter of the teachers). At a very generous estimate, only about a quarter of the teachers indicated that their pupils undertook some form of investigative work.

In reading the feedback sheets one often got the impression that the worksheets formed a significant part of subsequent work—“...transfer of information (from worksheets) to project books”. Indeed, follow-up artwork frequently seemed to lean heavily on the illustrations in the worksheets. Most of our insights into the nature of this ‘art’ came from the answers to the question: “What use have you made of the children’s worksheets?” Representative examples are:

“Discussed and used to draw pictures from.”
“Coloured pictures as accurately as possible.”
“Have used them to illustrate project area in classroom.”

By and large, there was little evidence of any attempt to integrate the Zoo visit with the scheme of work of the class. Where there was, most of the work seemed to be book—and content-oriented. It seemed to be concerned with knowing what a particular animal looked like, how it should be drawn, or what it ate. Children transferred knowledge from the worksheets, or from reference books, to their jotters. There was some team work (in which children might learn to work with, or for, others—or learn how to get others to work for them), and some individualised work. But there was little evidence of creative work—whether that was creative writing, creative art, or creative science (perhaps involving the pupils in making some observations and drawing their own conclusions). There was even less evidence of follow-up work in which the Zoo visit was followed by local, environmentally-based, studies of animals in their habitats, their conservation, the effects of pollution and means of reducing it, or by the children’s experiencing what could be done through direct (community) action to care for the environment, the countryside or animals.

As regards objectives at a deeper level, there was little evidence that schools took the opportunity to examine the critical dependence of mankind on not pushing the balance of nature too far from an equilibrium, and the role of the citizen and international organisations in regulating the pattern of inter-
relationships between Man and his environment. Nor was there much evidence of a genuine sense of awe at the complexity of animal life, whether that phrase is interpreted to mean a sense of wonder at the marvellous internal complexity of animals, or the intricate patterns of inter-dependence between different animals, and between animals and plants, in natural communities. Still less was there evidence of a tendency to ponder the implications of these complex patterns of inter-relationship.

Thus, while individual pupils may have been sparked to a lifelong interest in zoology, the care of animals, or the importance and practice of conservation through local action and international negotiation, there was scant evidence that schools were striving to capitalise on these potential benefits of Zoo Education work in any systematic way.

THE HMIs' SURVEY

The results obtained in the postal survey, the survey of teachers' objectives, and the analysis of the Zoo's feedback sheets, strongly support those obtained by the HMIs in their study for Learning and Teaching in Primary 4 and Primary 7. They found that in half the classrooms they studied, pupils gained their information mainly from dictated notes. Less than 1 pupil in 20 had significant opportunities to gain information and develop powers of observation in and outside the classroom. The majority of teachers never used the local environment. Hardly anyone used it frequently. Likewise, the majority of teachers (2 out of 3) saw Environmental Studies as concerned solely with the transmission of factual knowledge. Only about 5% saw it as an opportunity to develop skills and concepts. In more than 3 classes in 4 there was no evidence of pupils having been involved in making deductions and drawing conclusions from their work, and in not a single class was there evidence of pupils doing this frequently. Only about 1 teacher in 40 saw Environmental Studies as an opportunity to develop competencies.

Some of the HMIs' more general findings also have relevance to the present discussion. Project work, for instance, which was mostly based in history and geography, did take place in about three-quarters of the classrooms studied by the HMIs, but in only about one-quarter of the classrooms were teachers thought to be using it effectively. Less than half the projects which were undertaken were considered to be of any real significance.
'Language', too, in 9 classes out of 10, consisted largely of isolated exercises, devoid of context. There was very little actual use of language, or language embedded in a context of other communicative activities, or developed and refined over an extended period of time. Likewise, in most classes, there was little variation from one pupil to another in the language activities which were undertaken.

As the ORACLE team has shown, this picture of classroom life is valid for England as well as for Scotland.

THE PRACTICE OF NON-FORMAL EDUCATION INFERRRED FROM THE ZOO EXHIBITION

The Zoo's Education Unit invites schools to bring into the Zoo some work carried out during the year to form part of an annual exhibition. The best of this work is awarded a prize. It seems reasonable to assume, not only that those schools who are most committed to the goals of Zoo Education will be more likely to submit displays than others, but also that the displays which are submitted will represent the work which they consider to be most desirable from an educational point of view. (The Zoo is, however, aware of some tension between the schools which concentrate on the educational value of the processes involved in producing the display, and those which focus on getting the award.)

Our over-riding impression from the Exhibition we examined* was that the visits were associated in most teachers' minds with four ideas: firstly, with the idea of providing the pupils with a change, with something to break the normal routine; secondly, with providing the pupils with an introduction to animals and an opportunity to learn to discriminate between their shapes, learn their names, and, perhaps, something about such things as their coverings, camouflage, feeding patterns or geographical distribution; thirdly, with the provision of a 'stimulus' to pupils to practise such skills as reading, writing, and recording information; and, fourthly, with the provision of a subject for art activities in the classroom.

There was little evidence that the Zoo Ed work was integrated into the wider curriculum of the schools; still less that it was part of a long-term, systematic, and deliberate process of fostering the growth of the full range of the pupils' competencies and talents,

* A detailed report on this study is available from the Scottish Council for Research in Education.

74
influencing their values, or fostering positive attitudes to conservation.

When we looked for evidence of the pursuit of the more general objectives pursued by the teachers whose work we have reviewed or identified by the writers and authorities whose comments and writings will be reviewed in Chapter 5, we found little evidence of creative writing and personal observation, little evidence of a desire to explore the intimate relationships which develop between animals and habitat, and little understanding of the socio-economic processes which render certain animals 'endangered'. There was no evidence of an awareness of, still less direct experience of, the part one could oneself play in stemming such a process. The Zoo visit rarely appeared to have been used as an introduction to the local environment, or as a stimulus to any kind of research into, or contact with, other animals or the countryside. Where personal research on the part of the pupils was involved, it usually took the form of book research, rather than any form of involvement in natural history, let alone genuine scientific research. 'Art' tended to consist of representational drawings, revealing only limited feel for the range of symbolic processes which might have been used to express feelings or to communicate ideas to others. Where enquiry was involved, it tended to be teacher-dominated. Where words were used, they tended not to be the child’s words, evoked by him to express an idea or feeling, or to communicate that idea or feeling to an audience which he wished to influence. They tended to be the words of others, adopted by the child in going through the motions of a ‘tutorial’ process which was dominated by the teacher’s concerns and priorities. The words used, and their format, rarely revealed a basis in the child’s own observations, thoughts, feelings, reactions and enquiries. It appeared to be more important to the teachers that their pupils should write legibly and grammatically, and spell correctly, than that their pupils should find something which they really wished to communicate, or even communicate something effectively. Furthermore, it seemed to be more important that the content of the communication should be ‘established knowledge’ rather than personal (perhaps new) knowledge, or portrayals of the child’s reactions, feelings, or experience.

Where several pupils had laboured on a mural, it tended to have been under the teacher’s direction and to be individual work which was later joined together, rather than group work which was jointly organised and jointly evolved. There was little evidence of children
jointly working out an overall strategy, or gaining a feel for what was happening in an evolving process, and than contributing in the way which they considered best.

Although one gained the feeling that teachers wanted the children, through the activities they had undertaken in developing the displays, to master new facts, one was left with the impression that the teachers were not very clear about what they hoped their pupils would be able to do better as a result of the visit, or as a result of working on the displays. Although it was apparent that most of the teachers wanted their pupils to know about animals, and to care for conservation, one did not come away with a strong feeling that they even hoped that the children would have mastered new principles—derived perhaps from a study of evolution, or a study of the relationships which develop between animals and their habitats and between animals and Man—or even a study of the workings of society. In appealing for conservation, the pupils’ teachers did not appear to have encouraged them to enquire into the socio-economic processes which are leading certain species to be endangered.

Not only was there little evidence of this wider teaching: there was little evidence of systematic use of the Zoo visit, and the subsequent educational activities associated with preparing the display, to foster the wider competencies of the children. Thus, there was not a single exhibit which showed evidence of the schools’ having used the Zoo visit as part of a study of the range of animals in the environment around the school, the living patterns of those animals, and the ways in which the animals interact with each other, Man, and their habitats. Such a study would, indeed, have enabled the pupils to develop one or another of a wide range of personal competencies. Nor was there a single project in which there was evidence of the schools’ having encouraged the children to accept personal responsibility for conservation by, for example, reducing the levels of pollution in the environment around their school by tidying up rubbish. Still less was there evidence of the schools’ using such a project to confront pupils with the grim realities involved in trying to get manufacturing industry, and householders in general, to change their behaviour. Such a project would have led the pupils to develop never-to-be-forgotten insights into the way society works, and the first steps toward the development of the attitudes and competencies needed to deal with it.

Even though there was evidence of some appreciation of the
expressive goals of education—for the importance of allowing children to express their feelings, thoughts, ideas and emotions—one still got the impression that such opportunities were cramped and constricted. Where expressive activity occurred, it was confined to art, rather than writing, and there was no evidence that the pupils had been encouraged to express their thoughts and feelings in movement, drama, or language. In this way, it is probable that important opportunities were lost, particularly since feelings generally precede explicit cognitive thought.

More than this, there was little evidence of the schools' capitalising on the opportunities provided in the course of follow-up to a Zoo visit, to develop those integrated patterns of action which we admired in Chapters 1 and 2—personal observation, mulling over one's feelings, seeking out and finding appropriate reference books, and returning to one's feelings and personal observations to lay the basis for an effective strategy of self-development which would be available to the pupil throughout life. The potential of such follow-up activities to provide pupils with opportunities to practise inventing communicating, observing, finding out how things work, working with others, leading, following, getting others to accept their ideas, stumbling on points of view which ought to be communicated, marshalling evidence, and developing general competence, seemed to be overlooked.

**THE PLACE OF OUT-OF-SCHOOL VISITS, ENVIRONMENTAL STUDIES, AND PROJECT-BASED EDUCATION IN THE CURRICULUM**

In addition to the approaches already indicated, we accompanied a number of school classes on visits to Edinburgh Zoo, the Royal Scottish Museum, the countryside, the city, and a number of Ancient Monuments. We observed the activities which took place in a number of classes over a number of consecutive days—and were, as a result, able to examine the links established between visits and the rest of the curriculum, and the effects of visits on that curriculum. We followed a number of projects as they emerged, grew to fruition, and evolved into something else, by visiting the schools on 'project days' over a period of weeks. In these ways we were able to study the full range of benefits of enquiry-oriented, project-based, education grounded in out-of-school visits.

These extended periods of observation confirmed what has already been noted: relatively few out-of-school visits were made
by classes, they were poorly used; and they were poorly integrated into the rest of the curriculum. On many visits, little effort was made to stimulate the considerable interest and enthusiasm which could have been aroused. Little attempt was, indeed, made to capitalise upon the interest and enthusiasm which was sparked. Children talked to each other and to their parents about the visits much more than they talked about the ‘ordinary’ experiences of school, but little attempt was made to capitalise on this interest and enthusiasm.

There is little point in portraying in any detail the bleak environments which existed. Yet it is useful, by citing an example or two of what can only be viewed as ‘normal’ practice, to allay the belief that most primary schools have ceased to attend to ‘the 3 Rs’, and abandoned their traditional formal structure, in favour of either lackadaisical progressivism or one version or another of ‘good modern practice’ based on group work. And such material is useful as a foil to show just how extraordinary are the activities portrayed earlier.

Class A: A Typical Primary Class

In this section, the work of one class for one day is first recounted. The Environmental Studies work that the class did on the following afternoon is then described. It is portrayed separately in order to highlight the differences between this work and the usual work of the class.

The teacher began the morning of the first of these days by attending to the usual administrative details. She then asked the children to take out their English books, and turn to a page which dealt with prepositions. She explained a preposition by example: The watch was in the drawer. She asked the children to copy the sentences given in the book, and to add a few more to make a paragraph using the prepositions listed. The children suggested sentences to add to the paragraph.

The teacher then asked the children to look at the next exercise about time phrases and prepositions of time. She suggested a word to complete the first sentence: The aircraft is likely to arrive before noon. Thereafter, she suggested other words, for example: The aircraft is likely to arrive after we leave. The children were asked to complete the sentence with a preposition and a phrase. The next exercise was about prepositions of place. The teacher suggested that the children invent sentences more interesting than the one in
the book, and the class did so orally. The children were asked to do their English and then get on with their maths (SPMG).

The children began work almost immediately. All the time, the teacher sat at her desk and the children sat in rows of two, three, or four, facing either the front or the side of the classroom. Sometimes the queue of children at the teacher's desk became very long, with almost half the class waiting to see the teacher, but it changed size very rapidly. The children asked the teacher questions, which she answered while marking another set of books. The teacher's voice with explanations did not carry whole sentences to the back of the class, because she talked very quietly. The children rarely talked to each other, but they occasionally whispered. When the children had finished their work they took it out to the teacher's desk. After the English, they went on to their mathematics.

After lunch the children spent part of their time on the SRA materials, but the whole day was dedicated to English and mathematics.

On the afternoon of another day, the children worked on their project—"1936-53"—from the Yorkshire Television programme "How We Used to Live". (This television programme was a popular choice amongst Primary 6 and 7 classes. The Second World War was often a curriculum project for Primary 7.) The following account is extracted from the field notes of the afternoon spent working on the project.

The teacher has to rewind the video so the children watch the One o'Clock News about the Falkland Islands. There is no discussion of this. The children do not see all of the news story because the video of the programme is ready and starts to play.

The programme is a simple low-key dramatisation of family life in 1952. It is immediately followed by a programme about 1953 and the Coronation. After the two programmes the children go back to the classroom. The teacher holds a short discussion with the class (about ten minutes long). She compares the materials in the TV family's home with those in the children's homes and with previous programmes. A major feature of this discussion is the family's new TV set.

The children are asked questions about:

- the programme
- TV in the early '50s
- TV programmes in the early '50s

79
• viewing TV in the '50s
• life-style changes
• George VI's funeral
• leisure activities.

All the questions were for recalled information.

At one point pensions are mentioned and the teacher asks the class to find out what the old age pension was in 1953. (NB This does not seem to be followed up at any time.) There are several factual inaccuracies mentioned.

After the discussion the teacher distributes The War at Home, by Fiona Reynoldson, one copy between two. The children get pieces of paper out of their drawers. The teacher has written some questions on the board and the children are to answer them.

Questions

1. Why do you think that George VI was held in such high regard?
2. Write a report that a radio newsreader could use informing people of the King's death.
3. If you were making a display as a tribute to King George VI what would (you) ask friends and relations for?
4. Why do you suppose Mabel burnt the clothes coupons, would you have done the same?
5. Why was the installing of a television set such an important event? Can you imagine life without one, how would you have spent your evenings and holidays? Sketch one of the first TVs.
6. Apart from a television set can you think of anything else which was a novelty then but is commonplace now?
7. How were the television programmes paid for in 1953; is there any difference now?
8. What might have happened to Jimmy, Avril, Patricia and Edward since 1953?
9. Which episode of "How We Used to Live" have you found most interesting and why? Draw a picture to go with the episode.

Some children answered these questions between the end of afternoon play and home time. The others completed them in 25 minutes of spare time the following morning.
THE CHILDREN'S INTERESTS

In every class visited, the children were invited by the researchers to discuss their interests outside school. The children's interests contrasted sharply with what might be expected from the routine described earlier. The interests recorded in this class were not exceptional.

Two boys began talking about lizards and toads. One had wanted an iguana as a pet but, after having contacted and talked to a zoo keeper from Edinburgh Zoo, he had realised that an iguana would have to live in a greenhouse in the garden. After visiting a pet shop and talking to the owner, the boy had decided to keep terrapins instead. He had not bought them yet, but he was preparing a tank for them at home.

These two boys went camping at the weekend to watch rabbits. Together, as a team, “helping each other”, they had studied grasshoppers, and watched a family of dormice grow up and then return to the same site to nest the following year. They had found and followed badger tracks, and discovered and cared for an injured bird until they found it a home. They cycled about five miles to the zoo once a fortnight, joined, and took part in, Gannet Club activities and had been involved in other Zoo and less formal activities. They watched TV programmes, including ‘Naturewatch’ and ‘Wildtrack’, and tried out some of the methods used to attract animals in these programmes: for example, by setting up lights in the darkness. One boy said: “I used to be a bully before I got interested in animals, but I just want to find out more and more.”

The other boy said: “Really our subject is the study of animals and what they do, and to try to catch them and study them and watch them. We want to learn about animals.”

As well as watching TV and joining in Edinburgh Zoo activities, the two boys also read books dealing with animals, science or natural history.

These two boys were not unusual. A girl in the class said that her interests were netball and Guiding. She most enjoyed Guide Camps. She had been interested in lighting campfires, setting up tents, places to store food, and so on. She had been amazed at the gadgets used, especially a stand for a washbowl. She said that she liked being out-of-doors and that was why she also liked netball.

Another boy’s interests included looking after his dog. Each morning before school, he took his dog for a long walk. When he returned he fed the dog and brushed him. He kept a check of how the dog had grown and changed.
Another boy went fishing every evening after school (it was summertime), usually at a nearby harbour. He caught cod, flatfish, mackerel and, mostly, edible crabs. Occasionally, he caught salmon or trout. He was also a passionate footballer. Each Friday evening he went to a disco at the local community centre. Some of the other children went to the disco, too. They said they liked the music, they liked to dance, and they enjoyed meeting people out of school or from different schools.

Amongst the other activities some children enjoyed or were interested in were majorettes—"Good fun learning new routines, helps get you fit"—country dancing, an aviary, sailing—"the wind takes you and you just go"—Scouts, a telescope used for spotting ships and stars, any sports, music, dancing, playing musical instruments, science, banking, and many crafts.

CONCLUDING COMMENT

This account of 'Life in a Scottish Primary Classroom' seems, on the basis of our own limited observations, the Inspectors' survey, and our postal survey, to be fairly typical at a general level although, as our next example shows, there is considerable variation in detail. Most of the time is devoted to mathematics and language exercises which are workbook-based and completed out of context. A gesture is, however, made toward project work. But the work is isolated from the rest of the curriculum and poorly developed. Its potential is overlooked. Some may suspect that the school must have been in a 'deprived' area where the pupils lacked potential. But the pupils' interests belie this; there seemed to be ample scope to capitalise on them, to fuel, not only an active programme of individualised project work, but a much more engaging and developmental programme of studies in English and mathematics.

Class B: Another Typical Class

This day with a Primary 4 class began with administrative details, money collected, dinner numbers taken, etc.

Then the teacher introduced the subject of the farm visit which the children were to make the following day. She told the children she had made a worksheet with questions for them to ask the farmer. She said that they would visit a dairy farm which has some arable land. She asked the children: "What is arable?". They
guessed 'mixed' and then 'crop' farming. One boy told the class about some cows found in his garden that morning.

Thereafter 'sum' books were given out. Scottish Primary Mathematics Workbooks were given to a few children, but everyone else did the sums on the blackboard. The whole class chanted the '6 times table' from '6 x 1' to '6 x 10'. Each child was asked a separate question. The children chanted and recalled individually, in small groups, and as a whole class.

The teacher stayed at her desk, calling one 'group' at a time to have their sums marked and to do some oral work. The children did not move around the class or talk. Despite the fact that their oral work was on the 'six times table', one group worked on the 'four times table' with the teacher.

When they completed the sums from the blackboard, the children began their workbooks or workcards, played, or had their milk. During break, some children played with the model farmyard and farm animals which they had brought to the school.

After break, the teacher opened two new 'Matchbox' toys. She used the two toys to begin a discussion of the types and functions of animals on farms, both now and in the past. Then she gave out workcards which were designed to be used with some of the books. The children had one workcard between two, and a book to use with it.

Here is an example of one of the workcards:

| Read | Mr Silly on the Farm pages 4 and 5 |
| Write | "Why don't you open the gate and count the sheep as they come out?" Mr Silly said. |
| Write | Why was this a Silly thing to do? |
| How does the farmer keep his animals in the field? |
| Write | field loose |
| Write | idea moved |
| Overleaf. | |
| Draw the picture of the angry farmer and Mr Dizzy letting the sheep loose. |

The books were appropriate to the children's reading levels and they had no difficulty with them. About ten children did not receive workcards, and the teacher read a story about a sheepdog to them. After the story, she wrote the following questions on the board:

The books were appropriate to the children's reading levels and they had no difficulty with them. About ten children did not receive workcards, and the teacher read a story about a sheepdog to them. After the story, she wrote the following questions on the board:
1 Give the title of the story.
2 What breed was he?
3 Describe him.
4 Why was early spring a busy time?
5 What was the writer's most difficult task?
6 What time of night did the lambs break loose?
7 What did the shepherd say to the dog?
8 Describe why the shepherd admired the dog.

A few of the children could not manage these questions, so the teacher gave them *Word Perfect Book 1*. This work continued until just before lunchtime, when the teacher asked the children to clear up and said she would read them a story. This was about sheepdog trials. After the story, the children were asked factual questions about its content.

After lunch, the teacher gave out the homework jotters, and then half of the class went into a parallel class, and half of the parallel class came into this one. The next hour was devoted to reading. The children read novels to the teacher in small groups. When they were not reading, they did exercises from language books.

After the children changed over again, they copied down their homework and completed the rest of the day's work.

**The Effects of Being Educated in Such Classrooms**

At a guess, about two-thirds of Scottish primary classrooms are like these. We cannot be precise, because our sample for detailed study was small and deliberately skewed toward more innovative classrooms. But we visited many more classrooms than we studied in detail.

While it is obvious that the activities observed in these classrooms are a great deal less developmental and beneficial than those described earlier, it may not be so obvious that they are likely to have positively damaging effects. Thus, while it may well be true that, as the HMIs assert, such classes yield relatively high levels of attainment in language and arithmetic if attainment in these areas is defined and assessed in 'traditional' ways, that statement may, in fact, be entirely tautological. It may only be true if attainment is measured in 'traditional' ways. If attainment were assessed in other ways the conclusions might well be different. Arithmetical attainment could, for example, be defined and assessed, not in terms of ability to perform mechanical calculations at the time of the study, but as the probable ability to work out what 8 nines are...
long after the simple associative trace ('72') has faded, and measured by appropriate items. Many studies show that such mechanical associations do, indeed, fade very rapidly once, as is inevitably the case for most pupils, the skills cease to be practised on a daily basis. The question is not, therefore, whether a pupil can get the right answer. It is whether he understands what he is doing sufficiently well to be able to re-create the answer for himself. Does he, for example, realise that he can check ‘72’, not only by adding a column of 8 nines (a hazardous operation) but also by subtracting 8 ones from 8 tens?

Although the phrase ‘teaching for understanding’, like ‘teaching concepts’, was widely employed by those we interviewed, its implications did not always seem to be apparent to those concerned. The problem was highlighted by a student who said: “They (college lecturers) tell you that it’s important for them (pupils) to understand what they are doing; but they don’t teach you how to bring them to understand what they are doing.” Thus, few of the teachers we interviewed realised that if they had to tell a pupil what to do—such as to multiply or to draw a square—that in itself was an indication that the pupil concerned had not merely not understood the instructions, but also that he had not understood the operations he was dealing with. Few teachers understood that the implication of a question requiring basic guidance was that they, as teachers, had been corrupting ‘teaching for understanding’ back into teaching mechanical problem-solving techniques. Few realised that, when pupils submitted absurd answers to problems, this was an indication that they had not understood what they were doing sufficiently well to be able to recognise the absurdity. We are not speaking here simply of developing the habit of checking answers by reversing operations, but of developing the tendency to pay attention to those feelings which tell one that something is seriously wrong with an answer one has obtained. We observed only one teacher—Mrs McCullen—who, as a result of encouraging her pupils to apply mathematical skills to a new area, came to realise that her pupils had not, in fact, grasped the underlying principles which they were able to apply routinely to textbook problems.

In many of the classrooms we visited, mathematics and arithmetic were presented as techniques or rules to be followed to solve specific sorts of problem. As a result, pupils could not have worked out for themselves a method of solving the problems they were set. They were obliged to ask for instruction in the specific
procedure to be used. (Note the implications for the day they forget the rules.) Nor could they have invented for themselves a method of checking their answers. Still less could they have developed a spontaneous tendency to invent ways of cross-checking their deductions (for that is what answers are), or an intuitive feel for the appropriateness of a given answer in the circumstances in which it was generated.

Even where modern texts were used, apparatus assumed in the text was not usually available. Thus the children were unable to find practical solutions, or even to develop the understanding of what they were doing which would be required if they were later to re-invent the process (or the 'formulae') they were using.

Given these observations, the results of a broadly-based evaluation of mathematical attainment might well be much less positive than the impression given them by the Inspectorate in *Learning and Teaching in Primary 4 and Primary 7*. And the results of such an exercise might well be still less positive if an attempt was also made to assess such things as pupils' willingness to master new branches of mathematics later in life, their ability to use mathematics as a language or logic, or their ability to invent a mathematics of their own which was suited to their purposes. In saying this we are not, of course, saying anything new; we are simply saying that, if the Inspectors had had the Cockroft Report available to them at the time they carried out their survey, they might not have come to such a positive conclusion as they did about Scottish primary education in relation to the '3 Rs'.

In the area of communication there is equally every likelihood that a more broadly based evaluation would come to a different conclusion. As the 'Bullock Report' (1975) notes, there is little evidence that skill at spelling or analysing sentences, and naming their parts, is in any way related to the ability to use language to communicate effectively. Indeed, there is every reason to believe that a preoccupation with spelling and correct phraseology inhibits the willingness to notice things which deserve to be communicated, and the willingness to make an effort to communicate these to others. Yet, in some schools we visited, the main emphasis was on spelling, the ability to complete blanks in sentences, and the ability to name words and clauses.

It is true that no-one has made explicit any sound general rules for effective communication which can then be taught to, and practised by, children. Indeed, it is precisely because of this that the motivational argument advanced by some teachers acquires such
force: if pupils have something they wish to communicate, and if they can be induced to monitor and try to improve the effectiveness of their attempts to communicate it, that will lead them to develop styles of communication which are compatible with their personalities, appropriate to that which is to be communicated, and tailored to the particular audience to whom the message is addressed.

The atmosphere which pervaded many of these classrooms was clearly not conducive to the development of the enthusiasm, self-development, creativity, and motivation which is necessary if such activities are to take place. It was conducive to learning to tolerate boredom and willingness to comply, minimally, reluctantly, and perhaps only overtly, with the demands of authorities (in this case the teacher). It was conducive to learning to accept that demands of authority should legitimately override one's own concerns. It was conducive to learning to evade the demands of authority. In this connection it is important to challenge Willis's (1977) claim that pupils in general derive real benefit from learning to appease and evade authority. He himself gives no evidence that most pupils reacted in the positive way he describes in some children. A few pupils get on top of the situation and develop positive, if underhand, responses. But, while confirming Willis's conclusions for a few, our own previous work (Raven, 1976) suggests that most pupils simply go under, becoming defeated and despondent, rather than developing positive, adaptive, responses which will serve them in their future lives.

The general air of purposelessness which permeated many of these classrooms suggests that it is relevant, once again, to underline the wide range of pupils' interests and their willingness to pursue these interests enthusiastically if appropriate steps are taken to tap them. It seems appropriate to emphasise again the fact that many teachers remained unaware of their pupils' interests. It can hardly be doubted that, had they created classroom environments in which there had been less pressure for 'work', they would at least have become aware of these potential sources of motivation and enthusiasm—even if they did not know how to harness and capitalise upon them for educational purposes. If the pressure for 'work' is to be reduced, it is necessary to challenge its value. This may be done by asking such questions as "Why learn to spell these words?"; "Why learn the meanings of these words?"; "Why learn the names of these animals and plants?"; "Why these particular ones out of so many possibilities?"; "Why the uniformity in what is
learned by all the pupils in the same class?”; and “Why not relate particular pupils’ learning to their own individual interests?”

The implicit message of the activities observed in classrooms such as those described cannot be lost on pupils. That message is that all must learn the same things, that they must compete at a common task, that they must routinise low-level learning and master associations in the least interesting (and least effective) way, and that it is of the greatest importance to focus on the internal construction of communications (spelling; the formal labelling of words and clauses) rather than on what is being said and its relevance to one’s interests.

Quite apart from the messages contained in what is done, attention may also be drawn to the fact that these uniform, low-level, activities are likely to ‘turn off’ pupils who wish to be creative, to work in close relationships with others, to co-operate rather than compete, to find new ways of thinking about things rather than master what others have discovered, or who wish to work for the good of their communities rather than for their personal advancement. By simply not encouraging the development of a range of human capacities, such activities, however desirable in themselves, may be doing the community as a whole a disservice. It may be that not only should such schools embrace different goals, but also widen the range of goals they try to achieve within any class of pupils.

Just as many empirical questions need to be answered before a major emphasis can legitimately be placed on ‘open’ education, project-based education, and non-formal education, so, too, many empirical questions remain to be answered before it can legitimately be concluded that what is going on in these schools is genuinely worthwhile. To what extent is it true that a knowledge of spelling is dependent on being taught in a routine way? Is it really true that it is more important to be taught the names of things and relationships (Bereiter) than to develop the ability to analyse, abstract, and look for relationships (Spearman, MacNamara)? Is either of these an essential pre-requisite to the other? (See Raven, 1980a, for a fuller discussion of this issue). If this is true that there is some basic information which all pupils need to master, is that information best learned by rote or by understanding (Entwistle, 1981)? How true is it that pupils bound for low-status jobs like to learn by rote, whilst pupils bound for other jobs neither like to learn in these ways nor to learn to do the same things? When so many questions remain unanswered, it would seem inappropriate
to condemn or commend a particular approach. It would, however, seem appropriate to ask whether it is likely that a teacher who does not vary her approach—and the theories on which she bases her work—from pupil to pupil and from day to day is likely to be successful—in any sense of the word—with more than a fraction of her pupils. Yet this is just what we, and the authors of the ORACLE Study, did observe in a significant number of classrooms.

Finally, the values, concerns and patterns of behaviour evinced by a significant proportion of the teachers whose work we studied did not always seem to be those to which it would be most desirable to expose young people. The teachers often seemed trivia-minded, to be more concerned to be ‘in charge’ than to be helpful, and to lack respect for their pupils and their right to have opinions, interests, and areas of competence of their own. They did not think that pupils had a legitimate right to insist that their teachers helped them to develop their own interests and particular areas of competence. The teachers often seemed to be downtrodden and despondent rather than innovative, confident, determined to be masters of their destinies, and capable of finding ways of overcoming difficulties. The thoughts, feelings and behaviours they shared with their pupils hardly seemed conducive to encouraging the children to value innovativeness and personal development. They rarely demonstrated how to adventure, how to overcome difficulties, how to learn from experience, how to learn without instruction, and never to take ‘no’ for an answer. They did not teach their pupils what one primary school teacher taught the author—namely, that ‘there is no such word as ‘can’t’’.
CHAPTER 5

COMPETENCIES AS GOALS

The time has come to try to make explicit exactly what it is that distinguishes the work at Laneton (described in Chapter 1), and the work of the classes described in Chapter 3, from that observed in the classrooms portrayed in Chapter 4. Part of the answer is already clear, for we have made repeated reference to the concern of the teachers of the former classes with promoting the development of areas of competence beyond the 3 Rs. Three questions remain: is this the only, or even the main, difference between the work of the two groups of teachers? How does this way of identifying the difference relate to the literature on such things as the objectives of non-formal education, project-based education, environmental studies, open education and progressive education? And how are these areas of competence to be identified?

To answer these questions we will first summarise and comment on the answers we obtained when we searched the background literature and interviewed teachers, officials and educationists in an attempt to identify the objectives of the interrelated set of activities variously described as non-formal education, environmental studies, project-based education, enquiry-oriented education, discovery methods, out-of-school visits, open education and progressive education. Our conclusion will be that, while many diverse things are said and implied, there is a central and crucial kernel to much of the writing. This has, however, rarely been made explicit. We will suggest that this core is best identified (using McClelland's 1973 term) as Competency-Oriented Education. We will also suggest that the essential difference between what these writers and practitioners and others are about has centrally to do with objectives, not method.

As we see it, what is essentially being advocated by the writers whose work we will review is a focus on promoting the growth of a wide range of components of competence—ie of competencies. This is to be sharply distinguished from a concern to convey information to pupils.

A competent person is not only potentially able to do things, but is interested in doing them as well. He has the confidence needed to
do them. He shows initiative in doing them. And he effectively mobilises resources for doing them. Society is full of skilful and knowledgeable, but incompetent, adults, and the same is unfortunately true of children in schools. Most school pupils, for instance, can read, but how many are competent readers, like some of the children we met at Laneton? When school visits are made, most children can listen dutifully and fill in a worksheet, but how many can, like the Laneton children, take advantage of the situation as an opportunity for furthering their own spontaneous interest? Far too much writing and thinking about education has focussed on method and style rather than on the conscious goals of those who have learners in their charge.

Although competence is clearly recognisable when one sees it, it is complex when one tries to analyse it. It has many components, but the first step in understanding its character is to realise that its affective and conative components are every bit as important as its cognitive components and that their neglect produces incompetent adults.

In this chapter, therefore, we shall constantly be referring to competency and the components of competence for, if the growth of competence is to be an effective goal, the teacher’s vision of the components of competence—or competencies—must be a clear one.

From what has been said, it is obvious that competency-oriented education implies an outward-looking attitude on the part of the teacher. The competence aimed at is competence in the great world outside and not just competence in academic tasks. Hence the emphasis on environmental studies and out-of-school contacts. Hence the emphasis on bringing adults—as educators—into the classroom. Hence enquiry-oriented, project-based, education grounded in out-of-school visits. Hence ‘open education’. And hence our title Opening the Primary Classroom.

In our attempt to identify goals or criteria against which we could ‘evaluate the links established between primary schools and agencies of non-formal education such as Zoos and Museums’, we reviewed the available literature and interviewed a wide range of officials and educationists. It may surprise the reader to learn that we had to devote so much time and energy to clarifying objectives; after all, philosophers and educators since at least the time of Plato have written on this theme, and one might be forgiven for assuming that objectives for non-formal education (ie everything other than straightforwardly didactic lessons on basic skills and knowledge)
would be clearly set down in reports such as *Children and their Primary Schools* (the ‘Plowden Report’, 1966), *Primary Education in Scotland* (the ‘Primary Memorandum’, Scottish Education Department, 1965), the HMIs’ 1980 study *Learning and Teaching in Primary 4 and Primary 7*, the Consultative Committee on Primary Education’s booklet on *Environmental Studies* (1981), and in general literature on progressive education, such as Cremin’s (1961) book on progressive education in America, van der Eyken and Turner’s (1969) *Adventures in Education*, or Marshall’s (1963) *Experiment in Education*. Not only is this not the case; there is little agreement about what is meant by the terms we have mentioned. However, in the context of the argument summarised above and developed later in this chapter, it is important to note that, when Bennett (1976) asked Head and class teachers in twelve schools to identify the differences between ‘progressive’ and ‘traditional’ education, not one of the differences which were both mentioned by the interviewees and noted by Bennett had to do with differences in objectives; all referred to differences in method. The significance of this cannot be over-estimated. In the first place, despite the small number of schools involved, it suggests that little heed has been given to the voices of those who, like ourselves, have argued that ‘progressive education’ is not so much concerned with new methods of achieving old goals as with achieving objectives which have been neglected in the past. As the HMIs put it: “The Scottish primary school teacher insists on making her pupils literate and numerate. She does not, however, sufficiently recognise that there are fields of human experience and competence beyond these.” Secondly, it suggests that much of the controversy which has surrounded discussion of educational ‘methods’ has been irrelevant because it has failed to acknowledge what we maintain is the central issue—namely that the procedures which are advocated by teachers with different orientations are not different ways, or methods, of achieving the same goals, but are in fact actually directed toward different goals. Thirdly, as Bennett’s work went on to demonstrate, much ‘progressive’ or ‘open’ educational practice must have been based on but a hazy grasp of what the activities in which the teachers engaged their pupils were intended to achieve. Fourthly, and perhaps most significantly, much of Bennett’s statistical work must have been beside the point because—since he was unaware of many of the objectives which seem to lie behind the concerns of many of those who advocate ‘open’ education—he could not (and did not)
include measures of such outcomes in his study. (It has, of course, to be said that, given that his work showed that many teachers had only a poor understanding of the objectives of the processes they were using, he would have been unlikely to find that such objectives were being achieved in many classrooms, even if he had included measures of alternative outcomes in his study. The value of including such measures would, however, still have been considerable—for he would then have obtained evidence that schools generally fail to attain a large number of extremely important goals. This fact would then have found a place in subsequent discussion of the policy implications of his study."

Bennett’s results do not, however, show that it is meaningless to make a distinction between ‘traditional’ and ‘progressive’ teachers. The author’s own work with secondary school teachers (Raven et al, 1975) shows that teachers differ sharply from one to another in the objectives they strive to achieve. The two strongest dimensions, or factors, which differentiate between them are, firstly, the amount of effort they put into achieving ‘non-traditional’ objectives like helping their pupils to develop self-confidence, social skills, initiative, independence, leadership and responsibility; and, secondly, the amount of effort they put into promoting success in the traditional academic area. It is true that there were five more factors and that it also makes sense to distinguish between teachers who are concerned with the broader character goals just mentioned and those who are concerned with wider cognitive goals (like formulating hypotheses and reasoning logically). But there can be no doubt of the fact that teachers vary significantly in their aims and objectives and that this variance is related to the distinction which has in the past been made between traditional and progressive orientations. What is disturbing is that, despite Barker-Lunn’s (1970) work showing that this variance in primary school teachers’ objectives is related to variance in pupil outcomes, so much research, and so much discussion, proceeds as if the important variables on which researchers (and student teachers) should focus have to do with methods and knowledge to be conveyed, rather than with objectives, processes and competencies to be fostered.

One way of thinking about the relationship between out-of-school visits, environmental studies, project-based education, and general education might be hierarchical. Without in any way suggesting that there is only one set of objectives in each area, it might be expected that the objectives of out-of-school visits would
nest within the objectives of environmental studies, that these would form a sector of the objectives of project-based education, and that these in turn would form a sub-set of the objectives of general education. And this is indeed what one finds for those teachers who (as the HMIs show, are in a majority) focus only on the knowledge which is to be communicated to pupils. For them, knowledge of a local ancient monument forms a sub-set of the knowledge of the local environment, and this, in turn, forms a sub-set of knowledge of the local community and its links with the rest of the world, which, in turn, represents a sector of the world.

For other teachers, and the HMIs themselves, however, no such nesting is implied. For them, environmental studies, and out-of-school visits in particular, present an opportunity to pursue objectives of general education which are usually overlooked in subject-based approaches. Such objectives include fostering powers of observation, the ability to work with others, leadership, initiative, and awareness of one's personal strengths. According to them, the objective of such activities is not to permit teachers to do more of the same thing, but to pursue an alternative and complementary sub-set of objectives of general education. Likewise, the three Rs do not nest into, or form a sub-set of, the objectives of general education in the way described above, but permeate everything.

It may be noted in passing that neglect of these objectives of general education which have for so long been recognised as important does not even entitle a teacher to claim to be a 'traditionalist': it invalidates his claim to be an educator. If 'progressive' teachers are judged incompetent because they fail to pursue the broader objectives of education effectively (and Bennett's argument is that this is the case), then 'traditional' teachers must be even more incompetent — because they do not even try to reach these objectives.

At this point we must ask whether these wider objectives fall within the range of goals which schools are expected to achieve. Surveys conducted among parents, teachers, pupils, ex-pupils and employers at secondary school level: (Bill et al, 1974; Johnston and Bachman, 1976; Morton-Williams et al, 1968; De Landsheere, 1974; Raven et al, 1975; 1976) show unmistakably that schools are expected to achieve such goals. At primary school level the following quotation from a report from the Department of Education and Science for England and Wales (1977) makes the point clearly:
Schools must have aims (and) the majority of people would probably agree with the following attempt to set out these aims, though they might differ in the emphasis to be placed on one or the other:

(i) to help children develop lively, enquiring minds, giving them the ability to question and to argue rationally, and to apply themselves to tasks;
(ii) to instil respect for moral values, for other people and for oneself, and tolerance of other races, religions, and ways of life;
(iii) to help children understand the world in which we live, and the interdependence of nations;
(iv) to help children to use language effectively and imaginatively in reading, writing and speaking;
(v) to help children to appreciate how the nation earns and maintains its standard of living and properly to esteem the essential role of industry and commerce in this process;
(vi) to provide a basis of mathematical, scientific and technical knowledge, enabling boys and girls to learn the essential skills needed in a fast-changing world of work;
(vii) to teach children about human achievement and aspirations in the arts and sciences, in religion, and in the search for a more just social order;
(viii) to encourage and foster the development of the children whose social or environmental disadvantages cripple their capacity to learn, if necessary by making additional resources available to them.

THE OBJECTIVES OF NON-FORMAL EDUCATION, ENVIRONMENTAL STUDIES, AND ZOOS AND MUSEUMS EDUCATION

Our initial presentation of, and reflections on, the results of our enquiries into the specific objectives of non-formal education, environmental studies, and zoos and museums education will be organised under the headings: Teaching Knowledge, Fostering Skills, and Inculcating Attitudes. This will be followed by a further review of the literature from the perspective of competency-oriented education.

1 Teaching Knowledge

By far the commonest interpretation of the purpose of visits to museums, zoos, and other facilities, is to convey information to pupils. Visits provide a powerful and total experience for teaching the names of animals and something about their structure and their way of life, or about artefacts and the ways of life of peoples distant in time and space. As the Lothian Museum Education Committee put it:

"Where objects are available for direct handling, (the Museum) can provide the factual and conceptual knowledge that children seek in a language they can use—the language of seeing and feeling."
With a little persistence, such activities can be extended to include teaching pupils about the habits of animals, about their make-up and habitats, about their behaviour, about food chains, and about the interdependence between animals and their environments and between Man and animals. In the Museum (and related facilities) pupils can be taught how artefacts were made, how they were used, and about the people who used them. They can be taught about the latter's work, values and preoccupations, something about the physical context in which they lived and worked, and something about the society in which they lived. Both can be extended into teaching about the socio-political context of the present day and the wickedness of big game hunters, whalers, or businessmen who pollute the environment. All this can be, and apparently often is, done without asking why pupils should learn about this particular animal or artefact, or seeking to encourage the pupils concerned to do such things as develop the habit of looking for chains of inter-dependence, or the spontaneous tendency to build up an understanding of how their own, or past, societies work from scraps of evidence such as is found on bits of pot in the Museum, or in newspapers and other modern artefacts.

Several people have commented that the objective of encouraging primary school pupils to study social, economic and political processes may be too advanced. However, we have already described the work of a number of schools in this area, and would also comment that avoidance of an issue does not mean that nothing is learnt; pupils, for example, learn that politics, like sex, is a dirty business which is not discussed in good company, and this carries over into a culturally-specific adult unwillingness and inability to think about and discuss serious social issues. (A comparison of the British/American and Japanese press is instructive from this point of view.)

Even where an effort is made to study something like interdependence—for example, between the Nile and the civilisations of Egypt—it is all too common to find discovery-based teaching being used to teach the obvious (eg that all civilisations are dependent on the physical context in which they develop) or the specific (eg the geography of Egypt and the Nile). Once again, this draws attention to the failure of curriculum developers and innovators to communicate their objectives and orientation to practising teachers. In a previous study (Raven, 1977), it was found that many of those who advocated discovery-based learning did so, not because it was a new method of conveying content, but because
they saw it as an opportunity to lead pupils to practise valued *styles of behaviour* (eg observing, reasoning, or inventing). The fact *that* civilisations are dependent on the physical environment can be taught by citing numerous examples. The history and geography of Egypt can be taught equally directly. The habit of looking for, and articulating, patterns of inter-dependence between social and physical phenomena and between social, economic and political systems cannot be taught in this way. Such habits and spontaneous behaviour tendencies have to be fostered by engaging pupils in the activity. And unless the teaching is as much an adventure for teachers as for pupils, it is very hard for teachers to communicate the reality that patterns of inter-dependence—like chains of causality—have to be discovered by building up a picture from scraps of disconnected evidence, whose relevance is not apparent to anyone, teacher or pupil, until the result—the pattern—has been discovered. It is for this reason that formal teaching, even if it is discovery-based, tends to be corrupted back into ‘teaching facts’ or, at best, “discovering what the teacher wants us to know”.

None of the educational activities so far discussed involve teaching the concept of inter-dependence, causality, or time—as seems to be advocated in the COPE and Lothian booklets. The idea of teaching such concepts merits specific comment because many teachers mentioned these sections of the booklets and told us that they did not really know what they were supposed to do.

Our own view is that, while it is, or course, useful to encourage pupils to look for interdependence between events and variables (themselves to be discriminated from their backgrounds)—or, as Spearman puts it “to discern relationships and educe correlates”—it is less useful to think of what one is doing as “teaching the concept of interdependence” than as “encouraging the development of a motivational disposition, or competency”.

The injunction to “teach concepts” reinforces the already widespread inclination to teach definitions of words. It is, of course, necessary to possess concepts and theories in order to observe and record—for one would not otherwise know what to observe and record. Indeed one would not be able to see anything. But the concepts and theories one requires if one is to practise observing and recording (and thereby develop the habits, sensitivities, and abilities which are required to observe and record) are concepts and theories which relate directly to the things and processes one wishes to observe and understand. Unless one is pursuing an activity one cares about, one will not develop the
competencies which are required to observe. One will only learn to see what others have seen. So the concepts and theories which pupils will need if they are to practise observing and recording will vary from pupil to pupil. The argument for teaching all children the meaning of particular concepts—such as interdependence, time, stability, and change—may therefore need to be reconsidered.

2 Fostering Skills

When one turns to the teaching of skills one again finds that the most common interpretation of the potentiality of visits is as a means of stimulating pupils to practise the skills of reading, writing, counting and drawing (Primary Education in Scotland particularly stresses this).

The Lothian Museums Committee goes a little further:

"In addition to the expansion of factual horizons...the Museum provides an excellent opportunity to encourage and develop a wide range of essential, formal, educational skills in a different and stimulating environment—cognitive skills, inter-personal skills, and psycho-motor skills."

True, but what have museums uniquely to offer in fostering such skills, and precisely what skills is it most important to foster, and how?

The booklets on environmental studies produced by the Consultative Committee on Primary Education (COPE) and Lothian Region, and Curriculum Paper No. 7: Science for General Education (SED, 1979), go some way toward providing an answer. They stress the need to enhance the development of such skills as observing, researching, recording and communicating, and we will return to this. This list may be supplemented by others mentioned by one or another of the teachers we interviewed. These included: being able to understand and influence the social-psychological processes which go on in groups, leadership ability, and the ability to muster arguments. Such skills are practised in the course of group-based project-work and environmental studies, through studying, and through role-playing, in museum-based activities, the thoughts, feelings and behaviours of those involved in the great events of history.

Unfortunately, all these 'skills' (including, even, observing and recording) are in reality complex motivational dispositions having cognitive, affective and behavioural components. They are only likely to be developed and displayed in relation to tasks which each individual pupil values and cares about.
Let us take ‘observing’ as an example. It is clearly not intended that pupils should learn only to see what others have observed, but rather that they should learn to make their own observations. As Eggleston (1982) has shown, the ability to make pertinent observations is specific to subject matter which is of interest to the child: it is a time-consuming and difficult process based not only on habits and cognitive schemata—or pre-dispositions to see particular things in the booming, buzzing, confusion which bombards us—habits and cognitive schemata which have to be painfully developed over time, but also the willingness to mull over and try to make sense of intriguing or beckoning annoyances, attractions or aura associated with the material being observed. To make one’s own observations one not only requires at least an implicit theory or conceptual framework (which itself has to be developed) to tell one what to see, register and record, but also a willingness to ponder fuzziness in order to discern that which has not been seen before. No-one is going to do any of these things unless he is interested in the area in which he is observing, and is thereafter able to use his observations for some purpose which is important to him.

‘Communicating effectively’ is another example. One cannot develop this ability unless one has something one wants to communicate and is therefore prepared to devote a considerable amount of time and effort to doing the things which are necessary for effective communication. These include making explicit what it is that one wishes to communicate and finding ways of getting one’s message across. They include studying, and mulling over, feedback, often from minor, non-verbal, cues from one’s audience which indicate ways in which one might improve one’s performance.

The Australian Committee on Environmental Studies includes the following under ‘Skills to be fostered’:

- identifying and defining environmental issues
- collecting appropriate data
- analysing data and diagnosing problems
- generating alternative solutions to environmental issues
- considering alternatives and making judgements concerning issues of environmental consequence
- implementing solutions to environmental issues.”

Although this list is the most explicit, deep and attainable of any we have found, it again attracts the comment that such skills are only likely to be called for and practised in relation to actions which
pupils care about. For their exercise they demand the ability and the willingness to understand and intervene in complex social and political processes. While such skills can no doubt be practised in the course of specific educational exercises, it seems more appropriate that they should form part of an integrated programme of studies designed to foster these qualities in the context of activities in which pupils pursue their own particular interests.

3 Inculcating Attitudes

In the attitudinal area, as in the knowledge and skills area, the objectives which have been advocated vary from the direct teaching of specific values—like a concern to preserve old objects and buildings or to protect species from extinction—to fostering complex motivational dispositions. Both the Lothian Region Museums Committee and the Australian Committee again include objectives of this kind, eg:

“Museums should be seen as an essential element in developing both social and creative values”.

(Lothian Region Museums Report)

Objectives more closely tied to Museums education include developing an awareness of other codes of morals, values and ways of life—and their consequences—with a view to stimulating the development of tolerance for other people and their values and weakening adherence to dogmatic moral and religious beliefs.

The Australian objectives are again the widest. They include:

“develop a positive ethical stance concerning wise human use of environments and resources
develop a concern for and a commitment to participation in actions necessary for the wise use of environments.”

The National Association for Environmental Education recognises, in its statement of aims for the formal educational system, the definition of Environmental Education originally written by the International Union for Conservation of Nature:

“Environmental Education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among Man, his culture, and his bio-physical surroundings. Environmental Education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality.”
The desire to foster a concern with conservation and the protection of the environment was frequently expressed in our interviews, but the Director of the Zoo’s desire to foster a concern with parks and the countryside as a source of relaxation and recreation was more unusual. He wanted pupils to value such activities and value the space:

"I see it as part of our remit to get people to understand that there is something there which is perhaps difficult to quantify, but which can be important to their own well-being."

This statement is important for a number of reasons. In the first place, it asserts the instrumental value of the intangible. As a society we have, for good reason, become reluctant to base value judgements on fleeting feelings on the fringe of consciousness; on benefits which can be experienced but are hard to make explicit and quantify. But this emphasis on the explicit and quantifiable has now come to dominate over the felt and barely articulated to an extent which has become dysfunctional. Secondly, it points to the importance of the experience itself as a basis for the value judgement: a personal knowledge that contact with a world greater than oneself is essential to one’s well-being (a view which, in the current-day world, attracts wry smiles if not outright scorn). Thirdly, it asserts that such intimate contact with Nature is not merely important to our personal well-being, but to the future of our species. And last, but not least, it raises serious questions about whether the benefit will be gained if children are herded around zoos (or the countryside) and then required to write about their experience (without the concepts needed to write about intangible experiences even if they have experienced them).

This would seem an appropriate point at which to introduce another set of objectives. As the Lothian Committee put it:

"(Museums aim to provide) ... the exciting experience, the awakening of personal emotions, curiosity, and a sense of wonder, the thirst for more, the impact on attitudes."

The desire to foster a love of animals perhaps belongs in a similar category. Through touching animals it is hoped to encourage communication with them and reduce people’s fear of them—indeed, to transform fear to love and so stimulate a concern for the well-being of the animals.

Other objectives include such things as developing a sense of
wonder and awe at the complexity of Nature, the intricacies of anatomy and physiology, and the extraordinary inter-dependence of symbiotic relationships.

A comment is perhaps in order on the priority given to enjoyment. While frequently derided as an educational objective, it is the case that enjoyment is usually associated with experiences which are developmental in some sense—even if that development consists only in re-creation prior to taking on more demanding tasks. Furthermore, although many necessary actions are not in themselves enjoyable, it is unlikely that many people will persist in the frustrating and demanding activities which are required to reach worthwhile goals unless there is a substantial element of pleasure somewhere along the line. And unless they practise doing these things it is unlikely that they will develop the competencies needed to do so.

Sparking an interest in something which may become a passionate lifelong concern was often mentioned as an objective of their work by the staff of the Museum and the Zoo. They felt that if a child stumbled across just one thing of this sort—something which would lead to a career as an engineer, anthropologist, botanist, or in politics—that would be sufficient to justify the activity.

The idiosyncratic nature of interests—whether in butterflies, toy soldiers, steam engines, or Victorian lace handkerchiefs—is something which has intrigued the author for many years and which again forced itself to his attention in the course of this project. While the argument that it is important for children to have an opportunity to clarify their interests is incontrovertible—indeed, according to secondary school pupils, it is the most seriously neglected of the important objectives of education—it is hard to see how visits of the sort with which we are most familiar among school children can provide the answer. The process is altogether too haphazard. Everything depends on a chance meshing of a small number of activities organised by a teacher, in part on the basis of her own interests, for a group of thirty-odd pupils, with an individual child’s interests. There is no systematic attempt to identify each pupil’s potential areas of interest. As we have seen, these are often very specific and may be in either topics (eg Victorian lace handkerchiefs) or behaviours (eg persuading others). Still less frequently encountered are attempts to enable pupils to discover whether they really are interested in topics or activities which, at first sight, seemed to appeal to them.
Virtually never have we encountered individualised, competency-oriented, programmes of development in which pupils are led to practise the components of competence (observing, leading, thinking, inventing, adventuring) in relation to topics or activities in which they are personally interested. Yet, as we will see later, it is only through such processes that pupils are likely to develop such competencies.

In the light of these comments there would seem to be an overwhelming need for means of identifying glimmers of interest among the experiences which pupils have already had and systematically introducing them to potential areas of interest, carefully following up their reactions to these preliminary introductions with visits tailored to their personal reactions.

The difficulty of trying to spark interest is illustrated by the following remarks by one of the people we interviewed:

"We show them snails, we show them spiders, we show them other animals which they could well encounter—you know, sort of town animals—animals they'll find in hedges, under stones, and perhaps suggest to them that there are things there that are worth looking at and that they are much more accessible than they had thought...yet...we have to rack our brains for things which will be of interest to the whole class (because we can't work with individuals and relate to their particular interests and, anyway, we don't really know what would interest them because we have had little prior contact with the pupils concerned)."

Discipline problems are bound to surface if one adopts the view that there is no alternative to marching groups of children—many of whom are not much interested in most of what goes on—around galleries and zoos. Yet, as we have seen, the problem is soluble if one encourages different children to do different things in pursuit of different goals—if one creates variety in the work—but, as we have also seen, that in turn raises serious organisational questions, and questions about the role of institutions like museums and zoos in the educational process. It becomes necessary for different children to do different things and for the organisations to fit into, and support, educational activities originating in schools.

**COMPETENCY-ORIENTED EDUCATION**

We have so far discussed the objectives which might be pursued through non-formal education under the traditional tri-partite headings of knowledge, skills and attitudes. We have also hinted at some of the limitations and difficulties which are involved in this
approach. We will now outline what we believe to be a more fruitful way of looking at the problem.

The competency-oriented framework is, perhaps, best introduced with the aid of some quotations:

"Environmental education ... has to enable people ... to identify environmental issues, collect data, generate alternative solutions and choose the most appropriate alternative. It must enhance the ability of individuals and groups to take appropriate action to improve the quality of their own environments ... it is action-oriented in that it concentrates on improving the ability of the learner to recognise the complexity of environmental issues and to contribute to their solution. Environmental education draws on a body of knowledge which is continuously changing, and requires a ... systems approach to issues which concern society."

(Australian Report)

"The demands of this age, and that to come, are for a capacity for independent thought, powers of deduction, and an ability to deal with change."

(Learning and Teaching in Primary 4 and Primary 7)

"It is important to encourage children to ask why people have made the face masks, designed the engine, built the house in this way, painted that particular painting. What does it tell you about Man himself, the way he lives his life, his aspirations? And if Man has spent so much time carving, painting, producing a complex engine, what does that tell you about his motivation? ... And are these important interests and motivations to develop? ... If we can get some sort of inspiration out of seeing something that has been produced by Man ... it perhaps leads us on to other things ... to being creative ourselves, to realising our potential ... to respecting our environment and the people, animals and things which are in it."

(John Baldwin, Museums Adviser, Lothian Region)

"If you look at the sort of society we're in, look at the changing society, look at the nature of the technology, look at the nature of employment and all the rest of it, you can't hope to see everything that's going to happen. But you can make certain deductions from the evidence you've got before you ..."

(John Baldwin, Museums Adviser, Lothian Region)

In a similar vein, Roger Wheater, Director of Edinburgh Zoo, spoke of the need for an "enterprise", "interpretative", or "initiative" centre which would encourage and support teachers in mounting projects to study local tracts of land over several years, in order to make scientific observations having to do with the animals which lived there and the effects of changes in the industrial and other uses of the area. These studies, he argued, would involve the pupils in being real scientists, real historians, real social analysts,
rather than learning about science, about history, or about society. They would lead the pupils to develop the motivation and the abilities required to understand the environments in which they lived, and to intervene effectively in those environments. Simultaneously, they would produce new scientific, historical and sociological knowledge. The centres would also encourage and support teachers who were attempting to mount projects dealing with conservation, environmental improvement and pollution control. Through such projects, pupils would gain insight into scientific, sociological and political matters, develop the self-motivated abilities required to gain their own insights, and develop the motivation and the ability needed to intervene in the sociopolitical-technological process. Their beliefs and expectations about themselves and others would change. They would develop a better understanding of how society works, and come to appreciate the crucial importance of taking an active part in running it.

It would be a very important function of any such centre to portray for teachers alternative approaches to general education. It would be essential for the centre to engage in projects with the schools in order to support the teachers, promote the development of the projects, help teachers to evolve means of reaching their goals, make explicit what had been learnt from them, and disseminate the results.

Mr Wheater emphasised that it was not a simply a question of working out what needed to be done to achieve the broader goals of conservation and environmental improvement, but also of developing the habit of considering the probable long-term effects of one's own apparently insignificant actions and inactions. What effects were these likely to produce in the long run if other people did the same? And how likely was it that other people would do the same?

It seems to us important to note a number of things about the objectives which have been mentioned in these quotations and in the course of our summary of some aspects of our interview with Mr Wheater.

1 The objectives are heavily value-laden.
2 They are closely related to the individual's interests, priorities and values.
3 The questions which are raised have no right answer, and frequently point to major dilemmas with serious social and economic consequences.
4 The activities which would be needed to achieve the objectives are time-consuming and difficult. No-one is going to undertake such activities unless he believes them to be very important. Yet if he does not do so he will not have an opportunity to practise and perfect the competencies which it is hoped he will develop in the process.

5 Many of the activities demand processes of observation and analysis, creativity, sensitivity to the germs of new ideas, willingness to spend time making ideas explicit, willingness to study complex socio-political processes, and willingness to get help from others to achieve one's goals.

6 The knowledge base on which they are dependent is not common to all pupils and static. It varies from pupil to pupil depending on the issues under consideration, and it is ever-changing as new knowledge and connections come to light.

7 One of the major intentions is to lead people to want to do things spontaneously. The qualities to be fostered therefore seem to be best thought of as complex motivational dispositions which have cognitive, affective and behavioural components, instead of as skills, abilities, or attitudes.

8 The objectives to be achieved involve developing the sensitivities, habits, thoughtways and motivations of the committed engineer, scientist, or historian, rather than conveying a knowledge of science, engineering or history.

9 There is more than a hint of a particular emphasis on the perceptions, motivations and abilities required for active citizenship—active citizenship which will involve people considering the long-term social implications of their actions and deciding for themselves what they should do. In other words, the objectives embody more than an element of moral education.

For the reasons which have just been outlined, it is not possible to pursue these goals through traditional classroom activities or conventional visits to zoos and museums. Yet our observations, particularly in two schools, has shown that such goals can be effectively pursued with primary school children.

Curriculum Paper no. 7: Science for General Education, and the Consultative Committee on Primary Education (COPE) Environmental Studies booklet, also list a range of activities which it would be desirable for pupils to practise. Science for General Education includes the following table:
Thinking

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Unfortunately, the authors never again refer to these skills. In this way they contribute directly to the process whereby few opportunities to practise these skills are created and, as a result, to the process whereby the authors of *Learning and Teaching in Primary 4 and Primary 7* are able to come to the conclusion that: “Teachers ... favoured the acquisition of knowledge ... and avoided opportunities for discovery learning ... and discussion.”

The CCC’s Committee on Primary Education’s booklet *Environmental Studies in the Primary School* includes the following:

1. **In developing RESEARCHING, children should:**
   - (a) observe with all the senses;
   - (b) ask questions;
   - (c) discuss;
   - (d) express opinions;
   - (e) describe;
   - (f) summarise;
   - (g) report findings;
   - (h) collect and select data;
   - (i) manipulate equipment;
   - (j) construct practical instruments;
   - (k) use tools;
   - (l) make practical measurements;
   - (m) understand and use constructively — books, maps, gazetteers, diagrams etc.;
   - (n) know how to seek information from library sources within and external to the school;
   - (o) be aware of how to seek information by letter-writing;
   - (p) understand, construct and employ a structured and unstructured interview;
   - (q) understand, interpret and describe information given in pictures, charts, maps, diagrams, etc.

2. **In developing RECORDING, children should:**
   - (a) produce maps, diagrams and pictures, and models;
   - (b) take photographs;
   - (c) make tape recordings;
   - (d) mount and display work, labelling correctly.
3. In developing **INTERPRETING EXPERIENCES**, children should:—
   (a) observe purposefully with all senses and note particular attributes;
   (b) compare, sort and classify;
   (c) look for assumptions;
   (d) hypothesise and plan suitable testing situations;
   (e) see implications of change;
   (f) suggest a variety of approaches to a problem;
   (g) extend and improve suggested approaches;
   (h) criticise constructively;
   (i) develop original methods;
   (j) generalise from particular situations.

4. In developing **EXPERIENCING AND FEELING**, children should:—
   (a) react to environment by producing music;
   (b) react to environment through creative art;
   (c) react to environment through creative language;
   (d) react to environment through creative movement.

5. In developing **RELATIONSHIPS**, children should:—
   (a) share materials with others;
   (b) adapt to different groups;
   (c) interact readily with others as leader or partner or follower as appropriate;
   (d) participate readily in joint ventures;
   (e) carry out assigned tasks without supervision;
   (f) apply themselves to self-chosen tasks;
   (g) cope with changes of behaviour in others.

6. In developing **POSITIVE ATTITUDES**, children should:—
   (a) appreciate cultural and ethnic diversity;
   (b) develop sense of responsibility for the environment;
   (c) assist those in need;
   (d) accept the need for majority decisions;
   (e) develop social politeness.

By providing this more detailed table, they obviously go further than the authors of *Curriculum Paper No. 7* to link objectives and practice. However, once again, 80% of the pages in the booklet are devoted to topics to cover, rather than to describing ways in which it would be possible for these activities to be practised.

If the suggestion that they *are* to be practised is taken seriously, difficulties immediately arise. Let us take “observing with all the senses” as an example.

This is an activity which involves considerable interest in, sensitivity to, and familiarity with, the subject matter in relation to which observations are to be made. It involves spending time in an armchair with the eyes closed, mulling over what it is that one might have observed, and making this explicit to oneself. It involves evolving concepts for thinking about what one has observed. It involves considerable commitment to reflecting on what one has observed, to separating the relevant from the irrelevant, to looking for patterns in the chaos which bombards one’s senses, to finding ways of summarising and reporting that
which it seems relevant to highlight in attempting to describe what one has observed in relation to one’s purposes. If one is to practise these components of effective observation, one must have an intense commitment to the task. One must be able to persist with the activity over a long period. One must have acquired confidence from previous experience that the whole frustrating and difficult business is worthwhile. This is only likely to arise if one has experienced the satisfactions which come from having made sense of a perplexing and confusing situation in the past and being able to abstract the crucial elements which deserve comment and using those ‘observations’ to achieve one’s goals more effectively.

Given what has been said, it is obvious that different children will need to practise this skill in relation to different tasks. One pupil will want to study the social structure of an area or group—ie who knows whom, and talks to whom about what. Another will want to study the history of cheque books; another butterflies; another bits of Roman pot. Another will want to explore ways of establishing warm relationships with other people (not necessarily analytically). Unless this task of identifying the area in which the skill is to be practised has been undertaken prior to the practice session, it is probable that the activities will, once again, become those of the teacher telling the pupils what to see in the world around them, and telling them to see and describe what other people have already seen, and to summarise it in ways in which other people have summarised it, in relation to purposes which may actually be quite foreign to them.

In the course of our discussion it became clear that the place of knowledge in this process needs to be singled out for comment. Clearly, if any useful observations are to be made, pupils do need to know a great deal about the area in which they are making observations, and they need to be supplied with the concepts which are required to know what to observe and how to make sense of, and summarise, that which they have observed. Otherwise they will spend a great deal of time re-inventing wheels. It does, however, have to be noted, firstly, that the knowledge and concepts which they will require are specialist knowledge and concepts relating to their own interests. And, secondly, that the focus of attention is not on equipping them with that knowledge or those concepts, but on developing their powers of observation. A number of things follow from this: firstly, the knowledge and concepts which are required are personal. They do not consist of knowledge and concepts which should be taught to all pupils. Indeed, one of the most important
lessons which the pupils need to learn is that they themselves can find and master relevant specialist knowledge and concepts related to their purposes. It follows that the relevant knowledge and concepts are unlikely to be possessed by the teacher. It also follows that if, perchance, the relevant knowledge and concepts relating to a particular pupil’s area of interest are possessed by the teacher, there is no good reason for withholding them—for the task of observing and discussing can then move on to a different level, in relation to which the teacher will be as ignorant as her pupil. Finally, it is clear that it matters not one iota if the pupil does end up re-discovering something which someone else knew—provided that this information was not deliberately withheld by any of those with whom he came into contact.

What has been said in the last paragraph both calls many of the received views of discovery-based learning into question* and provides reassurance for those who worry about the inefficiency of everyone attempting to re-discover everything. The task is both to discover the information which is needed by the most efficient process and to practise the skills needed to discover it.

A similar commentary could be written on most of the other objectives enumerated by the COPE committee. It follows that it would be extremely difficult to implement the type of educational programme advocated by the committee without radical change in one’s understanding of the processes involved. It would be still more difficult to achieve some of the other objectives which emerge from the literature. Thus, the Lothian Region Museums Committee says:

“Exposure to museums ... is an important way of bringing children face to face with their culture and heritage and providing a sound base for each child from which to cope with rapid change ...”

It is not clear exactly what this means, but, for the sake of argument, we may stretch a point and suggest that it could imply the use of the museum to develop versatility, adaptability, a sense of relativism, and tolerance of ambiguity arising from the realisation that things not only could be, but have been, very different from the way they are. (And if it does not mean this, it is doubtful if this objective is particularly laudable!)

The achievement of such objectives is difficult indeed. It involves

* The objectives and practice of non-formal education overlap with those of discussion lessons, discovery-based learning, and project-based education. This is not the place to embark on a discussion of the variety of ways in which such practices are perceived. An account will, however, be found in Raven (1977).
influencing pupils' self-images, their values, and their areas of competence.

The development of versatility and adaptability is likely to be promoted if pupils have had experience of coping successfully with new and difficult situations, of building up an understanding of a socio-political process from scraps of information, analysing cause and effect, and taking appropriate action. It is likely to be enhanced if they have had opportunities to see their teachers doing these things successfully in order to gain control of their own lives. This might, for example, involve analysing the forces which deflect them from the educational goals discussed here, identifying the role of assessment in the context of certification and selection, and persuading parents and officials to do something about it. It is likely to be enhanced if competent teachers share their thoughts and feelings, their hopes, their fears, their plans, their monitoring of their effectiveness, and their quest for an understanding of the constraints under which they work and ways of influencing them, with their pupils. It is likely to be enhanced if their pupils are exposed to, and role-play, the patterns of thinking, feeling and behaviour characteristic of those who have made significant contributions to society in the past. It is likely to be enhanced if pupils can share in the activities of an environmentalist or other group successfully achieving its objectives.

John Baldwin spoke of fostering the tendency to conceptualise, to abstract, and to form generalisations:

"It may be also that the stimulus from the museum visit leads a class on to develop its own kind of little display, in other words not just the two-dimensional frieze—drawing plus written work plus their own craft work—but gathering together objects from home. Say your project is on 'Transport' and they are bringing in model cars, buses, lorries, whatever else. They are encouraged then to look at each of them—to classify them. So they are practising the skills of classification and registration such as a museum's curator would carry out. Then, once they had done that kind of basic work, to think of, for example, technological sequence, ordering those motor cars in a sort of sequence of technological change. That encourages them, it seems to me, to begin at least to understand the development of tools, such as the museum will house by the thousand or the million. Stone axes in a case mean nothing to most people, but if in a classroom you have been able to reproduce some of the museum curator's own skills, you've got somewhere."

The process as he describes it is not merely one of observing what is there, but of evolving classifications and abstractions suited to one's purposes and evolving purposes suited to evolving
classifications. It is the antithesis of teaching the “right” classification and the assumption of the appropriateness of linear progress toward pre-determined goals. It is inherently a cyclical process, involving physical and conceptual re-arrangements and re-definition of goals. This is characteristic of research—whether in museums, research institutes, or everyday life. It hints at the crucial role of play in advancing understanding, the need to overcome inhibitions to playful activity, the need to suspend judgement about the value of one’s work, and the need to reflect on the nature of what one has stumbled across and make its implications explicit. It involves the notion that other people’s observations and classifications are not the only, or even the best, ones to use to achieve one’s purposes. It involves the simultaneous examination of physical, technological and sociological processes.

Despite the laudable nature of what was said in the last paragraph, attention must be drawn to some of the implications and difficulties. If pupils are merely encouraged to classify materials which are unrelated to their own personal interests in short periods of time, they will undoubtedly generate trivial classificatory frameworks. Yet if they are to do otherwise it will both be necessary to individualise the tasks and to ensure that there are opportunities for pupils to become familiar with relevant classifications of others and to work on their own over extended periods of time.

Several people spoke of the importance of children developing the ability to understand other people and see things from their points of view. And not only the ability to do so, but also the habit of doing so, and understanding that other people’s viewpoints and preoccupations are often very different from their own. One of the Museum’s teachers, among others, stressed the importance of examining the dramatic social effects of shared preoccupations and concerns among sub-groups of populations and whole populations. *Primary Education in Scotland* may be interpreted as saying something similar when it emphasises that history is valueless unless the pupils have developed the capacity to think and feel themselves into the thought-ways and customs of a bygone era and to examine the causes and consequences of such thought-ways and preoccupations.

Such processes, while obviously easily linked to visits to museums and ancient monuments, cry out for the use of drama, role-play, and improvisation. But if they are to help the pupils to develop life-relevant skills and motivations, is it necessary to do
more? Would it be desirable, having overcome many of the inhibitions to such activities, to encourage pupils to do the same things in relation to current civic and political problems, so that they examine ways of viewing current issues and the views of the participants, as well as alternative explanations of, and probable causes of, consequences of, and solutions to, current civic and social problems? A suggestion like this, of course, raises the bogey of teachers imposing their own political views on pupils—a fear which may explain why it may be easier to do these things in relation to a bygone era. Unfortunately, it is always easier to overlook the variety of possible interpretations, viewpoints, and explanations when one deals with a historical situation than when one deals with current affairs.

Several of those interviewed, both in relation to museum and zoo activities, spoke of the need to develop an understanding of the effects of Man on his environment and an understanding of the effects of the environment on Man. It is again important to comment that it is all too easy for activities geared to such goals to become ritual examinations of over-simplified theories of the effects of Man on his environment in the past. It might be more appropriate to develop the tendency so strongly emphasised by Mr. Wheater, not only to study the previously unnoticed effects of Man on previously poorly-conceptualised aspects of the environment, but also the social, sociological, political and physical forces which force men to engage in activities which would either be harmless if engaged in by only one or two people, or be rejected as immoral if there were not strong social forces pushing toward the activity. Having developed a glimmering of an understanding of the operation of such social systems and the strength of the forces involved, the next step is to identify the personal actions which are needed. Taking that action and monitoring its effects then becomes an aid to understanding the social process. In this way a cyclical process of thought-action-feed-back-analysis and further action can be established.

Clearly it is difficult to incorporate experience of such processes into traditional classroom activities—or even into zoo or museum visits. Yet, without them, are the activities which are being undertaken going to make pupils significantly more likely to engage in the activities on which some people have placed so much emphasis? The case for Mr. Wheater’s initiative, enterprise and support centre for linkages between the Museum and the Zoo’s activities and schools may therefore be overwhelming.
Other references to wider goals are contained in the Australian Report:

"Develop an awareness of the interaction of physical, biological, political, social, cultural and economic systems within the environment."

This could be interpreted to mean simply teaching pupils about the interaction and the effects of these systems. Alternatively, it could mean encouraging pupils to build up pictures of these interactions and effects from scraps of information, developing the tendency to continue to make such analyses throughout life, developing the tendency to act on the basis of the conclusions drawn from so doing, to try out and experience the relative merits of alternative action strategies, and to practise the components of behaviour needed for effective action in relation to each of these strategies.

Again, the injunction to "develop a respect for life, both human and non-human" might mean simply imposing on pupils some such value as "all animals have a right to life" (a doubtful enough proposition in the world of Nature). Alternatively it could mean developing a tendency to consider the long-term social implications of doing such things as denying the right to a life, opinions, and values of their own to other people and other animals, and acting on the basis of these considerations. If interpreted in the second way, its achievement would involve pupils in complex discussions of social and economic processes and moral issues. Such discussions, while permeated by value considerations and assumptions, and in need of extensive ecological, sociological and psychological data which are currently not available, might be of the greatest importance to the pupils, the future of their society and Mankind, and the future of the world itself.

Their objective to:

"Develop an awareness that improvement in the quality of the environment and the improvement of the quality of life are dependent on one another"

appears to call for the development of skills in co-operative work and, above all, for recognition of the role of political activity as a means of orchestrating joint action to achieve shared goals for the good of all and the tendency and the ability to intervene effectively in political processes.

Their goal to:

"Develop an awareness of change, both past and present, and the agencies of change working within environments"
could mean ensuring that pupils understand that things will not always be as they are, encouraging them to develop the habit of studying the processes of change, and their part in influencing, and adapting constructively to, the processes of change. Like most motivational dispositions to be fostered, it would involve fostering a complex of attitudes, values, perceptions, expectations, habits and abilities.

We may conclude this review of perceived objectives by telescoping some comments of John Baldwin:

“If pupils have a knowledge that things can be, and have been, different, that they are understandable, they will have fewer phobias, hang-ups and fears. They will feel more adaptable and confident that they can cope with change.”

If developments in environmental studies and non-formal education are to be implemented, it would seem important to proceed with objectives such as this firmly in mind and to examine very carefully whether any proposed activity is, in fact, likely to lead to their attainment.

The Components of Competence — A Summary

We have discussed a large number of components of competence which one author or another has suggested that teachers might be able to foster through interdisciplinary, project-based, enquiry-oriented, educational activities grounded in out-of-school visits. These have included confidence in dealing with others, the ability to understand how society works and to influence what happens, leadership, initiative, decision-taking ability, willingness to work for the longterm good of Mankind, and the ability to communicate effectively. A detailed list of such competencies, as identified in this and other research, will be found in the author’s companion book Competence in Modern Society: Its Identification, Development and Release (1984). Here it is sufficient to suggest that these components of competence fall into three broad areas:

1 Value-Laden Competencies like initiative, leadership, and the ability and willingness to analyse the way organisation and society work, make explicit their implications for the ways in which one should behave oneself, and willingness to follow through such thought into action, monitoring its effects in order to learn more about both the situation one is dealing with and the effectiveness of the strategies one has adopted.
2 *Perceptions and Expectations relating to the way society works and one's own role in that society.* Under this heading we may group pupils' self-images and the way they think their society works and the way they think of their own role in that society.

3 *Understandings of concepts dealing with relationships in organisations*—terms like leadership, democracy, responsibility, and citizenship.

**The processes to be used to foster these qualities**

We have spoken at some length about the activities in which pupils will need to engage if they are to develop the understandings and components of competence with which the authors whose writings and discussions we have reviewed have been concerned. But it is necessary for teachers to do more than initiate pupils into individualised, competency-oriented, programmes of growth. It is also desirable for them to provide their pupils with the concepts they need to think about their values, interests and areas of competence, and about the types of mental, emotional and physical activity which are required as a basis for effective behaviour. It is desirable for the teachers themselves to share their normally private thoughts and feelings with their pupils, so that they can see how to behave in competent ways. Moral development is likewise to be promoted in this way. Adults who share with children their thoughts about the long-term consequences of their actions permit them, not only to see them engaging in essentially moral behaviour, which involves consideration of the long-term social consequences of alternatives, and trying to understand and influence the society in which they live, but also to understand and appreciate the value dilemmas which are inevitably involved in moral decisions. Mrs McCullen presented her pupils with an admirable role model for adventurous behaviour and encouraged her pupils to consider the dilemmas she faced and share in her hopes, her anticipations, her fears, her planning and her feelings of frustration and accomplishment. It is also desirable for teachers to encourage their pupils to experience the feelings of success and frustration which accompany different styles of behaviour.

Enquiry-oriented programmes of education based in out-of-school visits have the advantage of enabling teachers to get to know their pupils' interests and acknowledge their areas of competence. The growth of children's competence is greatly facilitated if the adults who are looking after them acknowledge that the children
are, on the whole, competent to cope on their own, and interested in learning and developing. In such cases they are prepared to put the children in demanding situations which call on them to exercise the abilities they possess in order to achieve goals they care about. This is unlikely to happen if, as is so often the case, teachers are unaware of the resourcefulness of their pupils and their ability to rise to challenging situations. It is also unlikely to happen if teachers think, as previous research shows is often the case, that their pupils are trivia-minded and have to be forced to work in order to accomplish anything worthwhile.

The growth of competence is also facilitated if adults are able to interpret children's responses and gestures and, as a result, realise when to demand that the child cope on his own and what to do to create an opportunity for him to do something which he wants to do, but cannot articulate. Teachers who know their children well are in a much better position to do both of these things than are those who do not. Jointly organised and planned out-of-school activities yield an excellent opportunity to do this.

Teachers who know children's interests and abilities are also likely to create situations in which those interests and abilities can be exercised. They therefore tend to create more diversified learning environments, in which pupils practise and develop a much wider range of skills and abilities than is commonly the case, and in which those abilities are recognised and appreciated. In relation to assessment, the main question in the teacher's mind then becomes "What is this pupil good at?" rather than "Where does this pupil fall on a scale of general ability?" It therefore becomes possible for all pupils in the class to be found to be good at something, and therefore to be treated with respect, to be esteemed by their teacher, and to develop a sense of worth and competence. Furthermore, the pupils do not have to compete with each other so much in order to gain their teacher's esteem. As a result, there is more supportive and developmental atmosphere in the classroom.

Through the processes which have been described, discipline also becomes less of a problem. The teachers discover that, provided they create an appropriately diversified learning situation and recognise the value of a wide range of contributions and types of development, it is not necessary to goad their pupils to work. They discover that their task is to manage motivation by identifying interests and spotting the incipient cues which indicate that particular pupils will shortly engage in disruptive activity if appropriate steps are not taken in the interim.
Summary and Conclusion

In this chapter it has been argued that, behind much diffuse writing about the objectives and methods of a range of “innovatory” activity in primary schools (eg non-formal education, enquiry-oriented education, project-based education, progressive education, and “discovery method”) lies a common concern which has rarely been made explicit and which is to be sharply distinguished from the most common concept of education—which is to transmit knowledge. This concern is to promote the development of a much wider range of value-laden components of competence, or talents.

We have also seen that the attempt to force discussion of these goals and objectives into the traditional tri-partite framework of knowledge, skills and attitudes to be fostered does violence to their integrated, self-motivated, value-laden nature. As one of the headteachers we interviewed noted, such qualities can only be meaningfully fostered and assessed in relation to pupils’ individual priorities, intentions, and interests.

It emerged that the processes to be used to foster such motivational dispositions included individualised, enquiry-oriented, project-based, programmes of personal development grounded in out-of-school visits which aim to investigate topics to which the teacher does not know the answer. The importance of the teacher’s not knowing the answer is that it makes it possible for her to engage with her pupils in the processes of scientific enquiry, the processes involved in generating a historical account, and the processes involved in organising material and reporting the results of enquiries. The processes involved in all these areas involve inventing, creating, analysing, classifying and summaising instead of absorbing the received wisdom of the past. However, such enquiry-oriented activities are not the only way of achieving these goals. Other activities like role-playing sessions and educational games can also be used.

We further argued that teachers could support such individualised, competency-oriented, programmes of growth by sharing their own, normally private, priorities, values, and thought processes with their pupils and by involving them in that process. And we argued that they could support it by providing their pupils, collectively and as individuals, with the concepts they need to think about their talents and those of their fellows and how they could be developed, released, and capitalised upon.
While the above may now seem obvious, it must first be stressed that it is a position which was not made explicit in any of the materials we have reviewed. Thus, not only has this position not been made explicit in any of the materials we have reviewed on non-formal education, environmental studies, or zoos or museums education, it has not been made explicit in writings on progressive education either. Thus, as Bernstein (1975) has shown, the multiple goals of which we have spoken remain implicit in the Plowden (1966) Report. Nor is the position we have developed acknowledged in Cremin’s (1961) authoritative review of the history of progressive education in the United States. In his book, Cremin reproduces Neil Curtis’ celebrated account of his Boats Project (carried out in Flexner’s Lincoln School) shown on the next page. The account remains distinctly content- and skill-oriented, with a hint of introducing pupils to new interests. It contains little suggestion of using interests to foster dispositions or competencies.

This oversight, it would now seem, must be viewed as unforgivable in a text on progressive education—for it has led to a situation in which authoritative research and policy reviews (like those of Bennett (1976), the ORACLE Team, Smith et al (1980), and Goodlad (1983) can proceed with scant reference to the existence of areas of competence beyond the 3 Rs.

It would therefore appear that a number of people connected with Zoos and museums education, enquiry-oriented education, non-formal education, and environmental studies have what can only be described—in the light of the remarks which have just been made, the results of the HMI Survey, our own classroom observations, and our postal survey—as very high aspirations. Yet, as work we have described earlier shows, these aspirations are not unrealistic.

At this point, however, the fact that many of the wider goals which have been mentioned have to do with fostering the motivation to good citizenship must be emphasised. Good citizenship involves the tendency and the ability to understand broad social, physical and political processes, analyse their causes and consequences, and take on oneself responsibility for intervening in those processes. All of these objectives have become much more important as organisations have grown larger and we have moved toward an administered world in which managerial ability and personal responsibility have become more important. Yet one still feels almost as if an attempt is being made to introduce educational activities directed toward these goals through the back
A UNIT OF STUDY
RELATED TO
BOATS
THIRD GRADE

STIMULATION

In the spring of last year many of the boys of this group were interested in trains and other means of travel.

Many summer experiences with boats.

Wood in supply box cut in shapes suggestive of boats.

Bulletin prepared by the teacher.

Trip to see Half-Moon.

Trip to see boat models.

PROBLEMS-QUESTIONS

To construct boats that will look like a certain kind and with which children can play.

How do boats “go”? Who first thought of making a sailboat?

How did people get the idea for different shapes for boats?

To know more about the people who traveled on the seas in early times.

To find out about the making of boats.

How many different kinds of boats do we have today and how is each kind used?

How did early people use their ships?

To find out about the different parts of a boat.

How do people know how much to put into a boat before it will sink?

SUBJECT MATTER CONTENT WHICH HELPED SOLVE THE PROBLEMS

INDUSTRIAL ARTS

Construction of boats: Making pattern, shaping hull, making sail, making keel, casting weight for keel, making rudder for keel, and tacking boat. How boats developed from early times to the present day. The difficulty involved in building a toy boat so it will balance in water. Different kinds of sail boats. The need for a keel on a boat. Different methods of propelling a boat. Modern inventions in connection with the propulsion of boats. What makes boats float. Different uses of boats today.

HISTORY

The Half-Moon directed interest to Hendrick Hudson and his ship. Historic ships: Santa Maria, Mayflower. Reference work, reading and discussion about: Vikings: What color and kinds of clothing did they wear? What did they eat? What kind of houses did they have? What were their boats like? Did Vikings have stores? How did Viking writing look? Story of Lief Erickson. The gods of the Vikings. Their beliefs. Phoenicians: Scenery, boats, people, trade, beliefs, clothing, cities, industries, etc. Egyptians: Scenery, country, boats, balls, tools, writing, etc. Story of the building of Solomon’s Temple. Early Mediterranean peoples.

GEOGRAPHY

Pictures of boat from newspapers which interested children in world geography. Geography related to countries studied: Norway: Country, climate, people and occupations. Phoenicians: Country, climate, people, trading routes, daily life of early people compared with that of today. Egypt: Country, climate, trading, etc. May interest: Norway, showing ancient home of the Vikings. The Mediterranean countries, showing cities of Phoenicians and routes on which the King of Tyre sent materials to Solomon’s Temple. Plasticine map of Mediterranean Sea and surrounding countries on which children sailed card-board models of early boats. Globe in frequent use to locate places mentioned. Outline world map, locating countries. Interest in determining distances (reading scales on map). How far is it from Norway to Phoenicia? How far is it from Norway to America? Building Lower Manhattan on blocks to exhibit boats. Map was drawn on floor; buildings in New York City that helped most with sea travel.

ARITHMETIC

Measuring for boat patterns and measurements in boat making. Figuring the number of board feet used by class in building boat. Difference in displacement and floating objects. What is a gram? Dimensions of Solomon’s Temple compared with dimensions of the Lincoln School. Children saw a cubit measure at the Museum.

FINE ARTS


COMPOSITION—LITERATURE

Stories written about the trip to see Half-Moon. Stories of other trips by individual children. Original poems about boats and the sea. Labels and invitations for boat exhibit. Written and oral reports about boats, Vikings, Phoenicians, etc. Stories for bulletins, room paper, council news, or absent class members, telling of class interest and study.

READING

Reference material pertaining to topics under discussion, found in school library or at home. Children’s reading material: Lief and Thorkle, Viking Stories, Early sea people. Boat Book prepared by other Third Grade, material prepared by student teachers.

SCIENCE

How can we tell if our boats will float andbalance? Try out in delta table.

Three experiments: Why do some objects float and why do some sink? How do people know how much to put into boat before it will sink?

DRAMATIZATION

Play—Story of Lief Erickson, spontaneously prepared by class.

MUSIC

## Probable Outcomes

### Desirable Habits and Skills
- Better skill in sketching.
- Better skill in handling brush and paints.
- A beginning of the development of how to sew.
- Developing the habit of making a pattern before constructing an article.
- Developing skill in shaping wood by means of plane and spokeshave.
- Developing skill in using gouge and mallet.
- Developing skill in reading distances on map.
- Rapid growth in map drawing.
- Developing habit of reading the newspaper.
- Better skill in measuring.
- Ability to gather information on a certain subject and reporting to class.
- Increased ability in writing.

### Attitudes and Appreciations

#### Economic:
- An appreciation of the use of weights and measures.
- What it means to construct a real boat that will float and balance properly.
- Appreciation of the change in the lives of the people caused by the discovery of iron and the use of sails.
- Appreciation of paper as a writing material.
- Appreciation of the modern inventions in connection with the propulsion of ships.

#### Social:
- What the early people contributed to the world.
- The number of people and industry it takes to supply materials for the construction of one building.
- Comparison of the ideas of fairness of the early people with the present day.

#### Recreational:
- Developing a joy in painting, sketching and drawing.
- Growing interest in reading books about historical peoples, inventions or boats.
- Playing with boats made.
- Interest in the construction of a toy-boat.
- Interest in the construction of a real boat.
- The pleasure in making maps.
- The pleasure of playing with maps.
- Aesthetic:
  - Appreciation of the beauty in line and construction of boats.
  - The adventure of the ship.

#### Information
- Knowledge of the development of the boat from raft to steamer.
- Who Hendrick Hudson was.
- General idea of historic ships.
- An interesting acquaintance with Vikings, Phoenicians, and Egyptians.
- General geographical knowledge of the world.
- What a cubit measure is.
- Knowledge of how to draw maps.
- Some idea of what makes objects float.
- Some idea of how to make boats balance in water.
- Some idea of how to construct a toy-boat.
- How the early people made their clay tablets.
- How to make a clay tablet.
- The need for molds in casting metals.
- Some idea of how iron is made into different shapes.

## New Interests

### Total Personality as Modified by the Foregoing Experiences

- Interest in world geography and travel.
- Maps and actual distances between given places.
- The time it takes to get to certain places.
- Interest in silk through answering the questions: What kind of clothing did the Vikings wear? How is velvet made?
- Interest in what clay is: How it is prepared for our use and how it was prepared by early people for making clay tablets.
- Interest in the Egyptian and Phoenician alphabet and how our alphabet was developed from it.
- The materials the Egyptians used for writing.
- Interest in metals.
- Interest in weight of different metals through casting of lead for keels.
- How metals are shaped.
- Interest in the construction of modern buildings through reading about Solomon's Temple and comparing it with the construction of the Lincoln School.
- Interest in other phases of transportation.
door. It may be, therefore, that the very fears and dilemmas which prevent civics education finding an explicit place in the curriculum—fears of political brainwashing and the imposition of values—will operate to deflect schools from the wider goals of which we have spoken.

There may be good reasons, therefore, why what many consider to be the most important objectives of education have in general been left implicit and unstated: Because the attitudes and perceptions to be cultivated are value-laden, and involve political and sociological understandings, they would have been controversial and divisive had they been made explicit. Unfortunately, left implicit, they are difficult to communicate to others and so can easily be overlooked and neglected by teachers.

This thought prompts two further observations. First, if the fear of political indoctrination and the imposition of values is driving important competency-oriented educational activity out of schools, parents and pupils ought to be offered a choice between different types of educational programme demonstrably and effectively directed toward specified goals. Second, since failure to tackle this problem is forcing teachers to behave in incompetent ways, one competency which teachers need to develop is the ability to understand and influence the wider social forces which deflect them from their goals. One reason why Mrs. McCullen was able to pursue her goals effectively was, after all, that she devoted considerable energy to influencing the priorities of parents, regional advisers, and secondary school headteachers.
CHAPTER 6

BARRIERS

While ideas which twinkle with innovatory potential were found in profusion in the schools we visited, and while these burst into a positive gleam in some places, we were frustrated in our efforts to pursue one of the tasks assigned to us. While we were able to provide a (rather bleak) evaluation of the links established between primary schools and agencies of non-formal education, and while we were able to show that some schools used these opportunities as means of moving towards goals which, as the Inspectors’ Report and the ORACLE Study showed, are often neglected in schools, we were not successful in finding shining examples of the types of educational activity which the head teacher of one of the large innovative schools we visited, we ourselves, and the Inspectorate would have liked us to have been able to portray. With the Inspectors, therefore, we found our minds turning to the question of what the blocks to development might be.

In our quest to make these barriers more explicit, we found no better place to start than by looking again at what happened in a large, urban, innovative school. The Head not only emphasised the crucial importance of objectives like fostering pupils’ ability to muster arguments and the ability to lead and to follow, but also emphasised that such qualities could only be fostered if the pupils concerned were engaged in activities which they personally cared very much about. He had therefore implemented a policy of out-of-school visits, arranging, with parental support, for a mini-bus to be available. His policy was that no child should go on any visit in which he or she was not interested. He had also arranged for parents to participate in the programme in order to create a more mature atmosphere, and so that their talents and abilities would be available to the school. Despite all this, while the school admittedly did a great deal more than many other schools, it did not ‘hum’ quite as the Inspectorate, the Head, (and, to be honest, we ourselves) would have liked. Why not?

Part of the slippage between the Head’s objectives and what happened in the school is undoubtedly to be explained by the fact that there is no satisfactory framework for discussing and thinking about the competencies mentioned by the Head and how they are to
be fostered. It is too easy, as the Head himself noted, for visits to become ends in themselves, in which the implicit objective is to convey to pupils a knowledge of some such topic as the way in which tea is packed. Such visits confer few developmental benefits on pupils. They are obviously not planned with broader educational and developmental goals uppermost in the teachers’ minds. Yet it is difficult for teachers to keep these goals at the centre of attention—because they do not have the vocabulary they need to think about the qualities which are to be fostered and the ways in which they are to be fostered*. 

Another component in the explanation of the slippage between the Head’s goals and practice is the problem of justifying work he valued to other people—to parents, to secondary school headmasters, and to Directors of Education: where are the benefits of all this work to be seen? Has the work deflected the school from ‘the basics’? (An excellent case study illustrating the way in which these processes deflect educational institutions from competency-oriented goals will be found in Adams, Robbins and Stephens, 1981.)

A third factor is the widely expressed view that education should not be related to individual values. In the case of this school this view found expression in a belief, held by some teachers, that children should be introduced to interests through visits, rather than developing the components of competence which their head teacher hoped they would foster through visits tailored to their interests. While the main reason for this re-interpretation of the goals was, again, a failure to grasp the importance of competency-oriented goals, active resistance to the idea that educational programmes should be tailored to individual interests, priorities and values was also present. It was felt to make too many demands on the teacher, and it smacked of pandering to pupils’ whims and ‘spoiling’ children.

But there was another process at work too, and it is on this that we propose to focus in the remainder of this chapter. This wider problem is essentially a management problem, and it can be brought into focus by noting that the innovative Heads of two of the small rural schools we visited had relatively little difficulty translating their ideas into practice, while the innovative Head of

* This problem is clear in Pamela Mays’ recent book *Teaching Children Through the Environment*. Had the book been entitled *Facilitating Growth Through the Environment* its content would have been very different and it would have come much closer to meeting the need identified here.
this large school, in contrast, had great difficulty implementing his clearly thought out ideas. The reason is obvious: he had to get his teachers to translate his ideas into action instead of putting them into practice himself. The question then becomes: what management style, and what organisational structure, would enable the Head of a large school to release innovative activity on the part of his staff? What management style would allow the Inspectorate to release more innovative activity on the part of many teachers? The Head of a large school is doing a different kind of job from the Head of a small school. Yet, head teachers (and most managers in our society) are appointed because they are good at doing their previous jobs and not because they have demonstrated a capacity for managing innovation in a larger organisation. Unfortunately, just as the social and educational sciences have not, as yet, been able to come to significant conclusions about the nature of competence and how it is to be fostered and assessed, so neither have they yet been able to specify how to create a climate of innovation in an organisation or society. It is important, therefore, that we use the opportunity provided by the present project to try to explicate both these sets of issues.

Before moving on it is, however, worth noting that some constraints on a manager arise from outside his organisation—in this case from parents, secondary school head teachers, and Directors of Education. Thus, the manager's task is not just to create a climate conducive to innovation within his organisation, but also to gain control over forces from outside.

In the discussions which follow, we have drawn on understandings built up in the course of previous projects. This previous research is summarised in Raven, (1977), Raven and Dolphin, (1978), and Raven, (1984). From that work it would seem that aspects of organisational climate conducive to innovation include: the clarity of the organisation's goals, the procedures which are to be followed to reach them, and the procedures which are implemented in order to clarify emergent goals and procedures; the rewards and recognition provided for innovatory behaviour; the extent to which responsibility for achieving innovatory goals is delegated to individuals; the climate of support for innovation; and the removal of organisational and resource-based barriers to innovation. The remainder of this chapter will be organised under these sub-headings.

Although most of what we will have to say about a climate conducive to innovation will be based on our case study of the
larger school already mentioned, our discussion of the first two issues—Clarity and Reward and Recognition, already alluded to in the introductory paragraph of this chapter—will be more broadly based.

**Clarity**

Like Bennett, we met many teachers and pupils who did not appear to have the words they needed to think about the wider goals of general education and the ways in which they were to be achieved. In an effort to work out for themselves what the purposes and procedures of the project work in which they had been encouraged to engage might be, several teachers had stumbled on objectives like “developing mapping skills”. Such objectives, while representing a shift from a knowledge-oriented toward a competence-oriented educational process, proved to be incapable of organising, and giving meaning to, wider activities and larger areas of work.

The benefits of having access to a more broadly based organisational framework can be illustrated by citing another teacher who described the activity in which she was engaged as “encouraging her pupils to be detectives—to look for clues and think about their implications”. Elaborating on this, she explained that her pupils would, through this process, not only discover new material, establish mental connections between sets of materials, and communicate new information to others, but also that the actual processes involved in doing all of these things were very important. She encouraged her pupils to think about all the activities in which they were engaged in this way, whether they were “doing” science, history, or geography. The result was that her pupils practised being scientists, being historians, or being geographers, instead of learning about science, about history, or about geography. They therefore developed the skills of the scientist, historian or geographer, rather than a knowledge of limited areas of conventional and out-of-date wisdom in science, history, or geography.

While this account illustrates the importance of having clear concepts to think about objectives and processes, something else is, perhaps, of more importance from the point of view of stimulating innovation. Because we will return to it later, it is sufficient to note here that, in the process of innovation, many people are not initially clear about the objectives which are to be pursued and the ways in which they are to be pursued. It is, therefore, more
Important for managers of innovation to focus on implementing organisational processes which will lead those concerned to become clear about what they are trying to do, the ways in which they are trying to do it, and the barriers to effective action, than it is to feed in specific concepts.

Recognition

Clarity about goals and the process to be used to reach them is not in itself sufficient to promote innovative educational activity. It is also essential that those concerned be able to find out how well they are doing (so that they can improve their performance) and for others to be able to identify what has been accomplished. The work of the teacher just mentioned may be used to underline the implications of this statement.

In the course of encouraging her pupils “to be detectives” she had led each of them to develop unique and specialist stores of knowledge in the areas of science, history or geography. This is to be contrasted with the low-level, poorly-understood, and poorly-articulated knowledge of minute areas of dead science, history, or geography, selected by the teacher, which most pupils in most schools learn to master. The problem is, however, that conventional educational assessment procedures would be quite unable to give the teacher or her pupils credit for the idiosyncratic, personally meaningful, coherent, integrated, and specialist areas of knowledge they had developed. Most of it would fall outside the ‘domains’ ‘measured’ by ‘attainment tests’.

This, however, is the least significant of the measurement problems posed by such work. We have seen that, by adopting the educational process she did adopt, this teacher led her pupils to develop the skills, motivations and attitudes of the scientist, historian and geographer. Traditional educational assessment procedures are quite unable to measure progress toward such goals—fundamentally important though they are.

But there is still worse to come. In the course of facilitating the development of these ‘detective’ skills, the teacher concerned fostered in her pupils different competencies and perceptions of their strengths and talents and what they could therefore contribute to society. One pupil became good at making explicit what members of the group were thinking; another became good at setting things down in words so that they could be communicated in writing; another became a good ideas man, able to generate fresh ideas for the group; another took on himself the task of getting the
group to work together effectively; and yet another the task of getting outside help for the group. Conventional measurement techniques are unable to give pupils credit for growth in these personally and socially important, if personal and unique, competencies.

Not only do conventional measures prevent teachers from giving pupils credit for this growth in knowledge, competence, and ability to think about their personal talents and contributions, and those of others, they also make it impossible for schools to plan and monitor the growth of each pupil’s areas of competence from one year to the next. Consequently, a Primary 4 project may well lead pupils to practise exactly the same competencies as they practised in Primary 3—because there is no way of organising the school’s programme of project work so that it will build on the skills, strengths, self-images, and patterns of motivation which the pupils have developed in previous years.

It is not only the growth of the pupils which cannot be monitored, fed, and credentialled. There is no way of monitoring teachers’ progress toward these objectives either. The Head Teacher of the large school on which we will be basing much of the discussion in this chapter was very concerned about the failure of some of his teachers to implement the educational processes in which he believed. He wondered why they weren’t more responsive. He ventured the opinion that, perhaps, they might be just plain lazy. But he was unwilling to intervene in the situation because he found that, at the end of the day, he could not distinguish between those pupils who had been in the classes of the teachers whom he deemed less innovative and effective, and those who had been through the sorts of programmes he encouraged. He needed means of detecting the outcomes to justify management intervention. In other words, he needed educationally-oriented quality-control, or accounting, procedures.

In the light of what has been said, it is appropriate to summarise the types and functions of the assessment procedures which are needed. One must be able to:

- identify individual pupils’ interests.

- identify personal strengths and weaknesses in pupils’ competence to pursue goals in which they are interested.

- plan individualised, competency-oriented, growth experiences

128
which provide continuity in growth (or at least cyclical development) from one project to another.

- *discover* when the pupil needs help from his teacher—so that teachers can indeed become facilitators of growth instead of instructors.

- *document* the effects of the programmes so that the school can demonstrate its effectiveness in this area and so that appropriate steps can be taken to intervene when all is not well. (*Group* assessment procedures would work here.)

- *credit* individual pupils for the qualities they have developed when the time comes to scramble for a job or to take further educational programmes.

The task of developing means of performing these functions, of working with teachers to develop a much more explicit framework for thinking about goals of competence-oriented education, the way they are to be achieved, and the way progress toward them is to be detected, is clearly a heavily research-based activity.

Yet here we come to another apparent barrier. Many teachers think it is not ‘real work’ for researchers, still less for themselves, to engage in such fundamental analytic and development activity. Furthermore, many teachers seem to have difficulty using general frameworks to think about their goals, about growth, and about the way in which growth is to be facilitated. In the course of our interviews they often said that they wanted kits or packaged procedures, and they often appeared to seize on any kits they were offered without, apparently, carefully examining the objectives the materials were supposed to achieve, or even how they were to be used. As one head teacher pointed out, that comment applied even in such traditional areas as mathematics teaching. He quipped that Fletcher was the most widely used unread maths text which existed.

While, therefore, it might, at first sight, seem appropriate to do more (as we have tried to do in this book) to spell out the goals of competence-oriented education and the way in which they can be achieved, there are reasons to doubt that this alone will enable such goals to be achieved unless such work is set in the context of a general climate which is conducive to innovation in schools. We will discuss the steps which are needed to do this shortly, but first let us re-examine the question of resources—the absence of which was often cited as a reason for not engaging in more project-based activity.

129
Resources

The problems most often cited as barriers to more effective work in the area we have been concerned with in this book were the absence of time and personnel, the absence of materials, and the absence of money. Relatively few (only 9%) cited lack of personal knowledge, skills or confidence—although some cited lack of self-discipline among their pupils. As has been indicated, however, our own impression was that the main barrier (other than the absence of an assessment-based support system and a climate of innovation) was a lack of personal resources—confidence, commitment, and understanding of educational theory. How else could one explain the fact that one school had no difficulty in finding the wherewithal to take pupils on visits, whilst the school across the road claimed that it had no money, no personnel, and no resources to carry out such work? The second school declined to raise money from parents, or to involve parents as support personnel—arguing that, if the activity was really important, then the local authority should provide both money and professional personnel (otherwise, disadvantaged children would be further disadvantaged).

Nevertheless, a number of teachers in innovative schools did identify areas in which an investment of time, money, or both, would considerably facilitate their work.

A problem which was frequently mentioned was the lack of availability of, or of the existence of, or knowledge of the existence of, suitable resources, especially films and film strips.

It is necessary to emphasise, however, that provision of the sort of resources which most of the staff had in mind would reinforce their orientation toward knowledge goals, and fail to stimulate recognition of the importance of other areas of competence and the strategies that are required to foster such competencies. More appropriate than the provision of such resources for teachers to use with pupils might therefore be the provision of resources which aim to develop teachers’ professional competence. These might include educational games, simulation exercises, and role-playing scenarios. They might include literature and case studies which would form the basis of staff seminars dealing with the nature, development and assessment of competence. Also of value might be seminars within schools, possibly involving outside speakers, especially if these visitors could be cajoled into working with the teachers in a curriculum development capacity over a period of
time, to evolve more effective means of achieving the school's goals.

Another commonly cited barrier was the time required to prepare and collect resources for projects. Those who mentioned this would have preferred to have prepared the projects up to a term in advance. Unfortunately, and, they said, inevitably, they found themselves devoting almost all of their available time and effort to the projects of the present. This difficulty has been documented in other schools, such as Countesthorpe (Watts, 1977). Sometimes the difficulty is tackled by making use of clerical or auxiliary staff, unpaid parental assistance, or by paying a responsibility allowance to a senior member of staff and/or reducing his or her teaching load to co-ordinate all available resources and develop access to, and institute means of communication with, outside bodies.

As has been mentioned, many of the 'resource' problems could be reduced if there were a change in teachers' priorities and, in particular, if less attention were focussed on the areas of knowledge to be 'covered' rather than the skills to be developed—for it would not then be necessary to assemble resources to be called on by the teacher. However, this task would be replaced by the problem of finding the time needed to plan, implement, and monitor individualised programmes of growth. While, to a degree, the problem of finding and co-ordinating resources into a 'plan' could be reduced, it would still be necessary to assemble a resource centre for pupils' use, to arrange to catalogue additional resources the pupils had introduced, and to establish some formal mechanism for keeping track of 'resources' or 'field centres' available in the community. While it is, therefore, not yet clear to what extent the release of teachers from traditional formal teaching activities would yield the time necessary for these other activities, it would appear unlikely that it would yield all the time which is required.

Management Activities

We come now to one of the most important sections of this chapter. It concerns management. On the basis of the previously referenced research into the management of innovation, it seemed appropriate to enquire whether the Head of the large innovative school which we have so often used to illuminate the processes under discussion had done certain things. These will be discussed under seven heads.
CREATION OF A CLIMATE CONducIVE TO INNOVATION

A climate conducive to innovation within an organisation would seem to involve at least the following:

- a belief that it is *important* to innovate, instead of believing that the old ways are best.
- positive enthusiasm, rather than scorn, for new ideas and innovative individuals.
- provision of help and support when difficulties are encountered, instead of making discouraging remarks like “I said it wouldn’t work” or in other ways undermining the activity.
- a tendency to seek out the innovatory potential in an idea, rather than focus on its limitations and the practical problems which its implementation would generate.
- a tendency to monitor, and share, up-to-date ideas and innovations from outside the school.
- disapproval of any member of staff who does not display the dedication, commitment, energy, and initiative required to reach high standards in innovative activity.
- recognition of the wide range of roles required for innovation, and willingness to acknowledge the value of different contributions to the overall process—rather than insisting that everyone should do his own research and reading, be his own ideas man, make his own contacts, form his own support group, make his own materials, and so on.
- a review mechanism designed to permit those concerned to find out whether innovative goals had been achieved and, if not, explore the reasons for failure and the steps which would need to be taken to overcome the barriers which were identified.

To what extent had the Head of the school we are concerned with here been able to create such a climate? What else could be done to influence it? The Head himself mentioned selection of staff, but there may be other things he could do. These might include arranging for regular reviews of:

(a) The climate of support for innovation. This could involve clarifying the roles which different members of staff might take within the school. In fact, the Head of this school arranged first for a teacher to attend courses in micro-
computer programming and then to instruct other teachers and children in their use. The teachers concerned then wrote programmes for use in their own classes. Sometimes they collaborated on programme writing.

(b) The ideas which might be tried out. This might be done through a programme of seminars, in which both school staff and others would try to become clearer about what they were trying to do, how it was to be done, and how to support each other in their innovative activity. In fact, in this school, when the staff referred to staff meetings, it became clear that these meetings sometimes involved discussion of aims and objectives in education. The Head Teacher also said that he sometimes did not attend staff meetings so that the teachers could discuss issues more freely. These meetings were not for all staff—instead, the teachers of two or three year groups met together. It was felt that these smaller groups facilitated discussion and collaboration. It was also felt that, in the event of a practical decision being made, these groups would have a further advantage in that the teachers concerned were already in very close contact with others working under similar conditions, and could thus implement their decisions quickly.

(c) The goals to be achieved by each member of staff and their progress toward them. Simply making the goals to be achieved and the procedures to be used to reach them explicit might have a galvanising effect if carried out in a supportive, rather than critical manner. In fact, the Head Teacher stressed that he held informal discussions with individual members of staff about the environmental studies programme for their class. In this way he could help them to articulate their goals and the means to be used to reach them.

The effective implementation of activities of this sort demands high level leadership. This includes being able to do such things as detect unarticulated viewpoints which lie behind expressed opinions, handle interpersonal relationships, build teams, and intervene effectively in group discussions to prevent undue criticism of innovative ideas.

2 INVOLVEMENT OF STAFF IN MANAGEMENT AND DECISION TAKING

To be effective as a means of stimulating innovation, it is not enough merely to consult staff. Do they contribute to setting
innovatory goals in the school so that they fully understand them, and in such a way that they personally accept responsibility for innovation in the course of doing their very best to achieve the school’s goals?

There is no doubt that staff were consulted:

*Mrs C said that in the six years she had been at the school she and all staff had always been consulted about anything major happening in the school. She agreed that, perhaps because staff had been consulted about programmes of work, then maybe they had been more inclined to make them work, but also volunteered that, in her opinion, because everyone had a hand in writing the programme then they were near what everyone was aiming at. She also said that the consultation and a long-term stable staff made it much easier for people to work together and get used to each other and the way they are expected to work.*

Another teacher drew attention to how the staff can use this atmosphere of consultation positively. She also drew attention to the teachers’ identifying weaknesses in the school’s programme.

*When asked about a “patchy historical view of Scotland”* a potential outcome of teaching history through projects she said that she felt that this might previously have been the case in the school, but a few years ago they had got together to prevent it by working out an overall programme which was as follows:

- P4 General History and Geography of Scotland
- P5 Mediaeval Scotland
- P6 Victorian Scotland
- P7 Two World Wars with reference to Scotland.

Despite the evidence of consultation, though, it is not entirely clear that this had led the school to adopt the Head’s goals as fully as he would have liked (which is not to deny that a great deal of movement had taken place).

In this context, the discussion of ‘patchiness’ is of interest, because it focusses on a knowledge goal—a knowledge goal which is implicitly uniform across all pupils and of doubtful value to most pupils in their future lives. It also overlooks the potential goal of fostering the skills of the historian or the social analyst, and the teaching of the concepts needed to think about and make sense of social processes in modern society (as well as a large number of

*The quotation is from Learning and Teaching in Primary 4 and Primary 7*
other potential goals of history teaching, such as using the study of values and their social consequences to help children to think about and clarify their own values). The sense of order which the teachers had imposed was a sense of order in knowledge.

This is not to say that resolution of the problem is easy. The attack—patchiness in knowledge—is based on a framework which the Head does not entirely accept. Yet an alternative framework—continuous growth over the four years of idiosyncratic competencies and specific areas of knowledge—is hard to envisage and talk about, never mind implement. It is not clear whether these problems were ever mentioned in the meetings which led to the above systematisation. Nor are they made explicit by the Inspectors in Learning and Teaching in Primary 4 and Primary 7.

The question of whether the goals which are set through consultative processes are on target is not, however, the only question which needs to be asked. Are the goals which are set realistic, challenging, measurable? Are processes of consultation set up to monitor how well they are being achieved and to see what could be learned from the attempt to achieve them?

In saying this one does not, of course, wish to imply that it is necessary to have frequent large meetings, or even that it is necessary to implement formal, written, attempts at evaluation. Rather, one might encourage a whole process of continuous involvement and consultation, in staffrooms, stairways, classrooms and elsewhere. Have efforts been made, one could ask, to involve all members of staff in consulting others outside the school—in other schools and in curriculum development centres—and in bringing these ideas back to the school and sharing them with others?

In conclusion to this discussion it may therefore be said that, while the Head had involved his staff in management and decision-taking (and done so more than most), and while this had the effect of engendering motivation, trouble-shooting activity, sharing in leadership, and enhancing commitment, it does not seem to have been as successful as it might have been in leading the staff to share the Head’s goals, to clarify new goals in education and the means to achieve them, or to the creation of a climate which was strongly supportive of innovation in the school.

3 ESTABLISHMENT OF REVIEW MECHANISMS

In establishing a review mechanism for individual members of staff, it would seem to be of particular importance to ensure that
goals which are personally challenging and innovatory, but realistic and measurable, are set and reviewed for each member of staff—not necessarily on a formal basis, but at least through some informal process.

One of the problems is, of course, that, in the absence of appropriate psychometric tools, many of the goals which the Head would have liked teachers to attain are not measurable. It was for this reason that he declined to intervene in the activities of the previously mentioned teacher whose work he did not value very highly; he could not distinguish between her ‘products’ and those of other teachers whom he considered to be more effective. While such a focus on outcomes has much to commend it, and while it shows a commendable restraint in relation to the often-made assertion that “I know what good teaching is”, the effects of his unwillingness to focus on educational processes—on what goes on in classrooms rather than on outcomes—were clearly not quite what he wanted. It can therefore be observed that, to a degree, he failed to act on the basis of his judgement when no facts were available to support it. This is a problem which frequently plagues managers in our society—for there is often no way of finding out whether their judgements have been correct.

If time could be found, a non-threatening review procedure, whereby individual teachers could review their goals, the steps which were being taken to achieve them, and ways in which progress toward them was to be detected, might confer important benefits. Our own study of the ‘spider diagrams’ which teachers prepared to organise their ‘project work’ showed that the focus was almost exclusively on low-level language skills, craft work, and book-reference skills. It involved much ‘closed’ questioning and stressed academic skills rather than skills which would be of value to the pupils in life outside the ‘educational’ system.

Great care does, however, need to be taken when implementing formal review procedures. They can too easily become threatening, checking-up, procedures which lead to teachers setting goals which are easy to articulate, specify, attain and assess (cf Adams, Robbins and Stephens, 1981). Goals which are important, but intangible, hard to attain, and hard to assess, tend to be squeezed out.

Put another way, what we are saying is that the formal review process is less important than the understandings and procedures which accompany it. Those understandings and procedures must recognise the value of pursuing hunches; they must recognise that effective behaviour often involves the following, apparently
illogical, sequence: feelings—behaviour—emergence of understanding of the reasons for the feelings—and recognition (only lastly) of the real objectives and purposes of the activity. Review processes must acknowledge the importance of supportive, enthusiasm-generating discussion, rather than focus on assessment of the quality of previous performance. It is the cyclical improvement in depth of understanding which is important in innovation—and not the planning process itself—for one cannot plan an adventure into unknown territory with any precision: one can only take steps to avoid certain sorts of anticipatable disaster. Review processes which will support and stimulate innovation must be accompanied by the flexibility required to capitalise on 'chance' discoveries and follow up unsuspected leads. Reassurance and help is often needed to overcome the irrational fears and anxieties which swell up when one is blazing a new trail, and to overcome the unexpected problems and disasters which are inevitably encountered and which lead the participants to wonder whether all the effort was worthwhile and whether anything of value will come of it all.

Despite the difficulties involved in such a programme of activities, the exposure of pupils to a climate of committed and effective innovatory activity would surely do a great deal to foster the values, perceptions, expectations, and understandings which the Head so much wanted to foster.

4 DELEGATION OF RESPONSIBILITY

Delegation of responsibility, in itself, does not make for innovation—it can make for stagnation and inertia. However, set in the context of a climate of clear goals demanding innovation, a climate which stresses and supports innovation, a management process which stresses participation in the formulation of organisational goals, participation in decision-taking, and appropriate review procedures, delegation to individuals of responsibility to take initiative in pursuing organisational goals is essential. Without it, it becomes impossible to exercise judgement and discretion and initiate action based on feelings or hunches. Moreover, endless time is wasted trying to justify courses of action, before initiating them, to people who do not have the necessary contact with the problem, the external resources available, or the personal resources which can be brought to bear to pull the activity off. We are therefore talking about delegation, not of specified
pieces of work, but delegation of responsibility for discretionary judgement and decisions about which goals to pursue, and what to do to pursue them effectively. Accountability must therefore be in terms of the quality of the judgements exercised, and not merely in terms of completion of pre-defined tasks.

Clearly, at the school concerned, there was delegation of responsibility. The teachers did not need to check everything with the Head before they did it, and the Head was reluctant to intervene in the activities of individual teachers. It was not clear, however, that all understood that they were being held accountable for the quality of the judgement and discretion which they exercised in pursuit of the innovatory goals of the school. And no effective mechanism for holding them accountable in these terms appears to have been set up.

5 CONFRONTATION WITH CONFLICT

In creating a climate supportive of innovation, explicit steps frequently need to be taken to ensure that differences of opinion come out into the open and are acknowledged and dealt with. Nothing undermines the effectiveness of an organisation more than personnel who acquiesce in public decisions, but then question and undermine those decisions.

From our interviews in the school, it was clear that some of the teachers did not share the Head’s goals and avoided taking the action they had agreed to take in pursuit of them. This fact was known to the Head, who was concerned to do something about it—and saw the researchers as allies in this work. It appeared, however, that steps had not been taken to make fully explicit the reasons for the teachers’ resistance, and to consider what might be done to counter legitimate objections to the desired behaviour. Thus, nothing seemed to have been done to connect mutterings that “Primary X had too much freedom last year and needs to be given some work to do” with the differing goals of the teachers concerned.

Nor did the Head fully acknowledge the fact that phrases which he used, though accepted and used by some teachers, were interpreted in ways which were diametrically opposed to his own.

Once again, we are talking about a shared climate of beliefs to the effect that it is important to mull over and make explicit such differences of opinion, and that this need not be interpreted as a sign of personal weakness or animosity. We are talking about a
climate in which such differences of opinion are regarded not merely as not reprehensible, not merely as inevitable (and therefore to be concealed or attributed to ‘personality clashes’) but as positive tensions which are the springboards to action if fully surfaced and explored. Again we are talking about a climate conducive to exhilarating action and development rather than grim resignation to the problems of modern society. What could be more valuable to the pupils than exposure to a climate which showed that such actions were possible?

6 MECHANISMS TO PROMOTE APPROPRIATE CONTACTS AND SUPPORT OUTSIDE THE SCHOOL

It cannot be expected that everyone with whom innovatory individuals come into contact will be supportive of what they are doing. Indeed, the opposite is to be anticipated. If innovators are not to be defeated by the difficulties they encounter, it is essential for them to have contacts with others outside the organisation in which they work who will provide the necessary support, ideas, and encouragement. This means encouraging teachers to create networks of contacts outside their own school.

To this end, the head teacher had encouraged members of the Advisory Service to visit the school. He had encouraged his staff to become involved in Open University courses and in-service programmes. Three of the teachers told us enthusiastically about a course on problem-solving which they had attended. One had tried out the ideas to which she had been introduced, but found that the work undertaken was unsatisfactory and therefore discontinued it. She felt out of control. She felt that the children were involved in too much discussion and found that, although she had planned for eight weeks’ work, she covered that in about four weeks. She might have benefited from more supportive discussion. The others had followed the experiment, and were thinking about ways of combining their own and the problem-solving approach.

One specific area in which contact with others outside the school may be useful is the discipline area. Many teachers fear that discipline problems will arise if they take children out. But in none of the schools we visited was this the case. On the contrary, it was frequently emphasised that the practice of environmental studies and visits improved behaviour. This occurred because a closer relationship was established between teachers and pupils. On the one hand, the visits led the teachers to develop a better understanding of each child’s interests, strengths, patterns of
competence, and integrity. The teachers came to respect and trust their pupils more. The pupils, on their part, became more aware of the teachers' knowledge of, and interest in, them. These two processes together set up new patterns of mutual expectation. Both teachers and children became more sensitive to cues which indicated when the borders of toleration were being approached, and both knew what to do about it. Both could bring to bear a wider range of incentives and sanctions to control the other's behaviour. When parents were also involved in the visits (to the school or outside) things improved even more, because they became part of a web of personal relationships, mutual expectations, and shared information which exerted a developmental and stabilising influence on behaviour, and which made it relatively easy to deal with incipient problems as they arose. Giving doubting Thomases an opportunity to see the process at work and to experience the benefits would seem likely to be highly beneficial.

7 ABILITY TO IDENTIFY AND INFLUENCE WIDER SOCIAL CONSTRAINTS

Primary schools do not exist in isolation. What they can do is markedly affected by the expectation of pupils, parents, Directors of Education, members of the Advisory Service, and secondary school Head Teachers. Perhaps more fundamentally, what they can do is controlled by the role schools play in the process of social selection and placement, and in the legitimation of that process. These social forces find expression in the demands which parents make on schools and the coercive power of the assessment system. Wherever we went, we found that pupils had a very clear understanding of their parents' views on the value of project work and were clearly aware of the dilemma that spending more time on project work, while intrinsically beneficial and enjoyable, might lessen their chances of success in secondary school subjects.

The head teacher of the school on which we have focussed for most of this chapter had made significant efforts to influence the view of project work held by all the groups which have been mentioned. He had expended a considerable amount of effort on parents through newsletters, in direct discussion, involvement in school affairs, involvement in outside visits, and involvement as visitors. He had held discussions with the Heads of secondary schools. According to his own account, he had been less successful than he would have liked in his efforts to influence the Local Authority.
It is less clear that he had fully laid bare the value-dilemmas which are involved in the type of work he was trying to encourage, and tried to find ways of handling them. He had observed that his efforts to encourage his pupils to play an active part in curbing pollution were negated by the activities of others and, in particular, by commercial interests. But he does not seem to have engaged with his pupils in an attempt to understand and influence the politico-economic processes involved. Nor is it clear that he would have been able to find ways of handling the value-laden pressures which would have arisen had he done so.

Likewise, while he himself was clear that the competencies he wished to foster could only be practised and developed by pupils in pursuit of goals they cared about—and established a mechanism which enabled them to do just that—it is not so clear that he had made fully explicit the conflict between such choice and variety and widely shared expectations of schools and their social functions. The latter involve legitimising the allocation of privilege by using a clear, explicit, uninvariate, criterion of success and failure.

Our objective here is not to belittle the achievements of this outstanding head teacher. It is simply to draw attention to the fact that effective management—and especially the effective management of innovation—whether in schools or elsewhere—involves struggling to study and influence wider social and political processes which stem from outside the institution. Management ability does not consist solely in releasing the ‘know-how’, goodwill, innovativeness, and enthusiasm of one’s staff. It also involves finding ways of gaining control over the wider social forces which primarily determine what organisations can do. And it is of crucial importance that this concept of management, associated with a commitment to innovation, be transmitted to pupils at the earliest possible opportunity.

Summary

In this chapter we have tried to use some of the data available to us to gain some insight into the barriers to the development and diffusion of educational innovation, and the steps which might enable the process to proceed more effectively.

We took as our starting point the fact that two of the small rural schools we visited seemed more able to innovate than the larger schools. We concluded that it might therefore be important to consider Head Teachers’ ability to create climates conducive to innovation in their schools.
We concluded that a prima facie case could be made for believing that the following conditions were important:

1. Creation of a mechanism which would both demonstrate concern with clarity, and lead to increasing clarity about, the objectives and process of the innovatory activity.

2. A mechanism whereby credit and recognition could be given for the accomplishments of those concerned—however "intangible" they might at first sight appear to be, and however idiosyncratic the contribution made by individuals might be.

3. Willingness to address the question of resources—and a willingness to consider ways of resolving it other than by calling for more time, money, or materials.

4. Creation of opportunities for staff and pupils to share in the management process and so share in setting innovatory goals.

5. Creation of a review mechanism to discover whether innovatory goals were being achieved and the ways in which they might be achieved more effectively.

6. Delegation of responsibility for innovative activity to individual members of staff.

7. Creation of a climate of support and encouragement for innovation, an acceptance of mistakes, and a willingness to provide help and support in order to overcome unanticipated difficulties and setbacks.

8. Willingness to try to make explicit, and seek to influence, the wider social forces from outside the school which so much determine what teachers can do. Schools exist as part of a wider social system. Although teacher effectiveness is primarily determined by what teachers do with pupils, what they can do is primarily determined by these wider social forces. Consequently, a crucially important teacher competence is the ability and willingness to understand and influence these wider social forces.
CHAPTER 7
FACILITATION

In this book we have:
1 Identified educational objectives which are frequently neglected by schools. These objectives include facilitating the development of competencies like the ability to understand and influence the way society works; the ability to make one's own observations and learn without instruction; the ability to communicate effectively; initiative; and adventurousness. Our review of the literature showed that many of those who had written and spoken about environmental studies, Museums education, enquiry-oriented education and inter-disciplinary education, emphasised such objectives. It also showed that such objectives are often implicit in official reports, such as the Plowden Report and the Primary Memorandum. They are, however, hardly ever mentioned, still less assessed, in the evaluation and research studies which have played such a major role in channelling public debate about education both in the United States and in Britain.
2 Clarified (i) the psychological nature of competencies like those mentioned in the previous paragraph, and (ii) the educational processes which are to be used to facilitate their development.

We argued that qualities like those mentioned are best thought of as self-motivated competencies, or motivational dispositions. They involve a great deal more than knowledge—and the knowledge which is required is specialised knowledge, rather than general information. They involve an entire package of finely-balanced, self-motivated, habits, thoughtways, and feelings—and strategies for capitalising on those thoughts and feelings. They are all heavily value-laden. They can therefore only be fostered and assessed in relation to a goal or activity which the pupil concerned personally values and cares about.

We also argued that there are so many of these desirable qualities that no one pupil could be expected to develop more than a few of them. Fortunately, not only do different pupils have the inclination and the ability to develop different talents
and motivational dispositions, society itself needs a wide range of people with different interests and patterns of competence.

Taken together, these observations point to the need for individualised, competency-oriented, programmes of education geared to each pupil's values, interests and emerging talents. Such programmes are not only difficult for teachers to administer and manage, they create for teachers dilemmas to which we will return in a moment.

3 Described the work of teachers who were effectively fostering qualities like those mentioned above. To facilitate their growth they found it necessary to create developmental environments in which their pupils could practise and develop components of competence, or competencies, whilst in pursuit of goals they valued and over an extended period of time (which might involve several 'projects'). Acquisition of these competencies was also facilitated if teachers shared with their pupils many of their own, normally private, thought processes, values, feelings and behaviours. It was also promoted by bringing adults into schools so that they could portray for pupils different types of effective behaviour in pursuit of different goals. And it could be facilitated by making use of appropriate simulation exercises and educational games, both in schools and in settings such as museums and historic buildings.

We showed that educational activities based in the environment around the school had several advantages from the point of view of competency-oriented education. Such activities enabled pupils to build on and use their existing knowledge and patterns of competence. The knowledge and competencies they developed in the course of community-based educational activities were of value in helping them to lead their lives more effectively in the 'here and now', and not only at some point in the future. In the course of such activities, pupils could work on real community problems to which someone wanted an answer. They could therefore be given an important role in the community. Community-based activities also enabled the class to work on problems which were as new to the teacher as they were to the class, thereby encouraging genuine enquiry skills, genuine excitement at new discoveries, and the development of effective communicative competencies. They enabled other members of the community to be viewed as sources of expertise and they enabled the pupils to acquire the abilities needed to identify resources in the
community. In the course of such activities, it was possible to forge links between the school and the community. These promoted, in the pupils, growth in the confidence and competence required to deal with adults and officials. Pupils developed their ability to forge their own understanding of how administrative and economic systems worked. They acquired the strategies needed to identify constraints on what individuals could do. They developed the abilities needed to understand and influence the workings of bureaucratic systems. Finally, links between the school and the community enabled the teachers concerned to influence some of the constraints on their own work which arise from the expectations of parents and officials.

Crucial to the effective use of any of these methods was, however, a clear understanding on the part of the teacher concerned of the objectives to be achieved and the methods to be used to reach them. Even where elaborate steps had been taken to introduce requisite facilities and procedures, the educational process tended to be corrupted back into conveying information rather than facilitating growth, precisely because the teachers concerned had not understood the objectives which were to be achieved or developed the unusual, complex, and difficult skills they required to achieve them.

4 Identified some of the barriers to implementing competency-oriented programmes of growth in schools. These include the following:

i The fact that all important competencies, including those which seem to be cognitive in character, are heavily value-laden and have important consequences for the future lives of the children concerned. As a result, teachers must either seek to influence pupils’ values or generate diversified educational programmes which explicitly offer different pupils different educational experiences geared to their present values. Both options tend to create serious value dilemmas which it is difficult for both teachers and the general public to resolve. These dilemmas have centrally to do with questions of equality, equity and diversity in education. These are questions which have occupied much attention in public debate about education for the past half century. Our work suggests that the questions need to be rephrased to focus on equity in diversity and on the ability of
our society to develop, capitalise upon, and reward all the talents available to it.

ii The fact that neither the nature of the competencies which are to be fostered nor the educational processes to be used to foster them have generally been made explicit and communicated to teachers in pre-service or in-service education.

iii The absence of aids to help teachers to manage the requisite individualised, competency-oriented, programmes of growth. Effective work in this area demands that teachers be sensitive to individual pupils' interests and areas of competence, sensitive to the meanings and implications of their gestures, and able to utilise this information when generating individualised programmes of growth. Effective work in this area also demands that teachers be able to monitor each child's development across multiple outcomes. They need to be able to create personalised programmes of growth for each child—personalised programmes of growth which enable the child to continue to develop talents sparked off in the course of one project as they proceed through the next. This set of requirements is a tall order for any parent, teacher, or personnel manager. It seems that teachers critically need means of assessing each of their pupils' particular interests, priorities and talents, and the experiences that will help them to develop these talents in the future.

iv The fact that it is virtually impossible to give either teachers or pupils credit for their work in these areas. Unless teachers can point to evidence of their accomplishments in these 'intangible' areas, they can neither monitor their progress towards these goals nor get credit for their achievements. Unless pupils have evidence of having developed these wider talents, they will not get credit for having developed them in the selection and placement process which schools perform for society. The development of more appropriate assessment procedures is therefore crucial to wider implementation of the procedures we have described.

v The difficulties involved in creating a climate conducive to innovation in schools. Creation of such a climate seemed, among other things, to require wider discussion of the role of, and competencies required by, head teachers and
teachers. We suggested that the role of the Head was, on the one hand, to create a climate of enthusiasm, dedication and innovation within his or her school, and, on the other hand, to gain control over some of the wider social forces (such as the expectations of parents and advisers) which critically determined what could be done in the school. Within the school there seemed to be a particular need to create a climate in which the need for innovation was more widely recognised, and in which innovators were supported when they made mistakes. Likewise, there seemed to be a need for more delegation of responsibility for innovative activity to individual teachers in the context of accounting procedures which recognise the achievement of innovatory goals.

5 Shown that it is possible, even with primary school children, to index and monitor progress toward outcomes of the type mentioned, and, in the process, to identify the types of developmental experience which each pupil requires next. Such outcomes are not “too intangible to measure”. Their measurement simply requires the adoption of appropriate techniques by teachers and researchers. Contrary to those who have claimed that “schools make no difference”, we found that pupils’ priorities, self-images, and expectations of themselves and of others, as well as the consequences which they anticipated if they were to undertake various types of activity in the community, reflected the educational processes in which they had been involved.

Teachers who wish to monitor their work in these areas should try to identify the particular interests, patterns of motivation, and talents displayed by each child. In thinking about their talents, it is important for teachers to have in mind the wide range of talents mentioned earlier in this book and others listed in Raven (1984). In recording such observations, whether for formative or summative purposes, a teacher should list the particular types of behaviour which each pupil is inclined to exhibit, and the components of competence he shows a strong tendency to display in pursuit of goals he cares about. The teacher should use this information to plan activities which the pupil might find interesting if he were introduced to them, and additional competencies which he might develop in the course of pursuing his interests.
Attention should be drawn to the fact that, in recording such assessments, statements about pupils' interests and talents are likely to be a great deal more revealing and useful than the scores which pupils attain on the limited range of psychological tests normally available to teachers. There is no doubt that teachers require research-based assessment tools to help them to generate educational activities of the type envisaged here, but there is much they can do on their own. Provided they know what they are looking for they can trust their own insights.

Facilitating Future Development

The aim of the remainder of this chapter is to bring together what has been learned about the steps which are needed if competency-oriented education is to be more widely implemented. The requirements fall under six heads.

1 RESEARCH-BASED ACTIVITIES

There are five of these:
(a) to develop a better conceptual framework for thinking about the components of competence, how their growth is to be facilitated, and how they are to be assessed;
(b) to develop better means of assessing the components of competence so that teachers can more easily monitor their progress when fostering them, and so that pupils can get credit for the qualities they have acquired;
(c) to develop aids to teachers in managing individualised, competency-oriented, programmes of growth which aim to foster multiple talents, and different talents in different pupils;
(d) to develop a much better understanding of the competencies required by head teachers in managing schools, and, in particular, the ways in which they can create more innovative climates within them;
(e) to develop better accountability procedures so that (i) teachers can get credit for implementing educational processes designed to nurture multiple and alternative talents, and (ii) head teachers can get credit for creating climates characterised by high levels of innovation, dedication and enthusiasm in their schools.
2 THE STIMULATION OF MORE PUBLIC DEBATE ABOUT THE OBJECTIVES OF EDUCATION

This should, in particular, focus on finding ways of resolving the tension which exists between the personal-development functions of schools and the functions which the educational system performs for society, by legitimising the rationing of privilege. There is a need to create a debate both about the concept of equality which informs much policy discussion in education, and about the tension which exists between a concern with equality and the need to identify and foster a wide variety of different types of talent. In this context it is necessary to promote wider public recognition of the fact that it is possible to implement diversified, multiple-talent-oriented, educational programmes. But, if this is to be done, parents and pupils must have a right to opt into, and out of, educational activities, so that they can find some which accord with their values and which help them to develop their own unique talents. The need is to create a wide variety of different types of educational programmes with demonstrably different consequences for those who pass through them, and between which parents and pupils can be invited to choose. Failure to do this will not only result in the perpetuation of the generally stultifying environments observed in some schools; it will also mean that we are unable to foster the competencies and understandings which are urgently needed in our society.

3 PROMOTION OF A DISCUSSION OF THE QUALITIES WHICH TEACHERS MOST NEED TO POSSESS IF THEY ARE TO PROMOTE THE DEVELOPMENT OF THEIR PUPILS' MOST IMPORTANT TALENTS

Our work suggests that, paradoxically, one of the competencies which teachers need if they are to perform their work effectively is the ability to participate in the debate indicated under (2) above. (Nevertheless, in line with the present argument, it may be mentioned that the teachers who are likely to be most effective in stimulating and participating in this public debate—so that classroom teachers can do their jobs effectively—will not necessarily be those who are best at working with children.)

4 CREATING A CLIMATE OF INNOVATION WITHIN EDUCATION

There are clearly no grounds for complacency about the state of primary education in Scotland. On the basis of the work we have carried out it would seem that there is a need to:
(a) promote the development of managerial ability among headteachers. The managerial ability needed is the ability to unleash the creativity, know-how, and enthusiasm of teachers;

(b) establish a number of innovation and initiative centres in which teachers can work with, and learn from, other teachers, and be supported as they try out new ideas and try to make explicit what they have learned in the process. These innovation centres need not be located in designated institutions like colleges of education, or regional advisory services, but would best be located with people who have demonstrated an interest in, and flair for, educational innovation. Our work suggests that one of these should be in the education unit at Edinburgh Zoo;

(c) make it possible for teachers much more easily to work with (ie in the classrooms of) teachers in schools other than their own, so that they can learn from them and become familiar with the strategies they use.

5 THE NEED TO CARVE OUT A NEW ROLE FOR THE COLLEGES OF EDUCATION

It would seem from our work that the main task of the colleges is, not to train teachers in methods of teaching such things as mathematics, but to stimulate, and participate in the debate about, the objectives and practice of education which was outlined above. It is to call into being the research activities which are required. It is to call attention to the deficiencies in the educational system. It is to promote the growth of teachers in exactly the same way, and through the same processes, as we have suggested that teachers promote the development of their pupils. It is to treat their students with the concern and respect which we have suggested teachers treat their pupils. It is to recognise and develop the very diverse interests and talents of their students. It is to promote the development of their students' ability to understand and influence the workings of the society in which they live.

6 STIMULATION OF A DEBATE ABOUT THE NATURE OF MODERN SOCIETY AND THE COMPETENCIES WHICH ARE REQUIRED TO RUN IT EFFECTIVELY

Over the past quarter of a century, dramatic changes have taken place in the way in which our society is organised; dramatic changes which have led to increasing concern with such things as the moral
imperatives placed on the citizen if the biosphere is to be protected for the long-term good of mankind and his fellow animals. These changes particularly underline the need for competencies and ways of thinking which have rarely been made explicit, the need for which has rarely been argued, and which were, in reality, much less important in the past. It is from this debate about barely discerned priorities that the greatest support will come for the objectives emphasised by those who spoke or wrote about conservation and environmental studies in Chapter 5.

It may appear that the changes advocated above demand a major increase in the funds channelled to education. Not so. On the one hand, it simply cannot be true that, as a society, we need to spend more than 10% of GDP on ‘education’. On the other hand, the very data we have presented show that, if one assesses the outcomes of the educational process in terms of the development of human resources, there is considerable wastage of the money which is currently allocated to the educational system. The need is, therefore, to divert resources from dysfunctional routine maintenance and caretaking activities to productive work. If the time teachers spend with pupils were spent more productively, pupils would need to spend less time in schools and would be available to carry out the endless tasks which need to be carried out in society. If that sounds unrealistic, it only serves to underline the importance which we, and many of those we interviewed in connection with zoos and museums education, have attached to the qualities required to understand and influence the way society works. As a society we urgently need new understandings of the way our society works — new, shared, understandings and attitudes. It is the task of environmentally-based, competency-oriented, enquiry methods of education in schools to develop the qualities which are required to evolve that understanding and those attitudes.
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154


The authors, having sought out some schools in which the wider objectives of general education were being effectively achieved through environmentally-based project work, portray vividly the outstanding work observed in these classrooms and then discuss, in an insightful way, the considerable benefits of this work. They identify also the sometimes surprising barriers to wider implementation of such important educational activity and the steps which will be required to overcome them.

Because the book makes explicit the competencies to be fostered in general education and identifies strategies to promote their development, it will be as valuable to those involved in personal, social and vocational development at secondary or college level as to primary school teachers.

Not the least of its merits is that it describes ways in which such qualities can be assessed. In addition, it outlines the management strategies which head teachers, college principals and others need to adopt if teachers and lecturers are to engage in the demanding innovatory activities needed to promote the growth of competencies urgently needed in modern society.

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