

VIEWING LISTENING LEARNING

**the use and impact of
schools broadcasts**

Caroline Sharp

nfer



VIEWING, LISTENING AND LEARNING

**the use and impact of
schools broadcasts**

Caroline Sharp

nfer

Published in May 1995
by the National Foundation for Educational Research,
The Mere, Upton Park, Slough, Berkshire SL1 2DQ

© National Foundation for Educational Research 1995
Registered Charity No. 313392
ISBN 0 7005 1373 6

CONTENTS

Acknowledgements	i
1. INTRODUCTION	1
Background to schools broadcasting in the UK	1
BBC Education	2
About this research	3
Outline of the report	7
2. TEACHERS' USE OF EDUCATIONAL TELEVISION	9
Introduction	9
The findings from previous research	9
Users and non-users of radio and TV broadcasts	10
Use of schools TV	12
Most popular schools TV series	13
Number of programmes used in a selected series	16
Recording, previewing and integration of TV broadcasts into the curriculum	17
How schools broadcasts are used	20
Reasons for choice of series	23
Appropriateness of selected TV series for the pupil group	28
Use of mainstream broadcasts	29
Summary	36
3. TEACHERS' USE OF SCHOOLS RADIO BROADCASTS	38
Introduction	38
Use of schools radio broadcasts in primary and secondary schools	38
Popular radio broadcasts	39
Number of programmes used in a selected series	41
Recording, previewing and integration of radio broadcasts into the curriculum	41
Reasons for choice of schools radio series	43
Pupil learning from schools' radio broadcasts	44
Appropriateness of selected radio series	45
Comments from interviews with primary teachers on pupils' listening skills	45
Summary	46

4. SCHOOLS BROADCASTS IN CONTEXT	48
Pupils' and Teachers' Views	48
Introduction	48
The characteristics of educational television	49
How broadcasts contribute to learning	51
Programme features and attention:	
the findings from previous research	57
Pupils' reactions to selected schools programmes	61
PROGRAMMES FOR INFANTS	63
Programme 1. <i>Numbertime. Number Eight</i>	63
Programme 2. <i>Words and Pictures. Letter o</i>	68
Programme 3. <i>Letterbox. Letter c</i>	73
PROGRAMMES FOR JUNIORS	78
Programme 4. <i>Look and Read. Earth Warp: Episode One</i>	78
Programme 5. <i>Landmarks. Coping with the Climate: The World's Weather</i>	84
Programme 6. <i>History 9-11. Boudicca, the Iceni Rebel</i>	89
PROGRAMMES FOR SECONDARY STUDENTS	96
Programme 7. <i>Quinze Minutes. Temps Libre</i>	96
Programme 8. <i>History File. Pompeii (Everyday Life in a Roman Town)</i>	101
Programme 9. <i>Seeing Through Science. The Body Builders</i>	108
Programme 10. <i>The Geography Programme. Japan 2000, Changing Lifestyles</i>	115
Children's reactions to selected BBC schools programmes:	
an overview	125
Summary	133
5. USING BROADCASTS IN SCHOOL	135
Benefits and Limitations	135
Introduction	135
School policy on broadcast use	135
Use of teachers' notes	136
Factors influencing the use of schools broadcasts	141
Limiting factors	143
Factors affecting non-users of schools broadcasts	145
Advantages and disadvantages of using schools broadcasts	147

Teachers' views on the development of the BBC's schools service, including new series	151
Teachers' attitudes towards the use of schools broadcasts	160
Comparisons between groups	162
Summary	163
6. SUMMARY AND CONCLUSIONS	166
Patterns of use of educational broadcasts	166
Factors influencing teachers' decisions to use educational broadcasts	168
Attitudes towards use of broadcasts	169
Perceived benefits and disadvantages of educational broadcasts	170
Defining characteristics of schools broadcasts	171
The contribution of educational broadcasts to learning	172
The influence of specific techniques	173
Key research findings and implications	182
REFERENCES	187
APPENDIX: Supplementary Tables	190

ACKNOWLEDGEMENTS

I welcome the opportunity to acknowledge the contribution of those who made this research possible. I am indebted to BBC Education for sponsoring this research, and to Julie Cogill of the BBC and Judy Bradley at NFER, for their oversight and guidance of the project. I would also like to acknowledge the work of Lesley Kendall, the Project Statistician, who analysed and assisted in the interpretation of the questionnaire data.

I would like to thank all the schools who contributed to this research. I am most grateful to the teachers who took the time to complete the questionnaires, and to the teachers and pupils who took part in the case study interviews.

I would like to thank Shirley Cleave, John Harland, Kate Hartley and Keith Pocklington for their help in carrying out the case study work. I would also like to thank Kay McCulloch for her helpful comments on the draft report.

Finally, I would like to acknowledge the contribution of all those who helped to prepare this report for publication. Thanks are due to Tim Wright for the cover design, and to Mary Hargreaves for her contribution to the layout and presentation of the report.

1. INTRODUCTION

Background to schools broadcasting in the UK

Schools broadcasts have a well-established place in this country. As a result of successive pieces of legislation, both the British Broadcasting Corporation (through its charter) and the independent television sector (through legislation) have a duty to inform, educate, and entertain. Schools broadcasts were first established in 1924, when the BBC began a radio service for schools (Cain and Wright, 1994). In 1957, a schools television service was established by both the BBC and the Independent Broadcasting Association (IBA). Under the provisions of the 1990 Broadcasting Act (GB. Statutes, 1990), a new Independent Broadcasting Commission was set up and given the duty to 'do all they can to secure that a suitable proportion of the programmes which are included in the Channel 3 services and Channels 4 and 5 (taken as a whole) are schools programmes'.

The use of video and audio tapes of broadcasts recorded by schools was made easier in 1988, when the Copyright, Designs and Patents Act (GB. Statutes, 1988) allowed educational institutions to make recordings, provided that they are licensed by the Educational Recording Agency.

Perhaps inevitably, schools broadcasts have had to fight for their position, with periodic concern that the service will be marginalised in the fight for existing space on the airwaves, or threatened by competition from new service providers. In recent years the responsibility for providing schools TV in the independent sector has moved from ITV to Channel Four (largely as a result of changes brought about by the 1990 Broadcasting Act). Schools radio has undergone a move from Radio 4 (FM) to the newly-established Radio 5 (AM) in 1990, and then to Radio 3 (FM), as Radio 5 has been transformed into a live news and sports service. BBC schools programmes remain on BBC 2, with some series transmitted at night.

BBC Education

The BBC Education Directorate was re-formed in 1992 to group together programmes, publications and policy for TV and radio in continuing education and schools. The Directorate was represented on the board of management for the first time in 1994. The BBC has a team of Education Officers, based in London, Cardiff, Belfast, Edinburgh and Glasgow. They collaborate with producers and writers to commission series. The Education Officers visit schools and colleges to evaluate current programmes and to trial new ones.

Information on the take-up of programmes, and on the availability of audiovisual equipment in schools is gathered through the annual Survey of Listening and Viewing – a questionnaire survey funded jointly by the BBC and Channel 4. The BBC undertakes its own research and commissions other studies from time to time on specific topics of interest.

Information for teachers and lecturers on TV and radio broadcasts is provided through brochures, leaflets and wall charts. There is also a telephone enquiry service. In addition to the broadcasts, the BBC offers a range of support materials for purchase by schools and colleges, such as: audio and video tapes; teachers' notes; pupil worksheets and books; CD ROM and multimedia products.

Recent initiatives taken by BBC Education include the development of computer software to accompany broadcast programmes aimed at young people with severe learning difficulties – a project conducted in liaison with the National Council for Educational Technology (NCET). The BBC has launched a series designed to support science teaching throughout the primary school. Developments in teacher education include: a module in a Masters course for teachers interested in broadcasting issues, based at the Roehampton Institute of Education and an initial teacher education module on the use of broadcasts.

About this research

In November 1993, the BBC commissioned the NFER to carry out a large-scale research project to look at the defining characteristics of educational broadcasting. The brief was wide ranging, encompassing broadcasts aimed at four- to 19-year-olds, and including schools and colleges in Northern Ireland, Wales, Scotland and England.

The main aims of the research were:

- ❑ to identify those factors which influence teachers' decisions to use educational broadcasts in their teaching;
- ❑ to ascertain teachers' and pupils' views on the benefits of educational broadcasts and on what they perceive to be their defining characteristics;
- ❑ to provide evidence on the contribution made by educational broadcasts to the learning process and to examine the influence of specific techniques on the viewers' comprehension and recall of programme content.

Research methods

The research used three main methods of data collection. The first part of the research consisted of a selective review of the research literature. A second main strand of the research was a large-scale questionnaire survey of primary and secondary schools. This was complemented by fieldwork visits to schools, where interviews with teachers and pupils were carried out.

The literature review

In order to inform key questions for the research, a review of recently published research on teaching and learning from TV and radio was conducted. A search of the relevant databases was carried out by the NFER's library staff. The review focused on research in two main areas: the impact of specific features of broadcasts on children's attention and learning; and the use of broadcasts by teachers and lecturers. Many of the research studies in the former area were carried out in the USA, and

most were concerned with TV rather than radio. The results of this review are reported in a number of relevant sections within the following chapters.

The questionnaire survey

The questionnaire sample was drawn by statisticians at the NFER, using the NFER's database of schools. The sample of schools in Scotland was provided by the Scottish Council for Research in Education. The overall sample was designed to be broadly representative of different types of schools in urban and rural settings. It included grant-maintained and independent schools, as well as local authority schools and sixth-form colleges within the FE sector.

The survey consisted of two questionnaires, one for primary and one for secondary respondents. Although the questionnaires differed in certain respects, they contained many common questions so that direct comparisons could be drawn between the two sectors. The questionnaires were aimed at both current users and non-users of schools broadcasts. They contained separate sections on the use of schools TV and radio broadcasts, and on mainstream broadcasts use. Respondents were assured of confidentiality. The draft questionnaires were piloted with 45 teachers. The questionnaires were amended in the light of the results from the pilot exercise, and sent out in February 1994.

Six copies of the primary questionnaire were sent to each school, requesting completion by teachers of different age-groups (one teacher per age group). The secondary questionnaires were aimed at heads of department or faculty. Seven subject areas were selected for study: English; mathematics; science; modern foreign languages; technology; history; and geography. Each school or college received four of these questionnaires for completion by heads of different subject areas.

Responses were received from 54 per cent of primary, and 59 per cent of secondary schools and colleges. In total, there were 658 individual responses from teachers in 224 primary sector schools; and 1,020 individual responses from heads of department in 502 secondary schools and colleges. Further details of the sample of schools and characteristics of responding teachers/heads of department are given in Tables 1.1 to 1.3.

Table 1.1 Sample of schools responding to the survey

	Primary	Secondary	Sixth-form colleges
England	185	407	14
Wales	10	20	-
Scotland	18	42	-
N. Ireland	11	19	-
Total	224	488	14

Table 1.2 Gender of questionnaire respondents

	Primary teachers %	Secondary heads of department %
Female	80	35
Male	15	62
No response	5	3
Total %	100	100
N	658	1020

Table 1.3 Questionnaire respondents: years in teaching

	Primary teachers %	Secondary heads of department %
Up to 5	20	3
6-15	28	33
16-20	18	27
21-30	25	31
More than 30	4	4
No response	5	2
Total %	100	100
N	658	1020

By using the NFER register of schools, we were able to check the representativeness of the English and Welsh schools in the sample, in terms of school size, location and status (we do not have comparable information for the schools in Scotland and Northern Ireland). This revealed that the responding schools were typical of the whole population, except in the following respects: there was an over-representation of larger schools in both samples; and an under-representation of schools in metropolitan districts, and of independent schools in the secondary sample.

Interviews with teachers and pupils

The questionnaires invited respondents to volunteer to take part in a further stage of the research, which would entail a researcher visiting their school. There was a higher response to the request from secondary heads of department (37 per cent) than from primary class teachers (19 per cent). The case-study schools were selected from these volunteers to represent a range of different types of school located in different areas of the country.

The sample of 35 schools comprised 16 secondary and 19 primary sector schools: 30 in England, three in Wales, and two in Scotland. The fieldwork was carried out by a small team of experienced researchers who had participated in a two-day training programme. The fieldwork took place during the spring, summer and autumn terms of 1994.

Table 1.4 shows the type of school and the social class of the school's population, as described by the teachers. Interviews were carried out with 25 primary class teachers (three of whom were headteachers) and 22 secondary heads of department. The primary teachers taught a range of different age-groups (from four- and five-year-olds up to 12-year-olds). The secondary heads of department were drawn from four subject areas: history; science; modern foreign languages; and geography (the programmes shown to secondary students were designed for these four areas of the curriculum).

A total of 240 pupils were interviewed. The interviews were carried out in mixed ability and mixed sex groups (apart from in two single-sex schools). Four pupils at a time were withdrawn from their classes for

between half and three-quarters of an hour. They were asked some general questions about their television and radio use, both at home and at school. The researcher then asked them to watch and/or listen to one of ten BBC schools programmes. Each programme was played to six groups of pupils in the appropriate age-range. The pupils' behaviour during the broadcast was observed, and they were asked for their reactions to the programme. Each taped programme was used only once in any one school. Further details of the programmes and pupil interviews are given in Chapter 4.

Table 1.4 Characteristics of case study schools

	Primary	Secondary
School type		
LEA (including voluntary-aided)	18	13
Grant-maintained	-	2
Independent	1	1
Social class of school population		
Mainly working class	5	4
Mixed	6	9
Mainly middle class	8	3
Total schools	19	16

Outline of the report

The report presents the results of the large-scale survey and intensive work in schools. The next chapter focuses mainly on the findings concerning the use of schools television. Teachers were asked to select one television series they had used recently, and to answer a series of questions on its use. There is also information on the use of mainstream broadcasts in schools. In Chapter 3, the use of schools radio broadcasts is examined. Chapter 4 presents information from the school visits, including teachers' and pupils' views on the differences between schools

and mainstream broadcasts. The main part of the chapter is concerned with a detailed analysis of pupils' reactions to each of ten schools broadcasts.

In Chapter 5, a number of broad issues concerning the use of schools broadcasts are examined, including: factors influencing teachers' use of broadcasts; perceived benefits and limitations; the demand for new programmes; and teachers' attitudes towards the value of the broadcasts for staff and pupils. Chapter 6 presents an overview of the main findings and draws out the key issues that need to be addressed by teachers and programme-makers.

Note on statistical significance

This report contains information from questionnaire surveys of primary teachers and secondary heads of department. In some cases, comparisons are made between the responses of these two groups, or within the samples (for example, comparing the responses given by teachers of different age-groups within the primary sample, or between heads of different departments). The responses of the groups have been compared using appropriate statistical techniques. These techniques assume that there is no real difference between groups, assess the size of the differences in each case, and evaluate whether it is likely that such differences could have occurred by chance.

Four levels of statistical significance are quoted in the report. These are stated using the convention ($p <$) followed by: .05, .01, .001, or .0001. In each case, $p <$ is the abbreviation for 'probability is less than'. A significance level of $p < .05$ means that there is less than a one-in-20 chance that this result would occur if there was really no difference between the groups. A significance level of $p < .01$ represents a one-in-100 probability of the result occurring by chance; a level of $p < .001$ represents a one-in-1,000 probability; and a level of $p < .0001$ represents a probability of one-in-10,000 that the result would have occurred by chance.

The statistical techniques assume that the respondents are representative of the groups to which they belong (e.g. teachers of infant-age pupils; heads of English departments). Therefore, where the number of respondents is small, care should be taken in the interpretation of results.

2. TEACHERS' USE OF EDUCATIONAL TELEVISION

Introduction

This chapter presents an overview of the use of television in schools. The chapter begins with a brief review of the findings of recent research on the use of broadcasts in schools. This is followed by an examination of the patterns of use of schools radio and TV by the NFER questionnaire respondents. The main part of the chapter reports the research findings on the use of schools TV broadcasts by primary teachers and secondary heads of department, including: which broadcasts are used; how they are integrated into the curriculum; what influences teachers' choice of broadcast; and what contribution the broadcasts make to pupil learning. A final part of the chapter considers the use of non-schools radio and TV broadcasts, including the pattern of use of schools and 'mainstream' broadcasts, which types of mainstream broadcasts are most commonly used and why teachers use them. The chapter ends with a summary of the main points.

The findings from previous research

Previous research studies have found that use of TV and radio broadcasts in schools is the norm in British schools, rather than the exception. Use of TV programmes tends to be higher among primary teachers (around 90 per cent) than secondary teachers (about 80 per cent) (GB. OFSTED, 1993; Moses and Croll, 1991). In their study of nursery and infant teachers, Choat *et al.* (1987) found that almost all teachers of young children used schools TV broadcasts for language development and over a third used schools TV for mathematics. The survey carried out by

OFSTED (1993) found that primary teachers used radio and TV broadcasts most often for music, language, topic work and PE (especially dance/movement). There was less use of broadcasts for maths and science. At FE level, Capron (1993) reported most use of TV broadcasts for languages and management/business studies.

Users and non-users of radio and TV broadcasts

The pattern of use of schools broadcasts among respondents to the NFER questionnaires is shown in Tables 2.1 and 2.2. Teachers were asked whether they had used schools radio and/or TV broadcasts in their teaching since September 1992 (i.e. within the past four to five terms). Secondary respondents were asked to give information on the use of schools broadcasts at a departmental level (i.e. to include the use of schools broadcasts by colleagues within the same department).

Table 2.1 Primary teachers' use of schools radio and TV since September 1992

		SCHOOLS RADIO			Total
		Radio Used	Radio Not used	No response	
SCHOOLS TV	TV Used	51	34	3	88
	TV Not used	4	2	-	6
	No response	1	-	5	6
	Total	56	36	8	100%

Percentages given in the table (N=658)

TEACHERS' USE OF EDUCATIONAL TELEVISION

Table 2.2 Use of schools radio and TV in secondary departments since September 1992

		SCHOOLS RADIO			Total
		Radio Used	Radio Not used	No response	
SCHOOLS TV	TV Used	7	55	2	64
	TV Not used	-	17	1	18
	No response	-	1	17	18
	Total	7	73	20	100%

Percentages given in the table (N=1020)

The tables show that the majority of respondents reported the use of schools TV broadcasts within the last two academic years. Half of the primary respondents used both TV and radio broadcasts for schools, but very few used radio alone. Only a small minority of the secondary heads of department reported any use of schools radio broadcasts within their departments, and all of these also used schools' TV broadcasts.

As found in previous research studies, a higher proportion of primary than secondary respondents reported the use of schools TV and radio broadcasts.

(The use of schools TV is examined in more detail in the rest of this chapter. For further information on schools radio, please see Chapter 3.)

Use of schools TV

As shown in Table 2.2, just under two-thirds of the secondary respondents (64 per cent) said that the teachers in their department had used schools TV broadcasts since September 1992. However, there was a great deal of variation between secondary departments in their reported use of schools TV broadcasts ($p < .0001$). Table 2.3 gives a breakdown of use for the seven secondary subject areas included in the survey.

Table 2.3 Secondary departments' use of schools TV broadcasts since September 1992

Subject area	% reporting departmental use
Geography (N = 142)	89
History (N = 161)	88
Modern languages (N = 151)	80
Science (N = 135)	79
English (N = 140)	63
Technology (N = 122)	34
Maths (N = 169)	15
N	1020

The table shows the large differences between departments in their use of schools TV. It is possible to distinguish three groups within this distribution: the highest users were geography, history, modern language and science departments. Just under two-thirds of English departments reported using schools TV broadcasts. The lowest users were technology and maths departments. (There was no significant difference in the use of schools TV by teachers of different age-groups at primary level.)

Most popular schools TV series

Respondents were asked to list up to four of the schools TV series used (including both BBC and Channel Four broadcasts), and then to give more detailed information on one of the series.

The majority of the respondents to the primary survey had used more than one schools TV series since September 1992: when asked to list up to four series titles they had used, more than half (53 per cent) of the 577 primary teachers who used schools TV listed three or four titles. A total of 71 schools TV broadcasts were named, the most popular of which are listed in Table 2.4. (As each series is designed for a specific age-range, the table provides a breakdown of use by teachers of different age-groups, 531 of whom gave information on both the programmes they used and the age range they taught.)

As can be seen from the table, the most popular series at primary level cover a variety of different subject areas, although there is an emphasis on language (*Words and Pictures, Look and Read, Storytime*) and on history/geography (*Zig Zag, Landmarks, How We Used to Live*).

At secondary level, the number of series listed by respondents as used most often in their department (up to a total of four) varied significantly according to subject area ($p < .0001$). On average, heads of department for science gave the titles of over three schools series used in their departments. In contrast, staff in maths and technology departments were reported to use between one and two series. The series used by the largest proportions of departments are listed in Table 2.5.

VIEWING, LISTENING AND LEARNING

Table 2.4 Most popular schools broadcasts used by primary teachers since September 1992

Age group taught	Series title	Used by %	Broadcast by	Target age range
4-7 (N=200)				
	<i>Words and Pictures</i>	58	BBC	5-7
	<i>Watch</i> (history & natural history)	36	BBC	6-7
	<i>Thinkabout Science</i>	25	BBC	5-7
	<i>Numbertime</i>	24	BBC	5-7
	<i>Storytime</i>	22	BBC	4-5
	<i>Stop, Look, Listen</i> (history/geography)	13	Channel 4	5-7
	<i>Numbers Plus</i>	10	BBC	5-7
7-9 (N=162)				
	<i>Zig Zag</i> (geography/history)	49	BBC	8-10
	<i>Look and Read</i>	48	BBC	7-9
	<i>Landmarks</i> (geography/history)	25	BBC	9-12
	<i>Music Time</i>	21	BBC	7-9
	<i>Watch</i> (history/natural history)	14	BBC	6-7
	<i>Science – Start Here</i>	13	Channel 4	7-11
	<i>Eureka!</i> (general)	11	Channel 4	7-11
9-12 (N=169)				
	<i>Landmarks</i> (geography/history)	43	BBC	9-12
	<i>Zig Zag</i> (geography/history)	23	BBC	8-10
	<i>How We Used to Live</i> (history)	17	Channel 4	7-11
	<i>Ghostwriter</i>	12	BBC	10-12
	<i>Search out Science</i>	12	BBC	9-12
	<i>English Express</i>	10	BBC	9-11

Percentages may sum to more than 100, since teachers were able to name up to four series.

TEACHERS' USE OF EDUCATIONAL TELEVISION

Table 2.5 Most popular schools broadcasts used in secondary departments since September 1992

Department	Series title	Used by %	Broadcast by	Target age range
History (N=142)	<i>History File</i>	79	BBC	14-16
	<i>20th Century History</i>	29	BBC	14-16
	<i>How We Used to Live</i>	23	Channel 4	11-14
	<i>History in Action</i>	23	Channel 4	14-16
Geography (N=126)	<i>The Geography Programme</i>	60	BBC	11-14
	<i>The Global Environment</i>	30	BBC	11-14
	<i>Landmarks</i>	24	BBC	11-12
	<i>Geography Casebook</i>	24	BBC	14-16
Modern languages (N = 120)	<i>Quinze Minutes</i>	63	BBC	11-13
	<i>Lernexpress</i>	48	BBC	13-16
	<i>Ici Paris</i>	28	BBC	12-14
Science (N = 107)	<i>Scientific Eye</i>	66	Channel 4	11-14
	<i>Science in Focus</i>	40	Channel 4	14-16
	<i>Science Topics</i>	23	BBC	14-16
	<i>Your Living Body</i>	22	Channel 4	13-16
	<i>Science in Action</i>	22	BBC	13-16
English (N = 88)	<i>English File</i>	74*	BBC	14-17
	<i>Scene</i>	52*	BBC	11-17
	<i>The English Programme</i>	39*	Channel 4	14-17
Technology (N=42)	<i>The Technology Programme</i>	45*	Channel 4	11-16
Maths (N = 26)	<i>Mathspy</i>	50*	BBC	11-16

* Care should be taken in the interpretation of results based on small numbers of respondents.

Percentages may sum to more than 100, since respondents were able to name up to four series used per department.

Primary and secondary respondents were asked to choose one schools TV series they used themselves and to provide some further information about it. This included the number of programmes used in the series, whether it was prerecorded or used live, how it was integrated into the curriculum, what pupils learned from it, and whether teachers judged the series to be appropriate for their classes. There were 574 primary and 590 secondary respondents who completed this part of the questionnaire, relating to their own use of a specific schools TV series.

Number of programmes used in a selected series

The number of programmes used in a selected school TV series is shown in Table 2.6.

Table 2.6 Number of programmes used in a selected schools TV series

	Primary %	Secondary %
One or two	2	14
Some of them	11	35
Most of them	33	35
All of them	53	15
No response	1	1
Total %	100	100
N	574	590

As can be seen from the table, primary teachers tended to use the majority of programmes within their selected series. In contrast, secondary heads of department used fewer programmes from a series, with only 15 per cent saying they used all the programmes (compared with over half of the primary teachers). This was a significant difference between primary and secondary respondents ($p < .0001$). There was also a significant difference between secondary departments ($p < .0001$), with heads of modern languages, history and geography departments most likely to use most or all of the programmes in a selected series (see Table A.1 in the

Appendix). There were no significant differences within the primary sample between teachers of different age-groups, in relation to the number of programmes used per series.

Recording, previewing and integration of TV broadcasts into the curriculum

The questionnaires asked for information on: the use of prerecorded video tapes of schools broadcasts, whether teachers previewed broadcasts before using them with their classes, and how broadcast material was integrated into the curriculum.

Table 2.7 Teachers' use of live or tape-recorded TV broadcasts

	Primary %	Secondary %
Use broadcasts live	21	-
Use prerecorded tapes of broadcasts	77	99
No response	2	1
Total %	100	100
N	574	590

It is clear that the majority of teachers in both primary and secondary schools used prerecorded tapes of broadcasts. However, the preference for using prerecorded tapes was much stronger at secondary level, where all responding heads of department used this strategy. About one in five primary teachers said that they generally used the broadcasts live. This represented a significant difference between primary and secondary respondents ($p < .0001$).

Further analyses of the primary sample revealed a significant difference between teachers of different age-groups ($p < .0001$). A higher proportion of teachers of four- to seven-year-olds (34 per cent) reported using broadcasts live than teachers of older children (about 10 per cent).

Table 2.8 Frequency of previewing schools TV broadcasts

	Primary %	Secondary %
Rarely/never	27	3
Sometimes	36	20
Most/all of the time	33	75
No response	4	2
Total %	100	100
N	574	590

At primary level, the majority of teachers did not routinely preview programmes before using them with their class. Over a third of teachers said they sometimes previewed TV programmes, and over a quarter said they rarely or never did so. Previewing behaviour was significantly related to the age group taught: the older the age group, the higher the proportion of teachers saying they previewed the programmes most or all of the time ($p < .0001$). Only 22 per cent of infant teachers routinely previewed programmes, compared with 46 per cent of teachers of upper juniors.

There was a marked difference between primary and secondary teachers' previewing behaviour. At secondary level three-quarters of respondents said they previewed programmes most or all of the time, whereas only about a third of primary respondents did so. This represented a significant difference between primary and secondary respondents ($p < .0001$).

There are several possible explanations for the difference in responses between primary and secondary teachers. First, one in five primary teachers used broadcasts live, thus making previewing impossible (except in the case of repeated series). Second, the greater use of series (and of programmes within series) may mean that primary teachers have less time to preview all the material they use. A third possible explanation is that primary teachers may feel more familiar with the programmes without previewing, due to their greater use of programmes in the series, and/or to the comparatively simple content and repeated format of some primary programmes.

TEACHERS' USE OF EDUCATIONAL TELEVISION

Table 2.9 Use of programmes to follow up work in class

	Primary %	Secondary %
Rarely/never	9	3
Sometimes	43	44
Most/all of the time	35	45
No response	13	8
Total %	100	100
N	574	590

Table 2.10 Follow-up of programmes with work in class

	Primary %	Secondary %
Rarely/never	2	4
Sometimes	34	45
Most/all of the time	59	44
No response	5	7
Total %	100	100
N	574	590

Table 2.9 shows that the majority of primary and secondary teachers used schools TV broadcasts to follow on from their classroom teaching (at least some of the time). There were no significant differences between primary and secondary respondents in their answers to this question.

Table 2.10 shows that over half of the primary teachers reported following up programmes with work in class most or all of the time, whereas under half of the secondary respondents did so. There was a significant difference between primary and secondary respondents in their answers to this question ($p < .0001$).

There were no significant differences between teachers of different age groups within the primary sample. At secondary level, heads of modern languages and history departments were more likely than other respondents to report using programmes to follow up work done in class 'most of the time' ($p < .001$).

How schools broadcasts are used

Previous research findings

Previous research has suggested that pupils usually view a broadcast as a class, and that sometimes more than one class view/listen to the same broadcast (Capron, 1993; Choat *et al*, 1987; GB. OFSTED, 1993). Choat (1988) found that although many teachers used prerecorded tapes of broadcasts, most of the infant and primary teachers he studied showed the taped TV programmes straight through, without using the video recorder's facilities (e.g. pause, freeze frame, rewind) to emphasise teaching points.

Research into the effectiveness of broadcasts supports the importance of the adult's role in helping children learn from TV. For example, Williams (1981) cites evidence that when mothers watched *Sesame Street* with their children, and encouraged them to attend, learning was facilitated. In a small-scale study, Choat and Griffin (1986b) evaluated the effects of teacher intervention before and after viewing programmes in a schools TV series. The group whose teacher had provided preparation and follow-up of the programmes made the greatest gains in tests of comprehension and inference.

Findings from the NFER interviews

Class viewing

The case-study interviews with 25 primary teachers and 22 secondary heads of department from 35 schools enabled this research to explore how broadcasts are used in the classroom. Thirty-nine of the teacher interviewees regularly used schools TV programmes. As found in

previous studies, broadcasts were used almost entirely in a class setting, and six of the primary teachers reported that more than one class gathered together to watch a broadcast.

A small minority of teachers said they occasionally used a broadcast with a group. An example of this was the use of broadcasts by infant teachers to reinforce concepts in language and number with groups of less able children. Some of the secondary teachers had considered making taped broadcasts available to students as a group or individual resource, but most felt constrained by a lack of space or equipment to utilise broadcasts in this way.

Preparation

Over half of the 39 teachers who used schools TV said they always prepared the class for a broadcast, and a further quarter said they usually did so. The type of preparation varied according to the broadcast, but the most common strategy was for the teacher to provide a verbal résumé of the programme. In the case of a series, this might include prompting the pupils' recall of the previous programme. Another common strategy was for teachers to alert the pupils to focus their attention on particular elements of the programme, and in some cases, to remind them to make notes of key points. In addition, some of the primary teachers pointed out that they timed their use of a broadcast to follow on directly from the pupils' class work in that area.

The teacher's role during the broadcast

All but one of the teachers said they always viewed the programme with their class, and most of the teachers reported using the video's controls to facilitate learning. Over two-thirds said they often used the 'pause' facility on the video to stop taped programmes, to enable them to ask questions, or draw attention to specific points. A minority said they regularly used the 'freeze frame' facility to enable pupils to view an image in more detail.

For example, a history teacher said she found this a useful way of getting students to examine details, such as the dress of a Roman soldier. A few teachers also reported rewinding parts of the programme and replaying them, to emphasise learning points. One teacher of juniors described his

approach as follows: 'I like to stop the programme at different times and discuss what's being presented so that I'm clear that the message that's raised has got across...I don't just go through it for the 20 minutes, or whatever it is, uninterrupted. I like to stop and discuss, and perhaps go back and show things a couple of times.'

Some of the teachers who did not stop the broadcast said they preferred to run it all the way through without interruption, because they felt this enhanced their pupils' enjoyment and appreciation of the programme. Others were unable to pause during the broadcast because they were constrained by the time available, or, in two cases, because they used the broadcast live. Several teachers described how they kept an eye on the class during the broadcast, occasionally commenting, to focus pupils' concentration. Some also made notes of pupils' reactions to the broadcast, which they could use to structure discussion and check for understanding following the programme.

Follow-up

The majority of teachers in the case study sample said they always followed up a broadcast, although some commented that immediate follow up was constrained by the amount of time available with the TV and/or the class. The most common strategy, used by about half of the interviewees, was to have an immediate discussion of the main points. A similar proportion followed the broadcast with related work in class (or for older students, with a task for their homework). About a third of the junior and secondary teachers provided pupils with worksheets to complete during and after the broadcasts. (Several of the infant and junior teachers mentioned that they used materials provided by the broadcast company as a basis for worksheets and/or follow-up work.)

Changes in use over time

Teachers were also asked if their use of schools broadcasts had changed in the past few years. The 1993 OFSTED enquiry into primary teachers' use of broadcasts suggested that the introduction of the National Curriculum had led teachers to become more selective in their choice of broadcast.

The NFER study provided confirmation of this trend: over three-quarters of the teachers we interviewed felt their use of broadcasts had undergone a qualitative change. The National Curriculum was perceived to have been responsible for a change in teachers' attitudes towards all resources: such resources would only be used if they were directly relevant to the curriculum. Teachers said they were prepared to invest time in planning the use of programmes and showing them to their class, but only if the programme was considered to be particularly valuable to their teaching. As one primary teacher commented: 'I've become far more selective. These days it has to be quality not quantity, because with the National Curriculum there is pressure from all the subjects that must be covered.'

The majority of 39 teachers interviewed felt the **amount** of broadcasts they used had not changed. However, about a fifth of teachers reported a decrease in their use of broadcasts (due to increased selectivity and, in some cases, to a lack of suitable programmes). A similar proportion said their use of broadcasts had increased in the past few years (due to an integration of broadcasts into curriculum planning, and the availability of suitable programmes).

Reasons for choice of series

The findings from previous research

Previous research studies carried out in the UK (Capron, 1987; Choat *et al*, 1987; Choat and Griffin 1989; Moses and Croll, 1991; GB. OFSTED, 1993) have identified five reasons commonly given by teachers for their use of schools radio and TV broadcasts. These reasons can be summarised as follows:

- for the development of knowledge, skills and concepts
- to bring additional expertise and teaching ideas (particularly for teachers who lack experience or confidence in teaching certain areas of the curriculum)
- to present information in an interesting and stimulating way

- to give access to experiences not easily provided by the teacher
- to introduce, extend and reinforce areas of learning.

The findings from the NFER survey

The NFER questionnaires asked primary and secondary respondents 'Why have you chosen to use this schools TV series in your teaching?' There was a wide variety of answers given to this question: the most common types of comment are summarised in Table 2.11.

Table 2.11 Reasons given for choice of schools' TV programme

<i>Analysis of open-ended responses</i>	Primary %	Secondary %
Fits with the curriculum	36	36
Good programme content/presentation	22	19
Introduces a visual element	8	19
Interesting/fun	20	17
Teaches knowledge/skills/concepts	13	5
Reinforces teaching	11	11
Adds experiences not easily provided by the teacher	10	14
Suitable for the class	12	8
Provides extra material	7	11
Provides (real life) examples	1	10
No response	1	1
N	574	590

Percentages may sum to more than 100, since respondents could make more than one comment.

Three of the reasons given by questionnaire respondents refer to their specific choice of series: that it related to the curriculum (clearly an important factor at both primary and secondary level); that the content

and presentation of the programmes was attractive; and that the teacher felt the series to be suitable for his or her class.

Several of the other comments relate to the findings from previous research outlined above: that the chosen series teaches knowledge, skills and concepts, and reinforces the work of the teacher; that it provides an interesting and enjoyable learning experience, and that it gives pupils access to experiences not easily provided by the teacher (such as recreations of historical events, views of life in other parts of the world, or insights into dynamic physical, chemical, or biological processes).

Two other aspects were highlighted in the responses to this question. First that the use of a schools TV series brings a visual element to teaching and therefore provides a more varied learning experience for the pupils. Secondly, that the use of a TV broadcast enabled teachers to include material in the curriculum that they would not have covered otherwise. For secondary heads of department, a further reason for using a particular schools' TV series was that it allowed them to show real-life examples, which they could use to illustrate theoretical points. (For information on the perceived benefits of schools broadcasts, please see Tables 5.6 and 5.7 on pages 148 and 149.)

Pupil learning from schools TV broadcasts

Questionnaire respondents were asked to comment on what their pupils/students learned from the selected series, in terms of concepts and skills. As might be expected, the answers to this question varied considerably according to the series. The most common responses from primary teachers are given in Table 2.12.

The table shows that primary teachers noted a variety of learning outcomes, some of which were specifically related to the programme content (such as subject knowledge, reading, writing, historical skills and concepts) and others which were more general, such as listening skills and cognitive skills (e.g. thinking, processing information, comprehension and problem-solving).

Table 2.12 Pupil learning from selected schools TV series – primary teachers

<i>Analysis of open-ended responses</i>	<i>%</i>
Reading skills	21
Listening skills	20
Cognitive skills	18
Subject-related knowledge	14
Historical skills/concepts	9
Letter formation/handwriting	9
No response	12
N	574

Percentages may sum to more than 100, since respondents could make more than one comment.

At secondary level, the responses were analysed separately by departmental subject area. However, there were some learning outcomes common to respondents from different subject areas, and these are listed in Table 2.13.

Table 2.13 Student learning from selected schools TV series – secondary heads of department (most common answers across all subject areas)

<i>Analysis of open-ended responses</i>	<i>%</i>
Reinforces teaching	19
Subject-related knowledge	18
Listening skills	16
Cognitive skills	10
Oral skills (discussion)	10
No response	7
N	590

Percentages may sum to more than 100, since respondents could make more than one comment.

As can be seen from the table, some heads of department pointed out that the primary function of their selected TV series was to reinforce and support their teaching. Others felt that its main purpose was to impart

factual information. However, a minority of respondents reported that, aside from subject-specific learning, students gained listening skills and cognitive skills from viewing schools TV programmes. It was also pointed out that a TV viewing session could act as a stimulus for discussion, which provided an opportunity to develop students' oral skills.

A breakdown of the most common answers to this question within each subject area is given below. (Responses from heads of technology and maths departments have been excluded due to the small numbers of respondents for these subjects.)

Table 2.14 Student learning from selected schools TV series – secondary heads of department (most common answers for specific subject areas)

<i>Analysis of open-ended responses</i>	<i>%</i>
History (N=135)	
Use of historical evidence	36
Understanding of historical change	24
Understanding of life in the past	24
Geography (N=121)	
Understanding of place	26
Understanding of human geography	18
Science (N=103)	
Application of science in everyday life	20
Application of science in industry	18
Modern languages (N=114)	
Listening skills	61
Understanding life in other countries	42
Oral skills	33
English (N=74)	
Understanding of different texts/styles/media	16*
Understanding of language	16*

* Care should be taken in the interpretation of results based on small numbers of respondents. Percentages may sum to more than 100, since respondents could make more than one comment.

The analysis shows that most respondents used their chosen TV series to develop young people's conceptual grasp of the subject. However, for modern languages, there was more emphasis on the development of skills in speaking and listening (although finding out about life in other countries was also an important aspect of learning from the broadcasts).

Appropriateness of selected TV series for the pupil group

Primary and secondary respondents were invited to comment on the appropriateness of the chosen series for the age and ability range of their class. The most common answers are shown in Table 2.15.

Table 2.15 Appropriateness of selected schools TV series for the class, in terms of age and ability range.

<i>Analysis of open-ended responses</i>	Primary %	Secondary %
Excellent/highly appropriate	73	53
Generally good	19	21
Too difficult for less able	4	10
No response	2	10
N	574	590

Percentages may sum to more than 100, since respondents could make more than one comment.

In general, teachers were satisfied with this aspect of their chosen series. In the primary survey, just under three quarters of questionnaire respondents commented that the series was highly appropriate for the age and ability of their class, and a further 19 per cent rated it as generally good. As one primary teacher commented: 'If it wasn't suitable, I wouldn't use it!'

TEACHERS' USE OF EDUCATIONAL TELEVISION

At secondary level, just over half the heads of department judged their selected series to be highly appropriate for the age and ability of their class and a further 21 per cent felt it to be generally suitable. However, one area of concern for a minority of secondary respondents, was the suitability of the programmes for students of lower ability.

Use of mainstream broadcasts

All of the questionnaire respondents were asked a series of questions about their use of mainstream (i.e. non-schools) radio and/or TV broadcasts in their teaching. In the case of the secondary survey, heads of department were asked to include the use of mainstream broadcasts by other members of their department. Tables 2.16 and 2.17 show the patterns of use of mainstream and schools broadcasts by survey respondents.

Table 2.16 Primary teachers' use of schools and mainstream broadcasts since September 1992

		M A I N S T R E A M			Total
		Mainstream Used	Mainstream Not used	No response	
S C H O O L S	Schools Broadcasts Used	24	61	7	92
	Schools Broadcasts Not Used	1	1	-	2
	No response	1	4	1	6
	Total	26	66	8	100%

Percentages given in the table (N=658)

Table 2.17 Secondary departments' use of schools and mainstream broadcasts since September 1992

		M A I N S T R E A M			Total
		Mainstream Used	Mainstream Not used	No response	
S C H O O L S	Schools Broadcasts Used	46	15	3	64
	Schools Broadcasts Not Used	6	11	-	17
	No response	6	12	1	19
	Total	58	38	4	100%

Table 2.16 shows that most primary teachers used school TV and/or radio broadcasts in their teaching (92 per cent), and about a quarter used mainstream broadcasts (26 per cent). Almost all of primary users of mainstream broadcasts also used schools broadcasts. Table 2.17 shows that more secondary departments used schools TV broadcasts (64 per cent) than mainstream broadcasts (58 per cent), and that departments using one type of broadcast also tended to use the other.

Although the tables show an apparently large difference in use between primary and secondary schools, it should be remembered that the two are not directly comparable; while primary teachers were answering on their own account, secondary respondents were asked to include other members of their department.

Within the primary sample, fewer teachers of infants (15 per cent) used mainstream broadcasts than teachers of older children (about 31 per cent). This was a significant difference between teachers of different

TEACHERS' USE OF EDUCATIONAL TELEVISION

age-groups ($p < .001$). There were also significant differences between departments in secondary schools and colleges ($p < .0001$). This is shown in Table 2.18.

Table 2.18 Use of mainstream broadcasts within secondary departments since September 1992

Subject area	% reporting departmental use
Geography (N= 142)	87
History (N= 161)	74
Science (N= 135)	73
English (N= 140)	67
Technology (N= 122)	51
Modern languages (N= 151)	48
Maths (N= 169)	12

The table shows that the highest use of mainstream broadcasts at secondary level was reported in geography departments. Over two thirds of history, science, and English departments were reported to use mainstream broadcasts, and about half of technology and modern languages departments. Use of mainstream broadcasts was much lower in mathematics than in any other curriculum area.

At secondary level, the use of both schools and mainstream broadcasts tended to be similar within departments (see also Table 2.3). For example, a high proportion of geography, history and science respondents reported the use of both types of broadcasts, but only a small proportion of maths teachers reported the use of either schools or mainstream broadcasts. In technology, however, the proportion of respondents reporting the use of non-schools broadcasts in their department (51 per cent) was higher than those reporting the use of schools broadcasts (34 per cent). This suggests that there maybe an unmet need among technology teachers for suitable schools broadcasts.

VIEWING, LISTENING AND LEARNING

Respondents were asked to state which mainstream programmes (up to a total of four) they/their colleagues used. The most common types of mainstream programmes are shown in Table 2.19.

Table 2.19 Most common types of mainstream TV and radio broadcasts used by primary teachers and within secondary departments since September 1992

<i>Analysis of open-ended responses</i>	Primary (individual use) %	Secondary (departmental use) %
Wildlife and ecology	35	13
Historical	17	17
Children's programmes	15	2
Current affairs and documentary	12	34
News	9	12
Science and technology	9	37
No response	9	3
N	173	591

Percentages may sum to more than 100, since respondents were able to name up to four series.

It is apparent that the types of mainstream programmes used differed between primary and secondary respondents. For primary teachers, wildlife and ecology programmes were popular. In secondary departments, science and technology programmes were used most commonly; with one programme, *Horizon*, used in 29 per cent of all responding secondary departments.

Information was also collected on the channel or station on which each mainstream programme was broadcast. The results of this analysis are shown in Table 2.20.

TEACHERS' USE OF EDUCATIONAL TELEVISION

Table 2.20 Channel or station for mainstream broadcasts used by primary teachers and within secondary departments since September 1992

	Primary (individual use) %	Secondary (departmental use) %
BBC1/2	85	66
Channel 4	12	28
ITV	6	8
Satellite TV	4	6
Regional TV	2	<1
Radio	1	1
No response	26	22
N	173	591

Percentages may sum to more than 100, since respondents were able to name up to four series.

The table reveals a strong preference for mainstream TV programmes broadcast on BBC 1 and BBC 2, particularly at primary level. At secondary level, over a quarter of respondents named programmes broadcast on Channel 4. It is interesting to see the use of satellite broadcasts in school by a small minority of respondents. (Satellite broadcasts were more commonly used in modern language departments, with 20 of the responding 73 heads of department reporting their use, presumably because they gave access to foreign language broadcasts.)

Respondents were asked to choose one mainstream series they had used since September 1992 and then to say how many of the programmes in the series they had used and why they had used it (42 primary and 138 secondary respondents did not choose a specific programme, so they have been excluded from further analyses in this section).

Table 2.21 Number of programmes used in a selected mainstream series

	Primary %	Secondary %
One or two	48	33
Some of them	20	41
Most of them	7	8
All of them	7	5
No response	18	13
Total %	100	100
N	131	453

The table shows that the majority of respondents who used mainstream broadcasts tended to use a few of the programmes in a particular series. A comparison between users of both mainstream and schools TV broadcasts confirmed that teachers tended to use a higher proportion of the broadcasts in a schools than in a mainstream series (see also Table 2.6).

The most common reasons given for the use of a particular mainstream broadcast are given in Table 2.22. This table shows the reasons given for the use of a selected mainstream programme. The most common reason given by both primary and secondary respondents was relevance to the curriculum. For secondary heads of department, good content and presentation were important factors, as was the potential interest of the programme for their students.

Table 2.22 Most common reasons given for use of mainstream broadcasts

<i>Analysis of open-ended responses</i>	Primary %	Secondary %
Fits with the curriculum	49	37
Interesting/fun	12	14
Good programme content/presentation	9	19
Provides extra material	9	8
Reinforces teaching	8	10
Provides up to date information	1	14
Fits with exam syllabus	-	13
No response	17	7
N	131	453

Percentages may sum to more than 100, since respondents could make more than one comment.

The types of answer for this question are broadly similar to those given for teachers' choice of schools TV (see Table 2.11), although the two are not directly comparable because fewer respondents used mainstream than used schools broadcasts, particularly at primary level. However, one factor which appeared to be important to some secondary respondents in their use of mainstream, as opposed to schools broadcasts, was that the programmes give access to up-to-date information.

Summary

Use of schools TV

- The majority of respondents to the survey had used schools TV broadcasts since September 1994.
- A high proportion (88 per cent) of primary teachers used schools TV. At secondary level, there was a significant difference between departments: the most use of schools TV broadcasts was reported in geography (89 per cent), history (88 per cent), modern languages (80 per cent) and science departments (79 per cent). Of the English departments, 63 per cent used schools TV. Use was much less common in technology (34 per cent) and mathematics departments (15 per cent).
- The schools TV broadcasts used by most primary teachers focused on language development and history/geography.

Recording, previewing and integration

- Most teachers used prerecorded tapes of schools TV programmes, although 21 per cent of primary teachers used live broadcasts.
- Most primary teachers did not routinely preview broadcasts before using them with their class. In contrast, 75 per cent of secondary respondents said they previewed programmes 'most or all of the time'.
- The majority of questionnaire respondents reported integrating the TV broadcasts into their teaching by using them to introduce or follow up work in class.

The teacher's role

- Interviews with primary and secondary teachers revealed that most used broadcasts as a whole-class resource. Teachers commonly introduced broadcasts to the class, led follow-up discussion and provided related work. Teachers generally used video functions to monitor learning and emphasise teaching points during the broadcast.

Choice of series

- Common reasons for the choice of schools TV series by primary questionnaire respondents were: fit with the curriculum; good programme content/presentation and that the programme provided interest and fun. The most common reasons for choice given by secondary respondents were: fit with the curriculum; good programme content/presentation and the opportunity to introduce a visual element into their teaching.

Learning and suitability

- Most questionnaire respondents identified examples of pupil learning from broadcasts. At both primary and secondary level these included: reading, listening and cognitive skills. At secondary level, TV broadcasts were identified as developing particular subject-related concepts.
- The majority of teachers felt the broadcasts were suitable for the age and ability range in their class. Satisfaction was lower among secondary heads of department, a minority of whom felt that some of the material was too difficult for less able students.

Mainstream broadcasts

- Mainstream broadcasts were used for teaching purposes by just over a quarter of primary teachers. Over half of the secondary heads of department said they and/or their staff used mainstream broadcasts.
- Almost all the teachers who used mainstream broadcasts also used schools broadcasts.
- The most common types of mainstream broadcast used by primary teachers concerned wildlife or ecology. At secondary level, the most popular types of mainstream broadcast used were science and technology, and current affairs/documentary programmes. The majority of these mainstream broadcasts were broadcast by the BBC.

3. TEACHERS' USE OF SCHOOLS RADIO BROADCASTS

Introduction

This chapter presents evidence on teachers' use of schools radio. As far more radio series are available for primary teachers, and it was known that primary teachers were much more frequent users of schools radio than their secondary colleagues, the questionnaires differed: primary teachers were asked to give more detail about their use of radio. Therefore this chapter is mainly concerned with reporting results from the primary survey, together with some information from interviews with primary teachers.

Use of schools radio broadcasts in primary and secondary schools

Previous studies have found that radio broadcasts are used more commonly in primary than secondary schools (Scottish Office Education Department, 1993). In a study of FE colleges by Capron (1993) radio was found to be used much less often than TV, with some use in modern languages, and occasional use for drama, local history and current affairs.

In the current research both primary and secondary teachers were asked to give information on their use of schools radio. At primary level, the question related to use by the respondent, but secondary heads of department were asked to include the use of schools radio by others in their department.

TEACHERS' USE OF SCHOOLS RADIO BROADCASTS

Table 3.1 Use of schools radio broadcasts since September 1992

	Primary (individual use) %	Secondary (departmental use) %
Used	56	7
Not used	44	93
Total %	100	100
N	658	1020

As expected, only a small minority of the secondary respondents reported any use of schools radio within their departments, whereas over half the primary teachers said they had used this resource in their teaching since September 1992.

There were significant differences in radio use between respondents within both the primary and secondary samples. Within the primary sample, a higher proportion of teachers of infants (68 per cent) used schools radio broadcasts than teachers of older children (about 48 per cent) ($p < .001$). In the secondary sample, there were significant differences in the use of school radio by different departments ($p < .0001$). In line with the findings of Capron (1993) cited above, modern language departments had the highest percentage of radio use (19 per cent). English, history and geography departments were also reported to use schools radio broadcasts in a minority of cases. There was no reported use of schools radio in maths, technology or science departments.

Popular radio broadcasts

The 365 primary teachers who used schools radio broadcasts were asked to provide the titles of up to four radio broadcasts they had used in the past two academic years. On average, primary respondents listed 1.6 titles of schools radio series. There was no significant difference in the number of titles listed by teachers of different age-groups.

Table 3.2 shows the most popular radio broadcasts used by teachers of different age groups (338 teachers gave information on both the radio series they used and the age-group they taught).

Table 3.2 Most popular schools radio broadcasts used by primary teachers since September 1992

Age group taught	Series title	Used by %	Target age range
4-7 (N=152)			
	<i>Let's Move</i>	62	5-6
	<i>Time to Move</i>	29	6-8
	<i>Music Box</i>	13	4-5
	<i>Something to Think About</i>	11	5-7
7-9 (N=86)			
	<i>Time and Tune</i>	34*	7-9
	<i>Time to Move</i>	24*	6-8
	<i>First Steps in Drama</i>	20*	7-9
	<i>Together: An Assembly or Schools</i>	12*	7-11
9-12 (N=100)			
	<i>Singing Together</i>	24	9-12
	<i>Dance Workshop</i>	24	9-12
	<i>Music Workshop</i>	19	9-12
	<i>In the News</i>	15	9-12
	<i>Together: An Assembly for Schools</i>	13	7-11

Multiple response question: teachers were able to name up to four series.

* *Care should be taken by the interpretation of results based on small numbers of respondents.*

The table shows that the most popular radio broadcasts were concerned with music and dance/movement.

Teachers were asked to choose one radio series they had used and provide more information on it, including: the number of programmes used; whether they prerecorded and previewed the programmes; and how they integrated them into the curriculum (363 primary teachers answered this section).

Number of programmes used in a selected series

The number of programmes used in a selected radio series is shown in Table 3.3.

Table 3.3 Number of programmes used in a selected schools' radio series

	Primary teachers %
One or two	3
Some of them	20
Most of them	35
All of them	41
No response	1
Total %	100
N	363

The table shows that a majority of primary teachers used most or all of the programmes in a selected schools radio series.

Recording, previewing and integration of radio broadcasts into the curriculum

Teachers were asked to provide information on recording, previewing and the integration of their chosen radio series into their class teaching. The responses to these questions are given in Tables 3.4 and 3.5 below.

Table 3.4 shows that almost all of the teachers using radio broadcasts used prerecorded tapes of the programmes. This contrasts with the situation for TV broadcasts, where one in five primary teachers used live broadcasts. It is possible that the difference is due to the interactive nature of music and movement programmes. During the interviews, some teachers explained that they liked to be able to stop a radio broadcast to allow time for clarification of the instructions and extra practice. Prerecording was more common among teachers of infants (97 per cent) than for teachers of older age-groups (about 88 per cent), ($p < .05$).

Table 3.4 Teachers' use of live or tape-recorded radio broadcasts

	Primary teachers %
Use broadcasts live	7
Use prerecorded tapes of broadcasts	91
No response	2
Total %	100
N	363

Table 3.5 Frequency of previewing and integration of schools radio broadcasts into the curriculum (primary teachers)

	Previewing %	Use programmes to follow up work in class %	Follow up programmes with work in class %
Rarely/never	30	34	21
Sometimes	39	37	47
Most/all of the time	26	11	23
No response	5	18	9
Total %	100	100	100
N	363	363	363

For some radio broadcasts (such as those designed for music and dance/movement) primary teachers are unlikely to devote time to the subject apart from a session based on a radio broadcast. In this case, the broadcast *is* the work in class for particular subject areas.

Table 3.5 shows that the majority of primary teachers did not routinely preview radio programmes before using them with their class. Over a third of teachers said they sometimes listened to the radio programmes before using them with their class, and over a quarter said they rarely or

TEACHERS' USE OF SCHOOLS RADIO BROADCASTS

never did so. This was very close to the pattern of responses for previewing schools TV programmes (see Table 2.8).

Most teachers did not usually integrate the radio broadcasts into their teaching, although just under a quarter said they followed up the broadcasts with class work most or all of the time. Teachers of lower juniors were more likely to use radio broadcasts to follow work in class ($p < .0001$) and to follow up radio broadcasts with class work ($p < .05$) than teachers of older or younger age-groups. It is unclear why this should be so.

It would appear that primary teachers integrated schools TV programmes into the curriculum more commonly than radio programmes. This may be due to the fact that for some teachers, a radio programme on dance/movement or music may have been their only weekly teaching session for these areas of the curriculum.

Reasons for choice of schools radio series

Teachers were asked why they had chosen to use their selected radio series. The most common responses to this open-ended question are shown in Table 3.6.

Table 3.6 Most common reasons given for choice of schools radio series

<i>Analysis of open-ended responses</i>	Primary teachers %
Fits with the curriculum	23
Provides support for the teacher	20
Interesting/fun	16
Good programme content/presentation	16
Teaches knowledge/skills/concepts	13
No response	3
N	363

Respondents could make more than one comment.

As with choice of television series, the answer given by the highest proportion of primary teachers is that the series fits the curriculum. One in five teachers said that they chose a particular radio series because it offered them support in teaching an area of the curriculum in which they felt they lacked confidence and expertise (notably dance/movement and music). Other reasons were similar to those given for choosing a schools TV series (see Table 2.11): that the programmes were interesting and entertaining; that they had good content and presentation; and that they taught the children knowledge, skills and concepts.

Pupil learning from schools' radio broadcasts

When asked what their pupils learned from the chosen radio series, teachers gave a variety of answers, the most common of which are listed in Table 3.7.

Table 3.7 Commonly identified aspects of pupil learning from selected schools radio series

<i>Analysis of open-ended responses</i>	Primary teachers %
Listening skills	52
Dance/movement skills	32
Music skills	31
Social skills	11
Following instructions	11
No response	16
N	363

Percentages may sum to more than 100, since respondents could make more than one comment.

The table shows that over half of the respondents pointed out that children learned listening skills from their exposure to schools radio programmes. Apart from specific music and dance skills, radio broadcasts were also observed to help children learn to follow instructions and to develop social skills (such as turn-taking and cooperation with others).

Appropriateness of selected radio series

As with schools TV broadcasts, teachers were asked to comment on the appropriateness of their chosen radio series for their class. The most common responses are given in Table 3.8.

Table 3.8 Appropriateness of selected radio series for the class, in terms of age and ability range

<i>Analysis of open-ended responses</i>	Primary teachers %
Excellent/highly appropriate	71
Generally good	17
No response	4
N	363

Most respondents judged their selected schools radio series to be appropriate to the needs of the class, with 71 per cent saying the series was excellent/very appropriate, and a further 17 per cent judging it to be generally good. This is broadly similar to primary teachers' responses for schools TV broadcasts (see Table 2.15).

Comments from interviews with primary teachers on pupils' listening skills

Although the teacher interviews did not include a specific question on the use of radio, as opposed to TV broadcasts, several of the 25 primary teachers we spoke to raised the issue of pupils' listening skills when discussing their use of radio broadcasts.

In these teachers' experience, children did not have good listening skills. Several put this down to the decline of talk radio and the increasing presence of visual stimuli in the home (i.e. television and computer use). As one teacher of juniors said of her pupils: 'They seem to be very good visually, but nowhere near as attentive or retentive through their hearing. Whether that reflects society today with all its TVs and (computer)

monitors et cetera, and the gradual demise of radio in the home, I don't know, but I suspect there is a connection.'

A lack of listening skills in pupils could make teachers less willing to use radio broadcasts, particularly programmes which require children to sit still and listen. For example, an infant teacher had recently stopped using a radio programme, because she found the children were struggling to relate to the content: 'I think the radio has a very hard job because children have not got listening skills. The reason I abandoned *Infant History* was that they were asking children to draw too much on their own knowledge of visual things.'

However, others were determined to expose children to aural stimuli, in order to develop listening skills. As one teacher said: 'I try to use one TV and one radio series if possible... Listening is not something they do often but it's very valuable and it's emphasised in the National Curriculum.'

Summary

Use of schools radio

- ❑ Over half of the primary teachers who responded to the survey had used schools radio in their teaching since September 1992. In contrast, only seven per cent of secondary heads of department reported the use of schools radio by staff in their department in the same period.
- ❑ At secondary level, modern language departments had the highest use of schools radio broadcasts for schools (19 per cent of which were reported to use schools radio). There was no use of schools radio reported in maths, technology, or science departments.
- ❑ On average, primary teachers used between one and two radio series. The radio broadcasts used most commonly were music and dance/movement series.

Recording, previewing and integration

- A majority of primary teachers used most or all of the broadcasts in a particular radio series. Most teachers used prerecorded tapes, rather than using the broadcasts live.
- Only a quarter of primary teachers always listened to the radio programmes before using them with their class. Most teachers did not routinely integrate radio broadcasts into their teaching by setting associated work for the class. This may have been due to the fact that for music and dance/movement in particular, some teachers rely solely on the radio programmes (therefore the programme is the work in class).

Choice of series

- The most common reasons given for choice of a particular radio series were: degree of fit with the curriculum; providing support for the teacher; that the series provided interest and fun; good programme content/presentation; and for the teaching of knowledge, concepts and skills.

Learning and suitability

- Apart from specific music and dance skills, primary teachers felt that schools radio broadcasts helped children to develop listening skills, to follow instructions, and to learn social skills.
- Most of the primary teachers surveyed judged their chosen radio series to be appropriate to the age and ability level of their class.
- Interviews with primary teachers revealed that they felt their pupils did not have good listening skills. This deterred some teachers from using radio, while others felt it was important to use radio as a means of developing pupils' listening skills.

4. SCHOOLS BROADCASTS IN CONTEXT

Pupils' and Teachers' Views

Introduction

This chapter presents information from semi-structured interviews with pupils and teachers. The sample consisted of 35 schools in Scotland, Wales and England where we interviewed 47 teachers. (For further information on the sample of schools, please see Chapter 1.) We also played extracts from BBC schools programmes to groups of pupils, observed their reactions and asked them for their views. The pupils ranged in age from four to 16, according to the target age range of the programmes. They were interviewed in mixed ability groups of four. There were ten programmes, each shown to six groups of pupils, making a total of 60 group interviews with 240 pupils.

The first part of the chapter looks at the differences between schools and mainstream programmes, presenting the findings from a previous research study and the views of the teachers and pupils we interviewed. This is followed by a summary of previous research findings on children's attention to and learning from educational television, and a section reporting the views of teachers interviewed in this research. The main part of the chapter consists of a detailed examination of pupils' reactions to each of the ten broadcasts. This is followed by an overview section, bringing together the main issues raised from the pupil interviews. The chapter ends with a summary of the main points.

The characteristics of educational television

Findings from previous research

Do educational programmes contain different features from 'mainstream' TV? In a study of US television aimed at children, Huston *et al.* (1981) set out to answer this question. They sampled two weeks of children's TV and coded the features present in each programme. The results showed that there were differences between the two types of programmes. Educational programmes were 'most clearly characterised by features involving reflection – singing, long zooms, and moderate character action – and by frequent child dialogue' (Huston *et al.*, 1981, page 41). The researchers found that commercial children's programmes were characterised by such features as rapid action, variability, intensity, contrast, change, novelty, and incongruity. They also contained more animation, non-verbal humour, and adult dialogue.

Pupils' and teachers' views

The 47 teachers interviewed in this research were asked to identify what they felt to be the main differences between schools broadcasts and mainstream TV and radio programmes. The 240 pupils were asked a similar question: 'Thinking about the programmes you watch/listen to at school and those at home, what are the main differences?' (The youngest children had difficulty in answering this question, although some of them were able to do so.)

In just under half the group interviews with pupils, a major distinction was drawn between the aims of the two types of programmes. Schools broadcasts were perceived to be 'educational': their purpose was to teach children, and to help them to learn. On the other hand, the broadcasts watched at home were not educational, their main purpose being entertainment.

One ten-year-old explained: 'You come to school to learn, therefore you expect to learn things [from the programmes]. At home you go to watch TV to enjoy things.' Similarly, a 13-year-old said: 'School ones are trying to teach you stuff, and they put on programmes that are educational. What you watch at home aren't really educational.' Even some of the youngest children recognised the pedagogic nature of schools programmes. For example, one six-year-old said: 'In *Words and Pictures*, he [the presenter] shows us what to do, how to learn things.' Referring to the same BBC schools programme, a five-year-old from another school said: 'Because there are letters and things, you can learn things at school, but not at home – you just watch and don't learn from them.'

A second distinction made by between a third and a half of the pupils concerned the types of programmes they were likely to watch in the two settings. At home they would watch soap operas, cartoons, films and sports programmes in contrast to the educational programmes shown at school. Schools broadcasts were perceived to be more factual than programmes viewed at home.

A few pupils said that at home they had a choice about the programmes they watched, whereas at school, viewing (and attending to the broadcast) was compulsory. Others pointed out that schools broadcasts were targeted on a school audience, and were often made for a particular age-group.

Children in some groups praised schools broadcasts for being interesting, and for helping them to learn. However, the question also gave rise to negative comments on schools broadcasts from a minority of pupils, mainly at secondary level. These included that schools broadcasts were less interesting, exciting, humorous, and up-to-date than mainstream broadcasts.

In general, the teachers made similar points to the pupils, with about a quarter focusing on the educational nature of schools broadcasts. A few added that schools broadcasts tended to be shorter, more tightly focused on a specific area of interest, and more factual. A few teachers also acknowledged that in school, children were compelled to watch and listen to programmes but at home they could choose whether to participate or not.

Interestingly, whereas several secondary heads of department said that they felt schools programmes should not differ much from mainstream broadcasts, others (particularly teachers of infants) wanted schools programmes to be completely different from children's TV. These teachers criticised mainstream children's programmes for providing poor role models, including sloppy speech, silly behaviour, and violence. One teacher commented: 'Some of the things they do in mainstream programmes are silly. Little children don't realise it's maybe all tongue in cheek and they emulate it.' Another said: 'Children's TV is all killing, shooting, banging and bashing. I think they [i.e. the schools programmes] should be as different as possible.'

How broadcasts contribute to learning

Comparisons between the impact of television and other media on learning

Certain reviews of studies comparing learning from a variety of different media (e.g. print, live teaching, radio, TV and computers) have found no evidence that any one medium is superior (Clark, 1983; Clark and Salomon, 1986). As Clark and Salomon state: 'Past research on media has shown quite clearly that no medium enhances learning more than any other medium regardless, of learning task, learner traits, symbolic elements, curriculum content or setting' (Clark and Salomon, 1986, page 474).

However, Kozma (1991), in his review of the research literature on media and learning, suggests that Clark's position must be modified: 'Some students will learn a particular task regardless of the delivery device. Others will be able to take advantage of a particular medium's characteristics to help construct knowledge' (Kozma, 1991, page 205).

Kozma draws on the work of Holland *et al.* (1986) to suggest that TV is a particularly useful medium for illustrating processes, such as the dynamic change resulting from the use of a mathematical formula. This point is also made by Bates (1981). As head of the audio-visual research

group at the Open University (OU), Bates points out that a TV representation can provide a bridge between the abstract and the concrete, or between personal experience and abstraction. In his opinion, TV examples of this kind are most helpful for borderline candidates.

Yet Bates acknowledges that learning from TV may not be a simple process even for adults. In an evaluation of the use of TV series designed to support Open University courses, less than one-third of the students had both understood the purpose of the TV material and were able to use it in the way intended. Rather than help them to apply the knowledge gained in the texts (as intended by the programme makers), students expected the programmes to contain new material or explain information inadequately covered in the texts. The OU now provides students and tutors with examples of the different uses of TV, and suggests how to approach such material. In Bates' view, this has increased the students' appreciation and use of the programmes.

Teachers' perceptions of how broadcasts contribute to learning

Thirty-nine of the teachers interviewed in this study were regular broadcast users. They were asked how the broadcasts they used contributed to pupil learning, and whether they could think of specific examples when pupils' learning was stimulated or enhanced by a schools broadcast.

The teachers found these questions difficult to answer. They tended to describe how broadcasts helped them to teach, rather than identify how broadcasts helped their pupils to learn. This could be due, in part, to the fact that teachers (particularly at secondary level) used broadcasts as a reinforcement of prior learning. As several teachers pointed out, broadcasts were one of many teaching approaches, so they did not evaluate what pupils had gained from this resource, as opposed to other aspects of their teaching. As one teacher said: 'I don't think about it too deeply, I just assume it works well.' However, other teachers did consider this more critically, and were able to identify what their pupils had learned from the programmes. Several main areas of learning can be identified from the teachers' comments.

Teaching techniques

The teachers felt schools broadcasts offered particular benefits as a medium for teaching and learning. Teachers referred to the ability of programmes to 'bring a subject to life', for example, by providing experiences from inaccessible places or by recreating images from the past. They also commented on the ability of media techniques to put a subject across in a stimulating way (through the use of strong visual images, unusual camera angles, animation, sound effects etc.) Several teachers commented that other teaching methods could not compete with the quality of broadcasts. As one infant teacher said of the TV series she used: 'It presents numbers to them in a way that's far more sophisticated than anything we could do – it makes us look quite dull!'

Through their stimulating content and presentation, broadcasts were felt to contribute to learning by enhancing attention, motivation and recall of factual information. As well as conveying information, broadcasts were found to be helpful in teaching pupils skills and developing their conceptual understanding.

Attention and motivation

Teachers noted that some broadcasts were particularly successful in stimulating pupils to attend to the information contained in the broadcast. One junior school teacher said: 'It sustains their interest, they're not going to be bored by it. The children here are quite easily bored and they won't learn if they're going to be switched off from the start.'

Teachers commented that pupils enjoyed watching broadcasts and that this was important in motivating them to learn. Several primary teachers described how viewing a programme had led to pupils wanting to find out more about a subject, for example, by taking out related books from the library, or in trying out ideas given in the programme.

Recall of information

Powerful visual images were one of the main features observed to help pupils to remember information contained in broadcasts. For example, one teacher of juniors praised the *Landmarks* series which included a dramatic account of the Plague and the Great Fire of London: 'The children got an awful lot out of that, a lot more than they would have from us just talking or looking at books.' She went on to explain that, some

time after the broadcast, an inspection team visited the school and questioned the pupils about what they had learned in history. The teacher was pleased with the amount of information pupils were able to recall on the subject: 'I think it was because of the visual image they had from the TV programme', she said.

Skills and concepts

A point made by many of the primary teachers was that through using broadcasts (especially radio), they were enhancing children's ability to listen and concentrate.

Some teachers used broadcasts to teach subject-related skills, particularly for primary science, music and movement, and for secondary foreign language teaching. One infant teacher described how some of her science teaching was organised around the TV programme *Thinkabout*. A recent programme had focused on the theme of pushing and pulling. Immediately before the programme, children had experimented with wheeled toys and a slope. After the programme, they resumed their class work, and the teacher observed that they had picked up ideas from the programme, such as measuring the distance covered by the cars running down the slope, and relating this to the weight and wheel size of each car.

Some broadcasts were felt to be helpful in demonstrating dynamic processes and providing concrete examples of theoretical concepts. For example, two heads of geography had shown the same programme about rivers. The programme included dramatic film of a waterfall on the River Tees, and used graphics to show how the waterfall had formed. Both teachers commented that they would not have been able to teach this as well using other means.

Two teachers of juniors said they had found a broadcast particularly useful for developing pupils' conceptual understanding of the relationship of the planets in space. Another junior teacher gave an example of how a TV programme helped children to understand how buildings are constructed. The class visited a local building site, and the teacher found: 'They were able to interview the manager of the site because they had seen a house being built on TV so they could relate to what was happening.'

A few teachers said that they found broadcasts helpful in promoting questioning and discussion, for example, by focusing on controversial issues, and by including opposing views.

Confidence and credibility

Two other advantages of broadcasts were mentioned by a small minority of the teachers: that schools broadcasts sometimes gave pupils the confidence to try something they had seen on TV, and that, when they confirmed what a teacher had said, they lent credibility to teaching. On the subject of confidence, one junior teacher described her pupils' reactions to a maths programme: 'They enjoyed the investigative work and seeing their peer group at work...they thought if they can do it, we can.' Another said of an infant science programme: 'When they see other children performing tasks, they identify with it themselves...even the shyest boy who hasn't shown a lot of interest will certainly be stimulated by it.'

On the subject of reinforcing the teacher's credibility, a teacher said: 'Books and talk aren't always taken in, but when they see it on a video, they think "Oh, it's on the video so it must be right". They smile in recognition of something I've told them as much as to say "Oh, you were right!"' Another teacher had found it difficult to persuade junior children to redraft their work, until she showed them a programme in the *English Express* series, which featured a writer of soap operas. The fact that a professional author's work always underwent several drafts had impressed the pupils, and made them more willing to accept that their teacher was right to insist on this.

Teachers' views on successful and unsuccessful broadcasts

During the interviews with 47 teachers (39 of whom were broadcast users) we asked them to identify the most effective aspects of the broadcasts they used. We also asked teachers to identify any programmes or programme elements they felt were *not* successful in stimulating a learning experience.

The 39 teachers felt broadcasts were most effective when they were about exciting or dramatic themes; contained issues and situations their pupils could relate to from their own experience; and provided opportunities to see and hear things pupils would not normally encounter. There was some difference of opinion on the use of cartoons, which some teachers disliked, but others felt added interest to the programmes. Other content-related comments supported the use of dramatisation (particularly for history); the use of questions; the inclusion of children of the same age as the audience; and relating the content directly to the school curriculum.

A few teachers mentioned specific examples where other aspects of a programme had helped pupils remember information. For instance, a head of science described a programme which used humour to portray human fertilisation: 'They laugh at it, but it helps them remember'; and an infant teacher gave an example from *Words and Pictures* which used humour to teach about the letter V, showing a cartoon of a vulture, wearing a vest, and playing the violin. Songs used in programmes could be effective in helping pupils remember learning: two teachers of juniors said they sang a song from the *Look and Read* TV series to remind poorer readers of reading strategies.

Programmes that were unsuccessful tended to have content that was either too difficult (particularly in terms of language) or too easy. Some were thought to contain too many dry facts, and not to relate the content sufficiently to the pupils' interests.

Teachers also felt the programme structure to be important. The programmes that they had found to be particularly successful tended to have a clear structure, with a varied presentation of issues all relating to a common theme. Good broadcasts were pacy, full of ideas (without losing focus), and up to date. They were also relatively short – a number of teachers pointed out that they could not effectively use a programme over about 20 minutes in length.

In contrast, poor programmes were identified as having a confused structure, being too fast-paced, or being too slow and static. (One teacher described such a programme in which a man standing in a field 'droned on' at length.) Other teachers were particularly averse to the use of 'talking heads'.

Presenters also featured in the teachers' comments. Effective presenters possessed an enthusiasm for and understanding of their subject, together with a clear and commanding voice. Poor presenters were either boring or too zany, and had poor diction or a condescending manner.

Finally, teachers commented on the importance of high quality visuals and sound. Visual quality was of particular importance, because as several teachers pointed out, children tended to rely on the visual information most heavily when watching television programmes.

Programme features and attention: the findings from previous research

One of the main areas of interest among researchers in the USA in particular, has been the elements or 'features' of children's TV programmes which can be studied regardless of the programme content.

Studies of how young children attend to the TV have identified certain features of programmes which attract young children's attention to the TV screen, are related to a loss of interest, or have no apparent impact on attention (Alwitt *et al.*, 1980; Anderson and Levin, 1976; Baggaley, 1985; Rice *et al.*, 1987). These features are summarised below.

- Auditory features, such as, lively music, sound effects, children's and women's voices, peculiar voices, laughter and applause, are effective in attracting and holding children's attention.
- Visual features, such as animation and visual effects, bright colours and high levels of physical action, attract and maintain attention.
- Changes in scene, characters or auditory effects are especially effective in eliciting attention, but less effective in maintaining it.
- Attention is higher when women, children and puppets are present.
- Features associated with a loss of attention are: long complex speeches; long zooms; men's voices; inactivity; and live animals.
- Camera work, such as pans, cuts and shorter zooms, seem to have little effect on children's attention.

Rice *et al.* (1987) summarise research findings from several studies which suggest that younger children (and those with little TV experience) are primarily interested in 'perceptual salience' (i.e. the perceived relevance of a programme to the viewer). Features that contribute to perceptual salience include intensity, movement, contrast, change, novelty and incongruity. While younger children respond to these elements as entertainment in their own right, older children develop more discrimination and are increasingly interested in the content of the programmes.

The relationship between programme features, comprehension and learning

A knowledge of the effects of programme features on children's attention is important for programme makers in helping them to make attractive programmes. But do children of different ages attend to different features, and what effect do these features have on comprehension and learning?

Anderson and his colleagues (Alwitt *et al.*, 1980; Anderson and Levin, 1976) have argued that young children learn to use certain features of TV programmes (e.g. animation, children's voices) as cues that a programme, or part of a programme, is likely to be comprehensible to them, and will therefore pay attention to it. However, as Rice *et al.* (1987) point out, comprehensible content is not sufficient, in itself, to hold children's attention. If a programme is perceived to be too simplistic, children will lose interest, just as they will if the content of the programme is too complex.

As children develop, their ability to relate visual to auditory information improves, as does their ability to integrate events occurring over time (Wackman and Wartella, 1977).

Collins *et al.* (1978) have provided evidence that children become more sophisticated viewers as they develop and mature. They argue that mature comprehension requires three elements: selection of relevant information; ordering the information according to a scheme; and the ability to make inferences that go beyond the presented information. In their study they showed specially designed TV programmes to US seven-, ten- and 13-year-olds. They found that comprehension increased with

age, as did the ability to remember plot-essential information, and the ability to make inferences. It seems that younger children had more difficulty in distinguishing between central and irrelevant information, and this may have made it more difficult for them to make sense of the plot.

When relevant information is clearly signalled, young children find the content easier to comprehend. For example, Williams (1981) summarises evidence from several evaluation studies of the US educational programme *Sesame Street* which found that children's learning was enhanced when the programme distinguished clearly between relevant and irrelevant information.

Huston-Stein and Wright (1979), drawing on the work of Anderson and Salomon, suggest that children may rely on salient features within a programme to help them distinguish important from irrelevant information, and that younger and less experienced viewers rely on this method of selection more heavily. In support of this theory, Calvert *et al.* (1981) found that young children (US pre-schoolers) attended more to some 'salient' features in a cartoon than older children (eight- to ten-year-olds). The older children attended more to moderate action, suggesting that it may be important for understanding plots.

If salient features are present, but are not directly related to central aspects of a programme, this can result in confused and fragmentary recall of programme content among younger children. An illustration of this is provided in a small-scale study of a schools TV programme (Choat and Griffin, 1986a). Twenty-one English children, aged from 6.6 to 7.4 years, watched a programme about canals. The results of interviews with the children showed that most of them had not understood the central theme of the programme, and had gained little from it. Their attention had been awakened by particular incidents (usually when something extraordinary or stimulating happened, such as the appearance of a spider), but these incidents were not related in a logical way to the content of the programme. Also, it appears that much of the relevant information (on the construction of canals) was contained in the commentary of the adult male presenter, but this was simply not comprehended by the children. (In this case, as well as salient features signalling irrelevant information, a non-salient form had been used to present relevant information.)

VIEWING, LISTENING AND LEARNING

As well as looking at the importance of highly salient features in children's programmes, research has also focused on children's comprehension of common TV techniques. For example, one study found that it was not until the age of seven that children noticed replays which had been inserted into a TV programme. Younger children tended to interpret the replays as repetitions, as though the actors had simply repeated their actions (Rice *et al.*, 1987). In a study of over 300 11-year-olds (Twitchin, 1991) comprehension of the use of black and white documentary footage in a schools history programme was assessed. Twenty six per cent of the children said this meant 'real-life or documentary' and 40 per cent said it meant 'in the past'. However, ten per cent said part of the programmes were in black and white because 'they couldn't afford colour'.

Clark and Salomon (1986) argue that a grasp of the function of media techniques is important in the comprehension of content. For example, Salomon found that children who were adept at relating parts to the whole, and who therefore understood the use of 'cut to close up' learned more content from a film using close-up techniques, than did children who were less skilled in understanding the format.

Rice *et al.* (1987) suggest that there are three levels of representation in TV programmes. The simplest level is a literal visual and/or auditory representation of the real world (e.g. a film of a walk through a park). A child's ability to process this type of information is mainly dependent on the same perceptual and cognitive skills used to interpret real-life events.

The second level of representation comprises media forms and conventions that have no exact real-life counterpart, such as zooms, cuts, dissolves, slow motion, and special effects. Rice *et al.* argue that children acquire knowledge about these elements largely through experience with the medium. (There would also appear to be a developmental element to children's ability to recognise and interpret these forms.)

A third level of representation involves symbolic forms common to the culture outside TV. This would include visual and verbal symbols, such as the language (e.g. 'Once upon a time, long, long ago'). Children can learn the meaning of these forms without viewing TV, according to their age and stage of development.

Pupils' reactions to selected schools programmes

The instruments used in this study to investigate pupils' reactions to broadcasts, drew on the findings of previous research. Fieldworkers were trained to show/play extracts from ten recently broadcast BBC schools programmes to groups of children, to observe their reactions, and to ask a series of pre-prepared questions. In order to keep the sessions with pupils to a maximum of about 45 minutes, most of the tapes were stopped before the end of the programme or edited slightly. The ten programmes were selected by the BBC in consultation with the project leader. Although they had access to teachers' notes for most of the broadcasts, the researchers did not know the specific learning outcomes the programme makers had in mind. The selected programmes are listed in Table 4.1.

Table 4.1 Details of BBC schools programmes used in the current research

Series	Programme	TV/Radio	Length in minutes *	Target Age-group
1. <i>Numbertime</i>	<i>Number Eight</i>	TV	12	4-5
2. <i>Words and Pictures</i>	<i>Letter o</i>	TV	11	5-6
3. <i>Letterbox</i>	<i>Letter c</i>	Radio	9½	4-5
4. <i>Look and Read</i>	<i>Earth Warp Episode 1</i>	TV	14	7-9
5. <i>Landmarks</i>	<i>Coping with the Climate</i>	TV	12½	9-12
6. <i>History 9-11</i>	<i>Boudicca the Iceni Rebel</i>	Radio	13½	9-11
7. <i>Quinze Minutes</i>	<i>Temps Libre</i>	TV	9	11-13
8. <i>History File</i>	<i>Pompeii</i>	TV	9½	11-12
9. <i>Seeing Through Science</i>	<i>The Body Builders</i>	TV	11	11-14
10. <i>The Geography Programme</i>	<i>Japan 2000 Changing Lifestyles</i>	TV	14½	13-16

* Length of broadcast actually used in the research

Research methods for pupil interviews

It was decided to play the broadcasts to pupils without teacher mediation. This strategy was adopted for two reasons. First, while acknowledging that most teachers help their pupils to interpret programme content, we wanted to know what the minority of pupils who do not benefit from teacher mediation were likely to gain from the broadcasts. Second, if we had studied the broadcasts by observing teachers interacting with their classes, it would have been difficult to judge how the quality of the mediation, as opposed to that of the programmes, had affected the pupils' responses in each case.

Each programme was shown to six groups of children in the appropriate age group. There were four children in each group (two boys and two girls in mixed-sex schools). Teachers were asked to select children representing a range of ability, and to choose pupils who were reasonably talkative.

The researchers withdrew each group to a separate area and introduced themselves to the children, saying they had been asked by the BBC to find out what children like themselves thought of the TV and radio programmes used in schools. The pupils were assured of confidentiality: 'I won't tell your teachers what we've discussed.'

After a few introductory questions, the researcher played the programme, noting the pupils' reactions to it on an observation schedule. The researchers then asked some specific questions to check if the pupils could recall the content, and some questions common to all the programmes: what they liked about the programme; what they disliked; was there anything they did not understand; what did they feel they had learned from the programme; what they would say the programme was about, if describing it to friends; and whether they thought it was appropriate for children of their age. The pupils' reactions during the broadcasts, and their answers to these questions, were analysed and the results are described below for each programme in turn.

It is important to point out that the viewing/listening situation was an artificial one: children were in a small group, rather than part of the class;

the programme was shown out of context; the teacher was not present, and there was no adult mediation of the programme.

We found that it was easier to observe differences in behaviour among the infants than older children. The younger children were much more likely to show their reactions in their body language (by looking towards or away from the TV/radio set, by fidgeting and attempting to distract the other children) and by joining in with or commenting on what they saw and heard. The observer's task became most challenging at secondary level, where the young people were fairly guarded in their reactions to the programmes as they viewed or listened to them.

Where reference is made to comments from 'individual children/students', this means that each of the remarks was made by one person.

PROGRAMMES FOR INFANTS

Programme 1. *Numbertime. Number Eight*

Most of this TV programme was shown. The programme was fairly fast-paced, with ten different segments. The programme use a variety of techniques to focus on the number eight, including: a female presenter; cartoons; model animation ('El Nombre'); film; and dramatisation (Wee Willie Winkie). There were several songs and sound effects. The children who viewed the programme were aged between four years four months and five years 11 months (the majority were five years old).

Observation

The children were very attentive throughout the programme. Some children became distracted for a short while, then a change of scene regained their attention.

VIEWING, LISTENING AND LEARNING

There were several features that were associated with particularly high levels of attention and involvement from the children. These were as follows:

- Counting song: sung by the presenter and repeated on three occasions.
- After the first time the presenter invited the children to join in. Almost all of the children did join in, one group also clapping along. Children in different groups exclaimed 'Champion' and 'This is good'. Several children also attempted to join in with other songs featured in the programme ('El Nombre', 'Numbers All Around' and 'Planet of the Eights').
- In the programme, a young girl with a toy octopus counted the octopus's legs. Children in all six groups counted along with her.
- Spiders. There were two spiders shown, the first was a cartoon animation, the second, film footage of a large tarantula spider which appeared as part of a fast sequence of images relating to the number eight. In three groups, the spiders were effective in gaining the children's initial attention ('Ooh, a spider!') but in two of the groups children were so excited by the spider that they continued to talk about it when the programme had moved on to the next scene.
- El Nombre model animation. Although there was some tendency for the children's attention to wander during this scene, the children were attentive to: the theme song (three groups), the appearance of El Nombre swinging in on a rope (two groups); and the number eight being drawn in the sand on three occasions (seven of the children copied the characters by drawing a number eight in the air).
- Wee Willie Winkie dramatisation, featuring a policeman, a crime reconstruction and eight witnesses. The story focused on the time of the incidents (e.g. just before eight o'clock, past eight o'clock), and Wee Willie Winkie's actions in making the women's babies cry. At the end of the scene, the policeman changed into Wee Willie Winkie. Children in all six groups were observed to be particularly attentive throughout this scene, and amused when the policeman turned out to be Wee Willie Winkie.

- Brief animation with scale singing (doh ray me). The singing of the top note caused a glass to break. Children in five of the groups were surprised and amused at the breaking glass.
- There were no parts of the programme that were consistently associated with lower levels of attention.

The children's opinions

All but one group of children had seen this programme before. When asked if they liked the programme, all the children said they did. One child said: 'It wasn't at all dreary!'

What they liked

The children in all six groups said they enjoyed the dramatisation with Wee Willie Winkie. They singled out two aspects that they liked: his mischievous character (he made the babies squeal, snatched a candle, he was masquerading as a policeman) and sound effects (the babies crying, the clock tick-tocking). Children in three groups said they had liked the final scene, which consisted of the presenter dancing and singing about a planet where everything was eight-shaped, with animations of eight-shaped objects. A few individuals mentioned liking the music, the songs and the presenter.

What they disliked

Only nine children were able to identify anything in the programme that they had not liked. There was little consistency in the few responses, although children in two groups said they had not liked 'the shouting' (there had been some shouting in the Wee Willie Winkie sketch). A somewhat surprising comment was made by one four-year-old who said he had not liked the (black) presenter 'because she's a brown colour'.

Their understanding of the programme

When asked if there was anything in the programme they did not understand, only one group came up with anything. One girl said she had not understood 'the eights and the dolls' (presumably a reference to the Wee Willie Winkie sketch) and another was puzzled by 'how the eight-shaped cars worked'.

What they learned

Children in three groups said the programme had taught them 'about numbers', and children in two groups said it had taught them about number eight. One child said he had learnt 'how to draw numbers'.

Specific questions on programme content

The programme contained a sequence designed to demonstrate conservation of number (however you divide up a number the total remains the same). This was done through animation: a sequence where eight dots formed patterns (two fours, four twos, etc.) to the accompaniment of country dance music. We wanted to check if the children had understood the point of this sequence, so after the researchers had shown the whole programme, they reran the tape and showed this sequence again, asking: 'What do you think that was teaching you?' In three groups, none of the children was able to comment on the purpose of the sequence. In the other three groups, children had noticed that there were eight dots, one boy noticed that there were 'two fours' and another went on to point out that there were 'always eight' of them. This suggests that this sequence was difficult for the children to comprehend without the intervention of a teacher.

Target age range

Most of the 24 children judged the programme to be suitable for their own age-group, although four of the five-year-olds thought it would be more appropriate for younger children.

How they would describe the programme to their friends

If describing it to their friends, children in five groups would say the programme was 'about numbers', and in two groups children referred to the Wee Willie Winkie sketch. One boy commented that he would recommend his friends should watch it because: 'You have to learn your numbers'.

SUMMARY POINTS *Numbertime*

- The children were attentive to the programme and enjoyed it.
- There was a positive response to being asked to join in with the songs. Children commented that they had liked the music and songs.
- The children reacted positively to action which they could emulate (e.g. the girl counting the octopus's legs, El Nombre drawing numbers in the sand.)
- The repetition (songs, El Nombre drawing the number eight, Wee Willie Winkie witnesses) was an effective feature.
- The children were attentive to and enjoyed the story about Wee Willie Winkie.
- The use of humour was enjoyed by the children, particularly where there was an element of surprise (e.g. Wee Willie Winkie's mischievous behaviour and the policeman turning out to be Wee Willie Winkie in disguise; animation of a glass broken by a singer's voice).
- The children had noticed and liked the use of sound effects (e.g. the clock ticking and babies crying).
- Children reacted strongly to the appearance of (cartoon and real) spiders in the programme, although these made only brief appearances. In some cases the children were so stimulated by the spiders that they continued to discuss them when the programme had moved on to another section.
- The children could not make sense of the 'dancing dots' sequence without mediation.
- The children clearly understood the purpose of the programme, and felt that it had taught them about numbers. Some of the children emulated the drawing of the number eight, demonstrated in the programme.
- The children felt the programme was appropriate for their age.

Programme 2. Words and Pictures. Letter o

This programme was shown up to the final part (a story about owls), which was omitted. The programme was in five main parts. After the title sequence, it began with the male presenter demonstrating an 'orange machine'. The machine consisted of a series of brightly coloured slopes down which an orange rolled. At the bottom, the orange triggered a switch, which moved from 'on' to 'off' (this was repeated four times). The presenter then asked the children to identify some things beginning with the letter o, and short film extracts followed, showing an ostrich, an otter, an orange and an ox.

The programme moved on to show four young children who each described characteristics of a mystery animal and asked 'What do you think it is?' as a series of close-ups revealed an octopus in a large aquarium. Next a man with a small octopus in a tank talked about the octopus to the children as they touched it and asked questions. This was followed by film of an octopus swimming in the large aquarium, and the children repeated information about the octopus ('I like octopus because...') The programme then moved back to the studio where the presenter drew an animal's eye. He asked the audience to guess what it was as he completed his drawing (of an owl). The final part of the programme, as shown, consisted of film footage of an owl and two owlets with a voice-over commentary.

The children who viewed this programme were aged between five years one month and six years 11 months (the majority were six years old).

Observation

This programme achieved very high levels of concentration from the children: episodes of lack of concentration tended to be rare and fleeting.

Several features were associated with particularly high levels of attention and involvement from the children. These were as follows:

- The title sequence: children in three groups joined in as the title was shown and spoken (by a child's voice).

PUPILS' AND TEACHERS' VIEWS

- ❑ The orange machine: two boys in different groups commented on the complexity of the machine ('That must have took a long time to make'). When the switch moved from on to off, two children said 'on' and 'off'. The children appeared to appreciate the fact that the action was repeated, and enjoyed watching the orange moving down the slopes.
- ❑ Film of things beginning with 'o'. The presenter asks the audience: 'What else can you see that starts with the same sound?' Most of the children joined in by guessing, and correctly identified the ostrich, otter and orange. Three children were able to guess the name of the ox. (Some of the children looked to the researchers, expecting them to contribute at this point.)
- ❑ When the children in the programme began to describe the animal, all the groups attempted to guess which animal was being talked about, and most were able to do so from the descriptions given, before the octopus was revealed and named.
- ❑ The film of the octopus was effective in maintaining attention (although four children became distracted right at the end of the sequence, when the octopus was shown swimming in the large aquarium). The children seemed particularly interested in the close-up of the octopus's suckers, when the children in the programme touched the octopus, and the octopus spitting water at the children. They were also attentive to some of the information given by the man talking to the children, and several repeated what was said, e.g.: 'It eats crabs'; 'He can see as well as us'; 'It's ticklish'.
- ❑ The presenter drawing the owl: most of the children tried to guess which animal he was drawing. Some guessed octopus at first, but children in all groups soon recognised it was an owl.
- ❑ The presenter's skills were commented on by two children. In the first scene, one boy assumed that the presenter had built the orange machine himself: 'That's a clever man, no one could make one of those.' When the presenter drew the owl, one girl said: 'That's good, he's good at owls.'
- ❑ There were no parts of the programme consistently related to lower levels of attention from the children.

The children's opinions

Almost all the children said that they had seen this programme before. The children were enthusiastic about it: one boy who had seemed quite restless during the screening unexpectedly pronounced the programme to be 'absolutely good'.

What they liked

The part liked by all the children was the film of the octopus. The octopus's suckers, and the fact that it changed colour were singled out for particular mention. A few children also mentioned liking: the music; the orange machine (because it was able to turn itself off); the owls (drawing and owlets); and the title sequence ('when the girl opens the book and the octopus comes out and the cat').

What they disliked

Only six children were able to identify anything they had not liked about the programme. Children in one group disliked two features of the octopus film: 'when the octopus changed colour' and 'when it hid behind a stone because it looked like it didn't have a face, just legs'.

Features disliked by individual children included: the owl film (one child said this was because she was afraid of owls) and being asked what things start with a letter o ('because you have to wait and see'). The orange machine was said to be 'boring' by one boy, and another had expressed disappointment with it during the screening because 'It doesn't do anything to the orange'.

Their understanding of the programme

Only one child said there was something he had not understood, which was 'what the little boys and girls were talking about when they were with the octopus in the tank'.

What they learned

When asked what they had learned from the programme, most children said they had learned about an octopus (several spoke about specific octopus facts they had learned). Children in two groups mentioned that the programme had taught them about words, and one boy said he had

learned 'about o and other things that start with o'. Two children also said they had learned the name for a baby owl (which one girl remembered as 'owly').

Specific questions on programme content

We wanted to know if the children would be able to recall some of the factual information about the octopus given in the programme. The researchers asked the question: 'What can you tell me about an octopus (can you tell me anything else about an octopus)?' both before and after the programme. Before the programme was screened, the children were able to name an average of four facts about an octopus per group (commonly that it has eight arms/legs, possesses suckers, lives in the sea, and can spray ink). Immediately after the screening, the children named an average of six octopus facts per group, the most common of which were: that it has suckers; can change colour; has eight legs; and is not slimy.

Although immediate programme effects on factual recall are to be expected, what is of particular interest is the way the children had picked up information from the programme. The visual quality of the film was important: for example, from a close-up of the octopus's leg, children had discovered that an octopus has numerous suckers ('about two thousand'), and that the suckers become smaller towards the ends of its legs. A close-up of the octopus's eye led one child to observe that 'it has lines in its eyes'. Two children commented on its swimming action: 'They kick their legs out' and 'It swims beautifully, sort of floats, like it's in the air; its under the water but it floats under the water'.

Children had also gained information about the octopus from the commentary: it eats crabs; has three hearts; when it's happy, it's a bright colour; it's ticklish; and it isn't slimy ('The man said they aren't slimy'). Some of these facts had been given more than once (for example both the children and the adult in the programme said that the octopus has suckers, can change colour, and eats crabs).

Target age range

Most of the children felt that the programme was appropriate for children of their age (and in some cases for younger and older children too) although three children felt that they were a little old for it.

How they would describe the programme to their friends

The children commonly said they would describe the programme to their friends as being about octopuses and owls, words, and the letter o.

SUMMARY POINTS *Words and Pictures*

- The children were attentive to the programme and were enthusiastic about it. They felt that the programme was appropriate for their age group.
- The children recognised a familiar series from the title sequence and enjoyed the opportunity to join in with saying the title.
- The repetition of the action of the orange machine was effective in maintaining attention. A feature liked about the machine was its ability to turn itself off.
- The children responded well to being asked to participate (e.g. by guessing the objects beginning with the letter o) and to predict what was going to happen next (e.g. by guessing the animal being described by the children, and the animal being drawn by the presenter).
- The information given about the octopus was reinforced in several ways: by the children's descriptions, the interaction with the small octopus in the tank, and the film of the large octopus, with the children reiterating why they liked it. Children had gained information about the octopus from all of these sources, including from close-up pictures of the octopus's eye and tentacles.
- The children enjoyed the experience of seeing an octopus, and had liked learning new (and sometimes surprising) information about it. They demonstrated that they had gained knowledge from the programme.
- They appeared to like and admire the (male) programme presenter.
- Apart from the information about the octopus, children recognised that the programme was about words and the letter o.
- There was a need for teacher mediation of the part of the programme when children were asked to name the things beginning with the letter o. The objects are not named in the programme itself, and the ox was unfamiliar to the majority of the children.

Programme 3. Letterbox. Letter c

This radio programme was played in its entirety. The programme was in five sections, including two songs and a story. It began with an alphabet song (heard twice) and moved on to the introduction of the character 'Letterbox' – a box containing letters of the alphabet (male voice). Then the sound of squealing brakes announced the arrival of Colin the Carrot, who proceeded to play animal sounds (cow, cat), asking the audience to guess the animals. This was followed by a song ('Three Cuddly Camels'). One camel disappeared at the end of each verse, and the audience was asked to guess how many camels were left. Finally there was a story about Colin the Carrot collecting objects which begin with the letter c. (The story was narrated by 'Letterbox' and dramatised with other voices and sound effects.) In the story, Colin meets several people (notably Connie Cooper and Cousin Campbell) who all warn him not to go to the house on the corner because this is the residence of the Cabbage Monster who has toothache. Needless to say, Colin does visit the house, and is frightened by the monster. A resolution is achieved when the Cabbage Monster attempts to bite into a concrete cabbage he has taken from Colin's collection: his tooth flies out, his toothache is cured and he thanks Colin. At the end, Letterbox and Colin drive off in Colin's car.

The children who listened to this programme were aged between just four and five years ten months (just over half the children were five).

Observation

There were much higher levels of apparent inattentiveness recorded for this programme than for either of the two television programmes designed for infant classes. In all of the groups who listened to this programme, some of the children were reported to be distracted (e.g. looking bored or dreamy, gazing around the room, fidgeting, fiddling with objects, or interacting with one another). However, the impression that children were bored and inattentive was often at odds with the children's expressed enjoyment of the programme and recall of the programme content. Their apparent lack of attention may have been due to the fact that they were not used to listening to radio programmes (apart from music and movement programmes, where there would have been more involvement from the children).

Programme features associated with different levels of attention were:

- The alphabet song. Although only four children joined in with the song (despite being invited to do so by the Letterbox character) most of the children were attentive to this opening sequence, a few smiled and several children moved to the music.
- Sound effects (rattling box, squealing brakes, cock crow, flying tooth). Each of these effects gained attention from some of the children. A few children smiled at the flying tooth effect.
- The story was associated with fairly high levels of attention. Children reacted to the sound of the female voice (Connie Cooper) and the scene with the Cabbage Monster (male voice, electronically treated) in particular. (One girl hid her face in her lap during the confrontation between Colin and the Cabbage Monster, then smiled in relief when the Monster thanked Colin for helping to cure his toothache.)
- Guessing the animal sounds. About half the children joined in with guessing the sounds. There was a similar degree of participation when they were asked to guess the number of camels remaining in the 'Three Cuddly Camels' song.
- The second section, where Letterbox introduced himself, was associated with a loss of attention in three of the groups. One boy seemed puzzled by Letterbox's description of himself.

The children's opinions

None of the children had heard this programme before, although some in one of the groups thought they may have heard other programmes in the same series.

When asked if they had enjoyed the programme, all but four of the 24 children said they had.

What they liked

The most popular part was the story (mentioned by children in all of the six groups), particularly the concrete cabbage, and the part when the

Cabbage Monster's tooth had fallen out. The story seemed to have captured some children's imagination: one boy commented that the concrete cabbage must have been coloured green (although this was not said in the programme) and a girl described the Cabbage Monster as having 'a big cheery smile on his face because his toothache was gone'. Some children had also liked the 'letter song'.

What they disliked

In all the groups children pointed out things they did not like in the programme. The things they had disliked included: the Cabbage Monster's voice (while this may have been because some children found it frightening, one child said the voice had been difficult to understand); and the camel song (this song included some nonsense words – one child said he could not understand what they were saying). One child disliked 'the carrot'.

Their understanding of the programme

Apart from the two children who had some difficulty in understanding the Cabbage Monster's voice and the nonsense words in one of the songs, only one child identified something he had not understood: 'when he [Colin] had the coke cola'.

What they learned

When asked what they had learned from the programme, children in three groups were unable to identify anything they had learned. In the other three groups, children suggested that the programme had taught them about the alphabet. One child commented: 'From the alphabet, from the song you can learn how to get, how to write the letter c.'

Specific questions on programme content

We wanted to find out if the programme would be effective in increasing the children's available vocabulary, so they were asked (both before and after the programme) to name vegetables beginning with a 'c' sound. The programme mentioned three such vegetables: carrot; cabbage; and corn on the cob. Before the programme, the children were able to name

VIEWING, LISTENING AND LEARNING

between one and two vegetables per group (usually carrot and cabbage). After the programme they were able to name between two and three vegetables, on average, per group (all said cabbage, four named carrot, and two mentioned corn).

In order to check their recall and understanding of the story, the researchers asked the children two questions: 'Why was Colin warned not to visit the Cabbage Monster in the house on the corner?' and 'What did the Cabbage Monster take from Colin's collection?' At least one child in each of the groups was able to answer the questions correctly. However, the question about why Colin was warned to stay away from the Cabbage Monster revealed a small gap in understanding: although the children knew that the reason Colin was warned to stay away was that the Cabbage Monster had toothache, children in two groups had deduced that Colin should steer clear 'because he might catch it' (i.e. the toothache) rather than because the pain would make the monster angry.

Target age range

Most of the children agreed that the programme was suitable for children of their own age, although nine of them (both four- and five-year-olds) thought it more suited to younger children because: 'They would learn the alphabet' and 'It seemed younger'.

How they would describe the programme to their friends

When asked what they would say the programme was about, if describing it to their friends, a variety of answers were given. Children in three groups said they would mention the story, and two groups said they would tell others about the 'Letterbox' character. Children in two groups referred to the language content: 'letter sounds' and 'We learned about the alphabet'.

SUMMARY POINTS *Letterbox*

- The children's apparently high levels of inattention to the programme may have been due to: their lack of familiarity with sitting and listening to a radio programme; the fact that they had not heard this particular series before; their young age (just under half of them were four); and the lack of a visual stimulus. Despite seeming inattentive and bored at times, most of them said they had enjoyed the programme and they could recall it in detail.
- Being asked to guess the animal sounds and predict how many camels were left were successful in securing the participation of about half the children.
- The sound effects were important in attracting the children's attention, and adding to their enjoyment.
- The dramatised story was effective in capturing the children's attention and was well liked by them. The female voice (Connie Cooper and Cousin Campbell) was associated with higher levels of attention. The children concentrated well during the confrontation between Colin and the Cabbage Monster, and were pleased that it was resolved happily.
- Children did not necessarily understand the link between the Cabbage Monster's ill temper and his toothache (the link was not made explicit in the story). This would require explanation, either within the programme itself or by a teacher.
- There were lower levels of attention during Letterbox's introduction. (He explains that he is not a post box but is a box full of letters of the alphabet.) It is possible that the children had difficulty in understanding this concept, or that their apparent inattention was due to the fact that the explanation was given by an adult male voice (a feature found to be associated with low levels of attention among young children in previous research).
- The children were able to name more vegetables beginning with the letter c after the programme than before.
- Some of the children felt the programme had taught them about the alphabet.
- Although most of the children thought the programme was suitable for their age group, a minority felt it was aimed at younger children.

PROGRAMMES FOR JUNIORS

Programme 4. *Look and Read.* *Earth Warp: Episode One*

This television programme consisted of a serialised story and contained aspects of language teaching. The programme structure, common to other programmes in the *Look and Read* series, presented a dramatised story in two parts around a studio-based section. The programme guide stated that the purpose of the middle section was to: 'help children with particular reading strategies, and to think more about all aspects of written language'.

The programme shown was the first episode in a new story, and therefore much of it was devoted to 'setting the scene' for future episodes. The story concerns an alien space probe which has landed on the earth. When the probe encounters high levels of pollution in a river, it signals to another spaceship to come to its aid. Central characters include: Sarah Brightly, a reporter for the local newspaper (the narrator), and Martin, a somewhat isolated boy with asthma, who has an interest in astronomy. After the first part of the story, the programme continues in Sarah Brightly's office, where she is joined by Chris, a young man on work experience. An animated language probe (Zot – male voice) emerges from Sarah's word processor, and offers to help Chris with his spelling. Calling on the services of 'Laser Larry' and 'Newshound' (actors in costume), Zot teaches Chris about words beginning in 'Sp' and words ending in 'ly'. The programme used computer animation (for the spaceship, and Zot). The tape was stopped before the beginning of the second part of the story.

The pupils who viewed the programme were aged between seven and nine years (a fairly even distribution between the three age-groups, but with more nine- than seven- year-olds).

Observation

The children were attentive throughout this programme, with few lapses of attention. The following aspects appeared to be particularly effective in heightening attention and enjoyment.

PUPILS' AND TEACHERS' VIEWS

- ❑ The space probe's arrival on earth. This was the first scene of the story (set 100 years ago). An angler is fishing by a river when the space probe arrives, splashing the angler and landing a fish in his arms. The children seemed to find this incident interesting and amusing.
- ❑ Songs (Earth Warp, Laser Larry and Newshound). These gained high levels of interest and involvement from the children, some of whom smiled, sang or moved in time to the music.
- ❑ Actress's voice. In three groups the researchers noted that the children appeared to be concentrating hard during a short interchange between two female guests at the hotel owned by Martin's mother. One observer thought that it was the voice of one of the actresses that had captured the children's attention.
- ❑ Although attention was waning a little towards the end of the section in Sarah's office, the children were particularly attentive to the appearance of Zot. (One child said 'Ugh, what's that!' as strange flashing lights emerged from Sarah's word processor.)
- ❑ Jokes. Some of the children were visibly amused by the humorous remarks made by Sarah, Chris and Zot.
- ❑ There were no features particularly associated with a loss of attention, although some observers noted a slight lessening of attention among some children towards the end of the longer scenes.

The children's opinions

Three of the groups of children had seen this programme at school, and a child from another group had seen it at home.

The children all said that they had enjoyed the programme, some with considerable enthusiasm. For example, children in one group pronounced it to be 'brilliant, cool, funny', and others said it was 'nice, exciting' and 'a good programme'. One child commented: 'It's good because adults have drama, but that's fit for children and it kind of educates you.'

What they liked

When asked what they had liked in particular, children named several aspects, and one group said they liked 'all of it; it's quite hard to choose'. The most popular aspects were the scene when the space probe landed in

the river and splashed the angler, and Zot. They also liked the space probe and the spaceship, which they felt had been very realistic (one child said the space probe was 'convincing' and another remarked: 'It looked three D!') One child commented on the lights emitted by the space probe, saying he liked: 'The electronic lighting – it flashed blue, green and red'.

Other features singled out by fewer children included: Newshound; Laser Larry; the Earthwarp song and other music; Sarah Brightly; and the use of humour. Several children said they had liked the story in general, which was described as 'realistic' and 'fun'. Two children also focused on the look of the programme, praising it for its use of colour and high quality: 'The way the film looked was good.'

What they disliked

Asked what they did not like about the programme, all but one group identified something, but many of their points referred to negative aspects of the plot, rather than to the programme itself. For example, children in two groups said they had not liked the polluted river. Others disliked aspects of a scene between Martin and two girls, where the girls had tried to help Martin, who was having an asthma attack, but were rebuffed by him. Two children in the same group felt one of the girls had been unkind to tell the other to leave Martin on his own, and a girl in another group had disliked the part 'when the boy was mean to the girls who were trying to help him'. (Interestingly, another child said she had been confused by this scene, and wondered what the point of it was.)

Two children commented that the story had got off to a bit of a slow start, and two others had disliked the part just before the emergence of Zot, when 'the word processor went funny'. Other comments from individual children included: that Sarah Brightly was rather boring, and that the scene in her office was annoying since: 'It's really the story that we want to hear.'

Their understanding of the programme

Children in five of the groups identified something they had not understood. Almost all of their questions related to aspects of the plot (although one boy said he had found the part about 'the -ly's' difficult to

understand). Plot-related questions included: why had the spaceship come to Earth; why had the space probe asked the other spaceship to come; why were the two spaceships different; and what was the connection between newspaper reports of a 'plague' and Martin's asthma attack? (Obviously, most of these questions would be resolved in further episodes of the story.)

In addition, some confusion had arisen over the distinction between information that was essential to understanding the plot, and irrelevant detail. For example, one boy was confused by the relevance of the local flower show (mentioned by Sarah Brightly twice in her introduction to the story), and children in another group admitted to being puzzled that the angler in the first scene had played no further part in the narrative, because: 'The first person you see, you think that's going to be the main person.'

What they learned

When asked what they had learned from the programme, the children referred to both the story and the language teaching. Things learned about the story included: 'about spaceships and going fishing' and 'something that happened a hundred years ago'. Some of the comments from two groups related to the themes of the story (concerning pollution and friendship). Children said the programme had taught them: 'not to throw rubbish in rivers' and 'Be friendly to people, don't pollute, believe people'. Aspects of language learning were mentioned in four groups, including: 'some words beginning with sp-' and 'It helped me to learn sp- and -ly'.

Specific questions on programme content

In order to assess children's language learning we asked them three questions before and after the programme. The first two questions related to the teaching of adverbs in the programme. We asked: 'Some words, like "quietly", end in "-ly". Can you tell me any other words that end in "-ly"?' and 'What does that tell you about the word?' Before the programme, the children were able to name an average of five words per group (most commonly 'quickly' and 'lovely'). After the programme, the number of words named rose to an average of six per group (most commonly 'quickly', 'brightly', and 'quietly' – all of which had been

VIEWING, LISTENING AND LEARNING

included in the programme). The total number of different words named by the groups also increased from 24 before the programme to 30 afterwards.

In the programme, the meaning of the suffix 'ly' is explained by Zot: 'Most ly words tell you how a thing is done', and is reinforced in a song featuring Newshound (e.g. 'The hound is quick, how does he run? Quickly, quickly'). Before the programme, children in two groups attempted to answer the question about the meaning of '-ly' at the end of a word. One group thought this meant that 'something's happened', while another gave a fuller explanation: 'You could do something beautifully or you could do something slyly. It's like a verb or something because you get a picture of it.' After the programme, children in five of the six groups attempted to answer the question, with one group quoting from the programme: 'It tells you how it's done.' Children in two groups thought this signified something has happened; one said it meant 'what it's done', and another said: 'Brightly, it means even brighter.' This suggests that the programme had encouraged the children to consider the meaning of words ending in '-ly', but that their thinking needed further clarification and reinforcement by their teacher.

We also asked the groups to name words beginning with 'sp-', before and after the programme. The children were able to name the same number of 'sp-' words before and after the programme (an average of seven per group), and the total number of different words remained virtually the same (34 before and 33 after the programme). There was evidence that children had picked up on the vocabulary used in the programme (e.g. space, spaceship, sparkling, spot), but these words tended to replace, rather than add to, the number of words they had identified before watching the programme.

Target age range

When asked if they felt the programme was aimed at children their age, almost all of the children felt that it was, and several said that it was appropriate for children aged from seven to nine years (the actual target age range for the programme). However, two boys from the same group felt the programme was a little young for them (the boys were aged seven and eight).

How they would describe the programme to their friends

All the children said they would recommend this programme to their friends, and would describe it as being about 'spaceships, pollution, language and reading'. When one child said he would tell his friends that the programme was about words, a girl in the same group commented: 'It tells you more than just words – if it was just words, it might be seen as boring.' A child from a different group suggested that they should not say much about the programme before their friends had seen it, because: 'I would like to give them a surprise, I would.'

SUMMARY POINTS *Look and Read*

- This programme was effective in securing the attention and interest of the children.
- Particularly engaging features of this programme were: songs; use of humour; dramatic story-line; and the special effects.
- The children appreciated the high quality of the special effects (e.g. the space probe and space ship).
- The programme's combination of a strong story with aspects of language teaching was recognised and appreciated by the children.
- They enjoyed the story, although the plot raised some uncomfortable issues (pollution and conflict between children). The fact that the children identified these as aspects of the programme they had not liked suggests that they were sensitive to these topics. It also highlights the importance of the teacher's role in helping children to deal with emotive issues.
- The children had been puzzled by certain aspects of the plot, and had many questions about it – again, suggesting the need for the teacher to help children clarify the story-line.
- Some children had been confused by the relevance of two programme elements: the flower show, mentioned by Sarah Brightly; and the scene with the angler. Both these incidents had seemed of importance to children, who were then puzzled that they did not appear to be essential to the plot. The two incidents appeared towards the beginning of the programme, and were stressed (the flower show by repetition; the angler

scene because it was an unexpected event and by the use of humour). This echoes the finding from previous research that children use salient features to help them make sense of the plot, and may be misled by the use of salient features to accompany non-essential information.

- ❑ The children picked up some vocabulary and grammatical understanding from the programme, but their thinking would require further reinforcement from a teacher.
- ❑ The children thought the programme was appropriate for their age-group (seven to nine) and would recommend it to their friends.

Programme 5. Landmarks. ***Coping with the Climate: The World's Weather***

This programme was the first in a series about climate, and introduced themes that would be followed up in subsequent programmes.

The programme began with film of children in different parts of the world (England, Northern Canada, Tunisia, India) and a verbal description of climatic conditions. The programme used two animations of the globe, first to show how the sun shines more directly at the equator than at the poles, and how rain forests are formed; the second to demonstrate the formation and location of deserts. There was also film footage: of a rain forest, showing animals and members of the Kayapo tribe creating a garden; and of desert conditions, showing animals and plants, and members of the Tuareg tribe with their camels. Key words, such as the names of the two tribes and of the desert areas, were displayed on the screen. The narrative was spoken by an adult female voice.

The tape was stopped before the end of the programme. The pupils who viewed it were aged between nine and 11 years, with half being aged ten (the programme was aimed at children aged from nine to twelve years).

Observation

- The children watched attentively throughout, with few instances of distraction. The children reacted with interest to two features in particular:
- The animals: some of the children smiled at the monkeys, which one girl described as 'sweet'. The desert animals interested the children, particularly the lizard and the rattlesnake ('Oooh, a lizard', and of the rattlesnake: 'If that bites you, you're dead!')
- The Kayapo: some observers noted an increase in attention at this point. One child smiled; two others commented on the Kayapo's felling of forest trees ('What a waste!') and expressed concern that a young Kayapo child was shown digging with a knife.

The children's opinions

Seven of the 24 children had seen the programme before. Most of the children liked this programme, although two groups had particular reservations.

What they liked

The feature picked out by children in all the groups was the footage of the animals, which was praised for interest and the quality of the close-up photography (particularly of the desert animals). One boy was impressed by film of a lizard scooping up insects with its tongue, and another said: 'Some of the photography was brilliant!' Other aspects mentioned as positive features by several children were: the footage of the people in different parts of the world; the display of key words (such as 'Kayapo', 'Tuareg'); and the factual content.

Individual children said they had liked: the presenter (voice-over); the explanation about the weather; the animation of the globe; and that the programme had flowed well ('As soon as one thing finished it goes straight into another').

What they disliked

When asked what, if anything, they had disliked about the programme, children in four of the groups commented. Reservations were expressed about both the purpose and pacing of the programme. Children in two

VIEWING, LISTENING AND LEARNING

groups felt that the content of the programme had not focused sufficiently on its intended theme. One girl thought there had been a bit too much on the animals: 'It's a bit weird doing nature when it's a weather programme'; and a boy thought that the programme had intended to show how the weather affected people's lives, in which case too much attention had been paid to how different parts of the world varied in their weather conditions.

In contrast to the comment of one child, who liked the programme's fast pace, children in two groups criticised the fact that at times there was too much information given too quickly. As one child said, it was 'a little too fast for those who can't take it all in'.

Several incidental images had caught the children's attention. For example, by the footage showing the young Kayapo child digging with a knife, the 'overburdened' camels and the Kayapo's felling of trees.

One group of 11-year-olds felt that the programme had been a bit boring, and had not taken the opportunity to involve the audience in the programme: 'It's good information, but what you're seeing is not engaging.' Examples of this included: that the programme had not conveyed what it felt like to experience a temperature of minus 40; that the Kayapo and Tuareg people had not spoken – which might have helped the audience to empathise with them; that the presenter's voice was boring: 'Even if something was exciting, she didn't change the tone of her voice.' Children in this group also criticised the fact that the programme used a voice-over, rather than showing the presenter. They would have preferred to see her, because: 'Gestures are important, they can convey meaning.' The group considered that the programme was rather dry, and inferred that the programme-makers had not consulted children, but had made a programme based on what they thought would appeal.

Suggested Improvements

Children in two groups felt that the key words should have been displayed on screen a little longer, and that the programme could perhaps have returned to some of the points made earlier, in order to reinforce their understanding.

Their understanding of the programme

When asked if there was anything they had not understood, children in two groups said they had understood it all. However, in other groups several children said they had not understood the animation and explanation of the effect of the sun on the weather at the equator and poles (one child asked: 'Why doesn't the sun shine equally on all parts of the globe?') Also, one child had been mystified by how the fat got into the camel's hump.

An element that puzzled one child was the significance of the children shown at the beginning of the programme, since they failed to play any further part, and 'it just went onto something different', (a similar comment to that made about the angler scene in Look and Read).

What they learned

The children were of the opinion that they had learned most from the programme about other people's lives, and 'that they have to live in different ways because of the weather'. They had also gained some information on animals. Specific facts recalled were: that Indian people have rain for three months (mentioned by a child of Indian parents); and that rattlesnakes have horns.

Specific questions on programme content

In order to find out if the children had gained an understanding of the information given in the programme, we asked two questions about the cause of the world's weather, both before and after the programme was shown. The questions were: 'What is the main cause of the world's weather?' and 'Why is it hotter at the equator than at the poles?' Before the programme, children in three of the groups answered correctly that the world's weather is mainly caused by the sun (incorrect answers at this stage included: the hole in the ozone layer; the sky; the clouds; and science). After the programme, children in all six groups were able to give the correct answer to this question.

In answer to the second question, children in five groups were able to give a fairly accurate answer before the programme was shown (that the equator is hotter because it is nearer to the sun). After the programme, children in all six groups were able to answer the question correctly

VIEWING, LISTENING AND LEARNING

(although several had not fully understood the programme's explanation that the angle of the sun at the poles meant that the heat was diffused over a wider area).

Target age range

When asked if the programme was suitable for children of their age, most of the children agreed that it was. However, a group of nine- and ten-year-olds added that they felt some of the language had been too advanced and needed to be better explained.

How they would describe the programme to their friends

If describing the programme to their friends, the children would say it was about: animals; how people live in different climates; and about the weather and the Earth. One group (which had been critical of the programme) said they would not choose to recommend the programme to their friends, because they did not consider it to be worth watching. However, they conceded that if you simply wanted to present 'the facts' then the programme was laden with them.

SUMMARY POINTS Landmarks

- The children were attentive to the programme, and were particularly interested in the footage of the animals, and of the Kayapo tribe (things outside their everyday experience).
- The children appreciated the high quality close-up photography of the desert animals.
- The use of key words was appreciated: some children would have liked these to have been displayed for longer.
- Some children felt that the purpose of the programme was not clearly enough stated or realised.
- Children in two groups felt that the programme had been too fast-paced, and could have usefully returned to some of the points made earlier, in order to reinforce their understanding.
- One group commented that the programme had not sufficiently engaged the audience, by making connections between their experience and that of people in other parts of the world. They disliked the use of a voice-over instead of a presenter.

- The programme had increased the children's understanding of the sun's effects on the world's weather. However, the explanation given in the programme about the effect of the angle of the sun at the poles was not fully understood, and would need further reinforcement from a teacher.
- The children felt the programme was suitable for children of their age (nine to 11), although one group of younger pupils had found some of the language too complex.

Programme 6. *History 9-11.*
Boudicca, the Iceni Rebel

This radio programme used a mixture of dramatisation and interviews to tell the story of Boudicca. The programme was hosted by a 'Legionary Guide' (male voice) who acted as the presenter and asked questions of the audience (whom he referred to as 'twentieth century recruits'). The main part of the programme consisted of the story of Boudicca, told by the story-teller Julia to her slave. The story was also dramatised, relating how Boudicca was made Queen when her father died. She attempted to honour her father's wishes and offered half the Iceni land to the Romans, but they threatened to take all the land and Boudicca and her daughters were whipped by Roman soldiers. Boudicca led her people into battle, and burned down the Roman stronghold of Colchester.

Contemporary evidence about Boudicca was provided by a group of children who interviewed the Curator at Colchester Museum and later described burnt artefacts displayed in the museum. A description of Boudicca by Dio Cassius was included, and the children gave their opinions of Boudicca's character and actions. The broadcast made use of music, singing and vocal effects to tell the story. The tape was stopped before the end of the programme.

The pupils who listened to the programme were aged between ten and 11, with the majority being 11 years old. (The intended age-range for the programme was nine to 11.)

Observation

- The children were very attentive on the whole, with very few signs of distraction. There were two features associated with different levels of attention.
- Fanfares: observers noted that in three groups, children became particularly attentive at the sound of the fanfares.
- There was evidence of a slight lessening in attention among some children in three of the groups during Julia's longer descriptions of the Boudicca story.

The children's opinions

None of the children had heard the programme before. Children in all groups said they liked the programme, commonly describing it as 'interesting'.

What they liked

The children had particularly enjoyed the dramatised story of Queen Boudicca: 'You found out what Boudicca was like, the kind of person Boudicca was'; and 'I'd never heard of Queen Boudicca before, and now I feel like I've met her'. Children in all six groups singled out the sound effects for special mention, which, as one child said, 'made you feel you was there'. Another praised the way the sounds had been carefully tailored to the element of the story which was being told (e.g. before a battle there were fanfares and drum rolls). Some children were also appreciative of the music, which one described as 'mysterious'.

Other features liked by individual children were: the airing of different people's opinions of Boudicca; and the Legionary Guide (because he was someone who was there at the time and 'it made you feel he was here in this room'). One child liked the inclusion of children who found out what had happened, and another thought it was good that the programme had asked the audience what they thought. The actress who played Julia was praised by one child for varying her delivery, and using pauses to enhance the dramatic effect ('She used her voice to create atmosphere,' he said). Two children (both identified as above average ability) commented on the pacing and structure of the programme, appreciating the fact that no time was wasted, and that the programme was divided into different segments 'like paragraphs in a book'.

PUPILS' AND TEACHERS' VIEWS

In one group, discussion of the dramatisation led to a difference of opinion over the relative merits of TV and radio. One child said: 'I would have liked to see it happening because it was so exciting'; but another preferred the radio presentation because: 'It goes on in your head so you can see what you think about it... it helps you imagine what it was like.'

What they disliked

When asked if there was anything they did not like, children in five groups responded. Their criticisms focused on the involvement of the children in the programme. The consensus was that the passages with the children had got in the way of the story: one child suggested that these should have been confined to the beginning and end of the programme, rather than interspersed with the narrative. There was also some criticism of the content of these scenes: that the children seemed to be repeating what they had been told to say, rather than researching it for themselves; and that the children's opinions of Boudicca had interfered with the listeners' attempts to form their own impressions.

Although one child had praised the Legionary Guide, children in three groups singled him out as a feature they had not liked. Some of them pointed out that, as a Roman soldier, his sympathies would have lain with the Roman cause. His attempts to put both sides of the story were therefore seen as incongruous: 'It sounded like he had a soft spot for them when he didn't. I mean he'd have been really angry if they were trying to kill the Romans off.' Two groups felt that the actor playing the Legionary did not have the right kind of voice: 'He didn't sound too Roman', and 'He sounded really soft and squidgy, like Paddington Bear!'

Other criticisms from individual children included: 'They shouldn't have kept stopping to ask questions'; not enough hard detail (facts); and that the story-teller was too matter of fact about Boudicca's whipping.

Suggested improvements

Some children suggested improvements to the programme, such as: more sound effects (flames, people running, fighting); having a song to learn ('Then you could sing along'); and the addition of historians discussing the burning of Colchester.

Their understanding of the programme

Children in four of the groups identified something they could not understand. Children in two groups said they had been a little confused by the switching between different parts of the programme and the consequent moves in time: 'Sometimes I didn't know whether you was inside the museum or out.' One group had found the 'talking bits' about Queen Boudicca (as opposed to the dramatisation) difficult to understand: 'It was quite boring in between – we couldn't understand what they were saying because they were saying it too fast'; and 'You had to listen hard and you couldn't get all the information into your head properly'.

Other confusions mentioned by individuals were: what was meant by the Legionary Guide when he used the phrase 'twentieth century recruits' (his term for the audience); why Boudicca did not keep the land or sell it to the Romans; and why she did not provide arms for her people.

What they learned

In response to the question about what they had learned from the programme, the children felt it had given them information about Boudicca and provided an insight into her motivation and character.

Specific questions on programme content

Both before and after the programme, we asked the pupils: 'Can you tell me who Boudicca was?' After the programme we asked them: 'What prompted Boudicca to lead a rebellion against the Romans?'

Before the programme, children in five groups recognised Boudicca's name, and they were able to give a limited amount of information about her (commonly that she was a Saxon leader, who fought against the Romans and committed suicide by poisoning herself). After the programme, children in all six groups were able to give more detail, including that she was leader of the Iceni tribe, and that her name meant 'victory'. The children recalled some of the descriptive information given in the programme: that Boudicca was a large woman with orange hair and piercing eyes; she wore a necklace and a cloak with a brooch to fasten it. They also spoke about her character: she was perceived as brave, powerful, selfish, and also quite wicked (because in burning down

the cities, innocent people had lost their lives). However, one group saw her in a more favourable light: 'She always fought positive, she made her tribe think positive... she always put her people first.'

After the programme, children in all six groups were able to explain why Boudicca had decided to fight the Romans (because the dying King's will had said they could have half the Iceni land, but the Romans wanted to take all of it, so Boudicca decided to fight them).

In order to assess the children's understanding of the archaeological evidence used in the programme, we asked them both before and after the programme: 'What sort of evidence could a modern historian use to study the conflicts between the Celts and the occupying Romans?' Before the programme, the children volunteered a variety of ideas, mainly about archaeological remains (clothing, jewellery, coins, weapons, armour, flags, bones, remains of a fort or a road). Two groups also mentioned written records, such as letters and diaries. After the programme, they focused on the evidence from burnt artefacts, which had been described by the children visiting Colchester Museum. Pupils in all the groups explained that blackened artefacts had been found in Colchester (including pottery, grain and plum stones), indicating that there had been a great fire in the town.

Target age range

The question about an appropriate age group for the programme raised some interesting issues. Although most children felt that it was appropriate for children of their age (ten and 11), they felt that certain elements would make it too difficult, and therefore boring for younger children; whereas other aspects would restrict its appeal to older children. One group pointed out that the limited amount of detail and the involvement of children as presenters would make it less interesting for older children, because: 'They'd probably think it babyish', and 'You wouldn't want children teaching you what were younger than yourself'.

One group discussed this question at length, concluding that, because the Legionary Guide had been too 'nice' (in putting forward both sides of the conflict between the Romans and the Iceni) the programme was aiming to appeal to younger children. However, the complexity of the language,

coupled with the fast pace, made it more suitable for older children. They felt strongly that the programme should cut down on the complex explanations and be made more exciting. If such improvements were made this would enhance its appeal: 'If they did change it, I think it could be very good.'

How they would describe the programme to their friends

Asked how they would describe the programme to their friends, the children focused on elements of the dramatisation. One child said: 'It's about a queen who wanted to take part in wars to try and win back her own land. She was a very positive queen and put other people above herself.' In two groups, children felt the programme might not appeal to everyone in their class: 'I'd warn them that although its quite a good programme about the Romans, it can get quite fast and its very factual – so some of them might find that boring'; and 'They would start listening and then when it got too fast they would start messing around'. However, another group were so impressed by the programme that they recommended it to their teacher, who asked the researcher for details so he could use it with his class.

SUMMARY POINTS *History 9-11*

- The children listened attentively to the programme. Their attention was heightened at the sound of fanfares.
- All the groups liked the programme, praising it for its interesting subject matter, effective dramatisation, and use of sound effects.
- The passages featuring children giving their opinions of Boudicca and discussing archaeological evidence were generally disliked, because they interrupted the dramatisation of the Boudicca story.
- Children in three groups disliked the Legionary Guide. There were two reasons for this: first, his willingness to see the Iceni side of the story was felt to be incongruous with his position as a Roman soldier; second, the actor's voice did not fit with their expectations of a legionary.

PUPILS' AND TEACHERS' VIEWS

- ❑ Two groups felt that the changes in scene had not been clearly enough signalled, and had found this confusing.
- ❑ One group said they had found the descriptive passages difficult to comprehend, because they were too fast, and contained complex vocabulary. The observers noticed that some children seemed to lose concentration during these parts of the programme.
- ❑ The children had gained a great deal of information from the programme about Boudicca and her battles. They had picked up information mainly from the dramatised story, but also from the description of Boudicca by Dio Cassius, and the children's discussions of burnt artefacts.
- ❑ The groups felt that the programme was aimed at children their age (ten and 11). However, there was some feeling that it was not consistently aiming at the right level. In softening the attitude of the Legionary towards Boudicca, the programme was felt to be aiming at a younger audience. Some of the language was felt to be too difficult and presented too fast, thus indicating suitability for an older audience.
- ❑ Suggested improvements to the programme included: moving the passages with the children to the beginning and end of the programme, so they did not interrupt the dramatised narrative; introducing more sound effects; adding a song that the audience could learn and sing along with the programme; and featuring historians talking about the period.

PROGRAMMES FOR SECONDARY STUDENTS

Programme 7. *Quinze Minutes. Temps Libre*

Programmes in this French language series are intended to be used in short sections with teacher mediation. This programme, aimed at 11- to 13-year-olds, took the theme of leisure time activities. The programme began with a series of short interviews with French children about what they did in their free time. This was followed by the male presenter in a studio, who addressed the audience in French, then repeated his question in English. Next there was a film of one of the children, Sébastien, playing football with his friends and cooking for his family. This was followed by a sequence in which two black girls, Tanya and Peggy, made a telephone arrangement to meet, then went roller-skating in a car park, and played Scrabble at home with their friends. Apart from the presenter's question (which was repeated in English) all the programme was in French, spoken by native French speakers. The tape was stopped before the end of the programme.

The 24 students who watched this programme were aged from 11 to 13 years, although only three were 11, and over half were 13. All were mixed ability groups, but one group of 12- and 13-year-olds had considerably more experience in French, having learned the language since the age of seven. (The reactions of the group with more French experience did not differ markedly from the reactions of those in the other groups, except where specified.)

Observation

The young people were generally attentive throughout the programme, with few episodes of restlessness. Two elements were associated with small differences in attention levels:

- The game of Scrabble: in three groups, the observers noted that the students appeared to be concentrating particularly hard at this point, and looking intently at the words.
- Film without dialogue or voice-over: in three groups, observers noted a tendency for the students to seem less attentive during these scenes (particularly when Tanya and Peggy were shown roller-skating).

The students' opinions

Only six of the students had seen this programme before, although several others said they were familiar with the series. In general, the students were not enthusiastic about the programme, with one group failing to identify anything in it that they had liked.

What they liked

The element liked by students in three of the six groups was that the programme featured real people doing everyday things: 'It shows you what people actually do' and 'It was about everyone's lives... you could recognise everyday things, things done at home'. Two groups appreciated the fact that it included children from different backgrounds/races and had an element of anti-gender stereotyping (i.e. Sébastien cooking). In two groups, students mentioned that they found the inclusion of material on French numbers (telephoning) and words (Scrabble) useful.

Other features liked by individual students included: the opening interviews with young people; the colourful studio set; and that the programme was relatively clear: 'I suppose it was quite good if you're learning French – it came across clear.' One student commented that in his view the programme had successfully backed up the spoken vocabulary with visual images, to help the audience interpret what had been said.

What they disliked

The general consensus was that the programme was fairly boring. Students from two groups commented that there had been too much time wasted during scenes with little action (e.g. Tanya and Peggy skating). It was also felt that some of the activities had been 'set up' and the young people had been instructed to slow down their delivery, which had made them seem somewhat stilted and unnatural: 'The people were conscious of the cameras, you don't behave like that. The director should tell them to relax.' One boy commented that there was a dilemma for the programme-makers in either having the speech totally realistic (and therefore difficult for the audience to follow) or being overly concerned with clear pronunciation at a slower speed (which could seem artificial). He felt it was important to strike the right balance between the two.

VIEWING, LISTENING AND LEARNING

Other negative comments concerned the presenter; the activities; and the look of the programme. Students in two groups felt the presenter had been patronising – smiling unnecessarily and asking questions using a silly tone of voice. One girl commented: 'I think he spoke as if we were stupid.'

Some of the students felt the activities featured in the programme were generally uninteresting (Scrabble) and out of date (in the skating scene, it was noticed that the girls used old-fashioned skates, rather than the more modern roller blades). As one girl explained: 'People don't play Scrabble or go roller-skating any more.'

A few students commented on the rather dreary look of the programme. Individual students said they felt that the background to the interviews was dull, and that the lighting had been rather dark, thus making it difficult to pick out details, and lending a gloomy atmosphere to the programme.

Their understanding of the programme

In contrast to the comment made by one student, who had found the spoken French clear, young people in four groups said they found the spoken French too fast and indistinct, so they had been unable to grasp what was said: 'They speak too fast and were hard to follow.' On the other hand, students in the group with most French experience said they had found the vocabulary too easy. One group found the changes in scene confusing, and said they had been unsure at times whether the conversation related to a new scene.

Suggested improvements

Several of the young people we interviewed made suggestions for improving the programme, including: show more interesting activities; display key words on the screen in French; after showing an interview with French speakers, review the vocabulary and give a translation; provide worksheets, including important words to listen out for, how to spell and use them; and make the programme more up-to-date.

Although one group wanted more English to be included, those in two groups had been irritated by the presenter's translation of his question into English: 'It does help a lot of people who don't understand it, but if

you're trying to work it out it can spoil it.' One girl acknowledged it was hard for the programme-makers to design a foreign language programme to suit all abilities: 'The main problem in watching programmes in school is suiting everyone, because even if you're in a set there is still an ability spread in that set, and some people might think this is really easy or this is boring or it's too hard.'

What they learned

The students felt that they had not learned much from the programme. Students in three groups said the programme had touched on work they had done in class, but they found the programme had been a limited aid to reinforcement: 'It refreshed my vocabulary, but a lot of it doesn't stick.' Pupils in one group said it had contained too many new words spoken too fast.

Specific questions on programme content

In order to test the students' comprehension and recall of the vocabulary, we asked them to complete a written question about the activities of Sébastien. In the programme, Sébastien described his leisure activities and was seen playing football and cooking. The question invited the students to fill in the gaps in the following sentences: 'Qu'est-ce que Sébastien fait pendant son temps libre? Il joue au avec A la maison, il....' The missing words used in the programme were: football; (ses) copains; faire des gâteaux. Most of the students were able to answer the first part of the question, with 17 of the 24 correctly putting 'football'. The students were generally unable to answer the second part of the question, although one put 'copain' and four put 'ami(s)'. Again, most of the students were unable to answer the last part of the question correctly, although seven indicated that they had understood it by answering in English (e.g. 'He helps his mum cook'). Two students put 'fait du cuisine', and one put 'cakes/gâteau'. This suggests that the students had understood the action of the programme, but would need their teacher's help in order to use it as a basis for written French.

Target age range

Five groups commented on the appropriateness of the series. Three groups of students (ranging in age from 11 to 13) judged it to be suitable for students older than themselves, because of the fast speed of verbal

VIEWING, LISTENING AND LEARNING

delivery. Two groups of 12- and 13-year-olds felt it to be more suited to younger children. This included the group who had learned French since the age of seven. The other group said they felt the programme was suitable for younger pupils because the presentation was similar to that in programmes aimed at a junior school audience.

How they would describe the programme to their friends

If describing the programme to their friends, students in three groups would say it was about what French people do in their spare time: 'It's all about the French, what you do in your spare time and what the French do.' Students in one group felt it was more about cookery than French, so they would tell their friends it was about how to make biscuits. Students in another group said they would not recommend it.

SUMMARY POINTS *Quinze Minutes*

- This programme was not well liked by the students, who found its presentation and content unappealing.
- In general, the students found the pace and pronunciation of the vocabulary too difficult for them, without the intervention of a teacher.
- The students criticised the programme for being out of date, and lacking in visual appeal.
- Some of the students disliked the presenter, who they felt had a patronising manner.
- Some students felt that time was wasted in certain scenes, which went on too long without any teaching input (and observers noted an increase in inattention during these scenes). However, it is possible that a teacher could have used these passages to reinforce the learning points.
- The students did not feel the programme had been successful in reinforcing their learning of French vocabulary or pronunciation.
- A written test of the students' French comprehension revealed that although they understood the activities portrayed in the programme, they were generally unable to reproduce the vocabulary used in a written form.

- ❑ The students appreciated the fact that the programme gave them an insight into the lives of young people in France.
- ❑ Some students noticed the programme's attention to racial diversity and anti-gender stereotyping, and saw these as positive features.
- ❑ Some students liked the inclusion of material on the pronunciation of French numbers and letters.
- ❑ Suggested improvements to the programme included: the use of key words on screen to highlight the vocabulary, the production of worksheets to accompany the programme, and that the BBC should bring out an up-to-date version of the programme.

Programme 8. *History File.* ***Pompeii (Everyday Life in a Roman Town)***

This TV series uses a 'high tech.' approach to explore aspects of historical evidence. The central character is a young girl who visits the 'Historical Interface Museum' and asks questions of the curator (a computer-generated image). Wearing a virtual reality suit, she is able to experience life in other places and times. By means of controls on her glove, she can access evidence, such as artefacts and reconstructions. In this fast-paced episode, the girl travelled around the ruins of a Roman town, found out about the discovery of Pompeii, looked at the reconstruction of a Roman villa, heard about the role of Roman women from an actress, listened to written evidence from Romans about their children, and looked at statues and paintings of Roman families. At times, information was provided simultaneously through voice, pictures, symbols (like computer icons) and text. The tape was stopped before the end of the programme.

The students who watched this programme were aged 11 and 12 years (over three-quarters of the viewers were 12).

Observation

The students were observed to be very attentive during this programme. (In one group it was noted that the students kept their concentration, despite a teacher entering the room, tripping over the TV cable and falling over, nearly taking the monitor and its trolley with her!) The only notable general reactions were:

- Some students in three of the groups were visibly amused at Cicero's description of his infant son: 'a puny creature'.
- Girls in two groups reacted indignantly to the Curator's explanation that: 'In law, husbands ruled their wives and could punish them.'

The students' opinions

For most of the students this was their first viewing of the programme, although six of the 24 had seen it before, and one group had seen other programmes in the same series. The programme provoked quite mixed reactions from the students.

What they liked

On the positive side, the subject matter was thought to be interesting (particularly the part about Roman family life, and the position of women in Roman society). Young people in three groups felt that it had compared favourably to other history programmes. For example, one boy appreciated that the programme had tried to build up an experience of Roman times, rather than plunging into a mass of factual detail, which he found off-putting in other programmes he had seen. Others commented on the format of the programme: the original idea of having a girl 'in some kind of reality machine'; and 'it was different from the average narrator giving information'.

Other features singled out for mention by more than one group included: the interesting reconstruction of the forum (achieved by overlaying a graphic reconstruction onto the ruins) and the dramatisation (an actress in role as Mrs Vetti, who was praised by one child for her expressive tone of voice). Some of the young people had appreciated seeing the evidence of life in a Roman town (wheel ruts showing the weight of traffic, ancient

stone bollards); and the sequence concerning the rediscovery of Pompeii (including film footage of a volcano erupting).

Aspects commented on favourably by individual students included: the use of humour; the colour; and that it had been convincing: 'Every now and then you actually got the feeling you was in the virtual reality!'

What they disliked

All the groups identified something they had not liked. The most common complaint was that the pace of the programme had been too fast: 'Two seconds to look at the Temple!', and that there were too many things happening at once: 'There was so much going on I just didn't take any of it in really.' A few students said that they would have liked more time to absorb information, and to take notes during the programme. Some students also complained that the 'high tech' approach was 'jazzy and distracting'.

Some of the students singled out two of the special effects for criticism. As the girl was walking around the ruined town, she could speed up the action by pressing a control on her glove. When this happened the film went into 'fast forward' and a purple ring appeared around the picture. This effect was particularly disliked by students in four of the six groups. As one boy said: 'The swirling colours were off-putting – like when you were looking at a Roman ruin and suddenly it would go all blurred. It didn't quite give you a headache but it was hard for your eyes to focus on it.' Another problem mentioned in three groups, was caused by the 'computerised' voice of the museum's curator, which several of the students had found difficult to understand. There were also complaints from two groups that the writing (especially that projected onto the museum wall) was difficult to read and was displayed on screen for too short a time.

Other comments made by individuals included: that the walk around the town was boring; the virtual reality suit mask was frightening; the museum set was 'tacky'; and the use of colour could have been more eye-catching.

Their understanding of the programme

Although students in three groups said that there was not anything they had actually failed to understand, in four groups they reiterated that the fast pace of the programme had made it generally difficult to comprehend and retain the information given: 'There was so much going on, I just didn't take any of it in really' and 'It didn't stick in there, it just goes in and then it goes out'.

Suggested Improvements

Two groups criticised the lack of dramatised action in the programme, wanting more reconstruction showing people doing things (for example, although the voice-over described people at work in the market, it was suggested that it would have been better to show how this would have looked). One girl said she had been amazed that the girl in the programme had not taken up the curator's suggestion to watch a reconstruction: personally, she found dramatisation in history programmes a good basic technique that was easy to understand.

The type of information students would have liked to see included in the programme centred on the discovery of Pompeii and the lives of the inhabitants. Individual students wanted to know: how the people who discovered Pompeii knew where to dig; how they got at the structures of the buildings; how the bodies were preserved; and what were the different types of buildings found in Pompeii. In terms of the people, students would have liked more information on what the children wore, and on the living conditions of rich and poor people in the town.

What they learned

Asked what they had learned from the programme, students in five groups focused on the social history aspects (that is, the information about the role of women and children). For example, one girl commented: 'It was quite interesting to learn that 12-year-old girls could be married, and that many children would have lost both parents by the age of ten.' A boy in another group said: 'Because we had done the Romans before, I didn't learn a lot, but if I'd been watching it first thing I'd have learnt

about Pompeii. But everything else didn't go in apart from Pompeii and the wives and how they treated the children.' Five girls and three boys said they had learned about the unequal ('sexist') nature of the relationships between men and their wives.

From the journey around the town, two students said they had found out about the existence of 'stepping stones', and another talked about the 'little alleys' that made up the town. However, one student commented: 'The man said something about shops, but I didn't know what he said, I kept looking around and there were no shops, and then he fast-forwarded it.'

Specific questions on programme content

Two questions were asked by the researchers before and after the programme was screened. The first was: 'What kinds of evidence might a modern historian draw on to study life in Roman towns?' After the programme, the students were asked a modified version of the question: 'What kinds of evidence did the programme draw on to present a picture of life in Roman towns?'

Before the programme each group of students suggested an average age between five and six possible sources of evidence on Roman towns that would be available to a modern historian. A wide range of ideas was put forward, the most common of which were: the remains of buildings; diaries; bones; coins; and armour. In the programme, a variety of sources was used, including: archaeological remains of buildings, people and artefacts at Pompeii; remains of buildings and streets (including bollards and wheel ruts) shown during the girl's 'walk' around Pompeii; graphical reconstruction of the forum, and computer images of the house of the Vetti; dramatic reconstruction of Mrs Vetti; Roman seals, statues, friezes and paintings; letters and inscriptions on a tomb. After the programme, each group of students identified an average of three types of evidence used by the programme. The most commonly mentioned sources of evidence were: buildings; letters; and statues. Other sources of evidence, each recalled by students in one of the groups were: bollards; pictures; monuments/inscriptions and reconstructions.

VIEWING, LISTENING AND LEARNING

The second question was: 'Can you tell me what you would usually find at the centre of a Roman town?' Towards the beginning of the programme, the Curator stated that the Forum ('a paved area where people could mingle') was to be found at the centre of most Roman towns. Later, in her walk around the ruins of Pompeii, the girl reached the ruined forum at the centre, where a visual reconstruction was shown.

Before the programme, only one student knew the answer to this question. Other common suggestions included: a church, a market square, and baths. After the programme, only one group (the one containing the boy who knew the answer before the programme) could correctly answer the question. Students in two groups did not attempt to answer, and in the other three, students suggested: shopping streets; a temple, a meeting place, and 'a big white thing' (this was probably a reference to the forum, as the reconstruction was drawn in white).

Target age range

Asked if they felt the programme to be suitable for their age-group, one group of 12-year-olds said it was, and another judged it suitable for children of their own age and younger. However, students in three groups agreed that it would be better for younger, junior-age children. Explaining this conclusion, students in two groups said that they felt the programme content should have been more challenging: 'I'm not sure the programme was good for 12-year-olds, maybe younger, because they didn't give as much information as they could have done.' One group suggested that younger children (nine- and ten-year-olds) would be more impressed by the futuristic nature of the programme: 'the sort of age you need to be convinced 'this is going to be fun''.

However, one group of 11- and 12-year-olds felt the programme would be more suited to students slightly older than themselves because of its fast pace and simultaneous presentation of information. As one of them said: 'a bit older, because the man was talking dead fast and you're trying to listen and you're trying to look at the pictures as well, and trying to read the writing'.

How they would describe the programme to their friends

The students said they would describe the programme to their friends as being about: Romans; Pompeii; Roman towns; and how Romans live.

One group said they felt it was for younger children, and so would not recommend it to friends of their own age. One boy said he would describe it to others as 'a history programme that didn't make much sense'; and another commented: 'I'd just say that you have to listen carefully and it is quite interesting.'

SUMMARY POINTS *History File*

- Students had mixed views about this programme, liking some aspects and disliking others.
- Features liked were the interesting subject matter (especially the treatment of social history), the graphic reconstruction, and the use of an actress to portray one of the inhabitants of Pompeii.
- Some students felt that the programme compared favourably to other history programmes they had seen, in its ability to build an experience of Roman times, and its move away from a narrator giving information.
- Students disliked the 'fast forward' special effect and the use of a purple circle around the picture. Some found the 'computerised' voice difficult to understand. The writing was found to be too small and difficult to read.
- Students felt that the overall pace of the programme had been too fast, and would have liked more time to absorb the visual information, or to take notes. They disliked the simultaneous presentation of information in different formats (for example, through several pictures displayed at once, commentary, special effects, icons, and written information). They found this affected their ability to comprehend and retain information.
- Students could only recall about three of the numerous sources of evidence used in the programme. They were unable to remember the name of the meeting place at the centre of a Roman town, although this information had been given twice in the commentary.
- The students felt that they had learned information from the programme about Roman family life, and particularly about the lives of women and children. Some students were sensitive to the issues of equal opportunities raised by the descriptions of the role of women in Roman society.

- ❑ There were mixed views on the appropriate target audience for the programme. Two groups felt the programme to be suitable for students of their age (12 and 13). Three groups felt that the programme was more suitable for younger pupils (partly because of its high tech format, and because it did not provide the kind of detailed information they wanted). One group felt that the fast pace and density of stimuli would make it more suitable for older students.
- ❑ Suggested improvements to the programme included: use more dramatic reconstruction; give more detail on the discovery of Pompeii and on the lives of the people who lived there.

Programme 9. *Seeing Through Science.* *The Body Builders*

This programme looked at how scientists study human movement and at the development of artificial limbs. The presenter was British astronaut Helen Sharman. The programme began with a short extract from a black and white film (Metropolis) where an android was being created. This was followed by a demonstration of a robot climbing a wall; then the presenter climbed the wall blindfolded.

The programme moved on to show people working out in a gym, one of whom was wearing an artificial leg. Next were shown a series of still black-and-white photographs of a person walking (by Eadweard Muybridge). The following scene showed the presenter visiting the Dundee Gait Analysis Lab, where her walking movement was analysed using reflectors taped to her legs which picked up beams of infra-red light. The process of recording and analysing the information was discussed with one of the scientists, and demonstrated on the computer. The presenter danced, and her movements were highlighted by the

reflectors. There was a brief scene showing the presenter walking on a sandy beach, then back in the lab where she demonstrated how pressure sensors in the floor can detect changes in force during walking.

The final part of the programme, as shown, concerned the man with the artificial leg. He was seen walking awkwardly when fitted with a mechanical leg. He then discussed the programming of his new 'intelligent' leg with an engineer. He was shown walking up and down in the laboratory, then in the gym on a treadmill. A great deal of the information was given in the voice-over commentary (by the presenter, and the man with the artificial leg). The programme made some use of graphics to illustrate processes, and to signal changes in scene. The programme was stopped before the second part, which went on to demonstrate artificial hands.

The students who watched the programme were aged from twelve to fourteen, although over half were thirteen. (As one school had to withdraw from the study at short notice, this programme was shown to two groups of students from the same school.)

Observation

As with the other secondary programmes, the students watched the programme attentively, with very few signs of distraction. The following reactions were noted:

- Muybridge photographs (of a semi-naked man). Students in two groups were visibly amused during this sequence.
- Presenter dancing: this provoked a reaction in three groups. Some students seemed to be particularly interested in this sequence, while others seemed a little embarrassed by it.
- Man walking with a 'stripped down' artificial leg: this was associated with heightened interest in two groups.

The students' opinions

None of the students had seen this programme before. In general, the programme was favourably received.

What they liked

The features liked by students in all groups were: the unusual subject-matter ('It was very interesting because you don't often hear about things like that'); the sequence showing the analysis of walking with reflectors and infra-red light; and several aspects concerning the artificial leg (seeing how it worked, watching the man walking and seeing the inside of the leg; seeing how the leg could be adjusted).

Students in three groups said they liked the fact that the subject-matter was modern and up-to-date. Students in two groups said they had liked the climbing robot and the presenter.

Aspects singled out by individuals included: the title sequence; the inclusion of people from different backgrounds ('It was good the way they had a Scottish person and an Asian person because you get that in big cities') and being able to 'see what the camera saw' (i.e. the presenter's movements shown by reflectors). There were also some positive comments on the overall content of the programme: that it was well put together; incorporated a relevant clip from an old film; gave factual information in a simplified, comprehensible way; and was not patronising ('They spoke to us as if we were adults').

What they disliked

When asked to identify anything they had disliked, all but one group responded. Students in more than one group commented unfavourably on the jokes, the music, the climbing robot, and the level of explanation. Students in two groups considered the jokes to be 'unfunny' (for example, when the presenter had reflectors taped to her body she said: 'Now I know what a Christmas tree feels like'). The use of background music was described as 'off-putting' by one group, and another felt this 'could be improved'. The climbing robot sequence was felt to be 'boring' by one student, and another said: 'It was quite interesting, but I'm sure there are more complicated robots. I didn't understand why they made it, it didn't do anything.'

Comments about the level of explanation were made in two groups. One student said: 'Some bits were too childish – the computer explanation

PUPILS' AND TEACHERS' VIEWS

was too simple, too young.' Another felt that the programme had shown her *that* the leg worked, but had not sufficiently explained *how* it worked.

Individual students' comments included: the title sequence could be improved (this student disliked the flowers, and felt that she had seen more interesting introduction sequences); that the man interviewed in the lab had been boring; the engineer's speech was difficult to understand and he had not looked at the camera; and that the sequence in the lab had been too long with too much walking around, all shot from the same angle.

A group of 13- and 14-year-old girls from a selective school criticised the presenter in particular. One said: 'It seemed as if she was speaking deliberately slowly and clearly, as if she was speaking to a younger person.' While these students felt a slower delivery was appropriate during more complex explanations, they felt patronised by the presenter's tendency to speak slowly all the time (even when saying something like 'Now we're going to the lab'). Also they felt her presentation had been: 'very scripted... You could tell she wasn't asking the questions, it was the script.' In direct contrast to this, another group of 13- and 14-year-olds said they liked the presenter: in their view she had asked the questions they wanted to ask and was enthusiastic about her role – not just getting paid to do a job.

Their understanding of the programme

Only one group of students identified something they had not understood: did the man have to reprogramme the leg every time he wanted it to move in a certain way? Students in two other groups commended the clarity of the explanations: 'It helped us understand it', and 'Some of the machines were quite complicated but I got the gist of it. They didn't explain it too much either, it was just enough to make you understand'.

Suggested improvements

Some of the students suggested improvements for the programme. These included: provide more information about how an ordinary leg works, and then compare it with the working of an artificial one; and suggest follow-up activities that the students could try for themselves,

possibly in a fact-sheet to accompany the programme (both these points were suggested by two groups). Other individuals wanted the programme makers to: add animation to show how the artificial leg moved; include 'children our age', not just adults; and to give an idea of what future developments in technology will mean for the development of artificial limbs.

What they learned

Students in all six groups were able to identify a number of things they had learned from the programme. Several of them had been impressed by the technology ('they have technology that you don't imagine') and its ability to help amputees: 'If you lose a leg you can get an artificial one.' Others focused on the analysis of walking, particularly the use of infra-red sensors. One student said he had learned: 'That you put more pressure on when you walk faster' and a girl said: 'I learnt how the leg moves – I didn't realise there was all those different movements.' One student said that because the subject matter of the programme was new to her, she had learned 'just about everything in it'.

Specific questions on programme content

In order to assess what the students had learned from the programme, we asked three questions. The first, asked both before and after the programme, was: 'How could scientists study the way the leg moves when a human walks?' Before the programme, the students came up with a variety of answers. The most common suggestions were: record a person walking on video or in a series of photographs; take a sequence of X-rays of a leg in motion; and dissect a leg to study the muscles and joints. Individual students also suggested: comparing movement in injured people with normal movement; studying movement in people of different ages, heights and weights; using a strobe light to highlight movement; inserting a miniature camera inside someone's leg; and wrapping something around the calf to measure how the muscle moves.

After the programme, it was evident from their answers that the students had understood the part of the programme on the analysis of human movement. All six groups mentioned the use of infra-red light, and students in five groups described the process whereby infra-red reflectors

('little balls') taped to the presenter's legs had picked up the light which was photographed by cameras sensitive to infra-red. Students in three groups went on to say that the data could then be analysed on computer. In two groups, students mentioned the analysis of pressure/force during running and jumping.

The second question, asked after the programme only, concerned a short section where the programming of an 'intelligent' artificial leg was explained and demonstrated by the engineer (with use of close-up to show how the air cylinders affect movement in the leg). We asked the students: 'In an intelligent artificial leg, what is used to substitute for muscles?' Students in all six groups were able to give the correct answer to this (air cylinders).

We also asked students to identify the advantages of an 'intelligent' leg over a purely mechanical one. This information had been given in voice-over comments by the presenter, the engineer, and by David, the man using the leg. It was also demonstrated through film of David walking stiffly with a mechanical leg, and then more easily with the intelligent leg.

The students were able to name between three and four advantages of the new leg per group. In all six groups, students said that the intelligent leg was able to react to a change in walking speed (a point reiterated in the programme), and that it was more comfortable to use. Three groups said that the new leg had a more natural/less stiff walking action: 'It looked a bit more normal, the way he walked.' Three groups felt that the new leg was more natural in appearance (although the programme did not explicitly compare the two legs in this respect). One student also suggested that the new leg would enable David to take part in sport (although this was not actually stated as an advantage, David was shown walking on a treadmill in a gym, wearing his new leg).

Target age range

Five of the groups were agreed that the programme was suitable for students of the same age as themselves (i.e. 12 to 14) and in some cases for slightly older and younger students too. One group of 13-year-olds felt the programme would be more suited to slightly older students.

How they would describe the programme to their friends

When asked how they would describe the programme to their friends, a number of different aspects were chosen for comment. Several students mentioned the artificial leg, and the study of human movement. The programme was also thought to be about: science and technology; the human body and the process of research into human movement.

SUMMARY POINTS *Seeing Through Science*

- This programme was well received by the students. They liked the unusual subject matter, and appreciated seeing the application of technology to the study of human movement. Some students commended the programme for being modern and up to date.
- Students felt the programme had been well put together, and that the explanations were clear without being patronising. The students found the content comprehensible.
- Aspects disliked by a minority of the students were: the inappropriate use of humour; the quality of the background music; and a sequence showing a climbing robot.
- Students said they had learned from the programme about new technology, and its application in the study of movement and the design of artificial legs.
- Questioning the students about aspects of the programme revealed that they had understood the programme's explanation of how movement was studied and could recall that air cylinders are used to substitute for muscles in an artificial leg. They were able to name several of the advantages of an 'intelligent' artificial leg over a mechanical one.
- The majority of the students felt the programme was appropriate for young people in their age range (12 to 14).
- Proposed improvements to the programme included: describe how a human leg works, then compare it with an artificial one; vary the pace of the commentary to reflect the complexity of the content; include young people the same age as the target audience; and suggest follow-up activities for the students.

**Programme 10. *The Geography Programme.*
*Japan 2000, Changing Lifestyles***

This series is aimed at students aged 13 to 16. The programme shown explored the problem of a shortage of flat land in Japan for building, and looked at how the Japanese are attempting to solve this by creating new land. The programme, as shown, was in three main sections. In the first, the problem of a lack of space in Japanese cities was demonstrated by showing aerial views of the city of Kobe with a (male) voice-over commentary. The creation of new land at sea was explained with the aid of a map showing the location of Kobe on Osaka bay. There was footage showing the excavation of a mountain, and the transport of soil and rock to the coast by conveyor belt and then out to sea in barges. The process by which the land is built up under the sea was illustrated by cartoon animation, and computer graphics were used to show what the bay looked like eight, and 26 years ago, before the addition of the new land. A second section looked at the living conditions of a Japanese family, the Hashimotos. They were living on Rokko island, a new development built on land created in the bay. The family were shown in their home, and undertaking domestic activities on the island. Interviews with the husband and wife explored the changes brought about by their move to the island.

This was followed by a short sequence showing that the excavation sites are themselves used for building work. One of the building projects has been the creation of a leisure complex called 'Happiness Village'. The final part of the programme featured the experiences of a young person, Takako. She was first shown swimming at the leisure complex, and then at a fairground with friends. Takako's interview focused on the Japanese emphasis on work (intercut with footage of people at work) and the attitudes of the younger generation towards this.

A section from the original programme, showing life in 'old' Japan, was omitted, due to time constraints.

The students who watched the programme were aged from 13 to 16. Although each of the age-groups was well represented, there were more 13-year-olds than any other age-group.

Observation

- The levels of attention during this programme were high, with very few, fleeting instances of inattention. Specific programme features were associated with differences in levels of attention.
- During the section on the creation of new land, the voice-over commentary mentioned that, because of the high price of land, it can cost up to £9,000 to join a tennis club. This caused visible reactions of surprise in five of the groups, with one student exclaiming 'wow' at the figure quoted.
- Two features were associated with particularly close scrutiny by some of the students: the animation of the build up of land under the sea (three groups), and the computer graphics showing the appearance of Osaka bay before and after the addition of new land (two groups).
- In the section on Rokko island, two young, partially clad children were shown playing near a fountain. This provoked smiles and giggles in four groups. Students in three groups smiled when Mr Hashimoto was shown being splashed with water by his young son.
- There were two instances when a minority of the students appeared to lose concentration: during the sequence on Rokko island, when Mr Hashimoto was shown putting away bedding (in three groups); and during the interview with Takako, when she was talking about the pressure on students to work hard (in five groups).

The students' opinions

Only one of the groups of students interviewed said they had covered Japan in geography (they had compared the car industry in Japan and Britain). None of the students had seen this programme before, although one student had seen a mainstream TV documentary about the building of the airport on newly created land in Osaka bay. In general, they had a favourable impression of the programme, typically describing it as 'all right' or 'quite good'. One student said: 'I thought it was quite good, I learnt more from that than from any other video that we've seen.'

What they liked

The programme was praised by students in all six groups for the interesting subject matter (the creation of new land) and the information

it contained (for example, the cost of joining a tennis club, and the average amount of floor space per person).

Students felt the programme had conveyed what life was like in Japanese cities, with three groups commenting on the way the aerial camera-work had enabled them to appreciate the immensity of the city. Two groups appreciated that the programme had kept to its chosen theme: 'A lot of other videos we've seen, they go off the subject, but it didn't go off the subject'; 'Although it kept along with the theme, it was quite open, it covered quite a lot'.

Students in three groups singled out the part where computer graphics were used to show what the bay had looked like before the addition of the new land, as a particularly effective device.

Individual students said they liked: the animation explaining the build up of land under the sea; the part of the programme showing the use of the excavated site for building houses; the way the male narrator spoke; that it was a modern programme, and that it didn't last too long.

What they disliked

Two elements were particularly disliked: the interview with Takako, and the music.

The interview with Takako was disliked by students in three groups because they found it hard to identify with her views. Students felt that Takako was complaining too much about the pressure on her to work hard. They also felt that this part did not fit in well with the rest of the programme. One student explained: 'She said she was feeling guilty that she was going out and having fun when she should be studying. If that's how she felt, she shouldn't have gone out!' Another student agreed, saying: 'That was all she was talking about, not being able to go out...I don't think she said anything about her family, Japan, or anything like that. If they'd had something about her parents' views, that would have been useful.'

The music was disliked by students in three groups, for a variety of reasons: it was felt to be boring, repetitive, and not 'Japanese' enough.

VIEWING, LISTENING AND LEARNING

One student criticised the use of music in many of the educational programmes he watched: he felt there was a sameness to the music which was composed of a few notes, and he made a plea for programmes to feature 'real' music.

Although the narrator had been praised by one student, three others disliked this element. One said: 'It was just the way he spoke. You wanted to take note of what he was saying but he just wasn't relating to you – it was just like a voice going on and on.'

Individual students criticised: the showing of several pictures at once (a device used to link parts of the programme); and fast intercutting of shots ('It made me feel sick').

Specific elements

In order to obtain more detail on specific programme elements, the interviewer asked for their reactions on the programme's use of: aerial footage; voice-over commentary; animation; and interviews with Japanese people.

Aerial footage

This was liked by students in all six groups, because they felt it conveyed the lack of space in the city, and the vastness of the urban area. One student commented that the movement of the camera over the city had caught and maintained his interest. However, students in two groups said they had found the visual information difficult to interpret at times, and would have welcomed the inclusion of some footage of buildings shot from the ground, so they could get a sense of proportion. One group pointed out that it had been possible to see the shadow of the helicopter at times, which they found distracting.

Voice over

Five groups criticised the narrator's delivery for being rather monotonous: they would have liked more variety in the speed of delivery and tone of voice. Suggested improvements included: having a commentator who was younger, Japanese, or having more than one narrator. However, the content of the commentary was praised in two groups for helping them interpret the visual information. One girl said: 'It concentrated on certain

important things.' Although one student would have preferred the programme to use a presenter rather than an unseen narrator, other students did not feel it was important for them to see the narrator: 'He's just saying what's going on, so you don't need to see him.'

Animation

The use of animation to show the build up of land under the sea was welcomed. Students felt this had been justified, because it would have been difficult to show this clearly in any other way. They had also liked the use of maps and computer graphics to show the coastline before the addition of the new land.

Interviews

Despite the reservations about the interview with Takako, the use of interviews with Japanese people was felt to be a positive feature of the programme, because it enabled students to get an impression of Japanese life from the people themselves. One student commented that interviews were the best way of conveying information about issues such as the influence of tradition and cultural change. Two groups said they liked the fact that the family had been shown at home, because it helped the audience to relate to them: 'You look at them and you think "its almost like being here"... eating breakfast, things like that.'

Three groups would have liked more people interviewed on the same subject, in order to get a wider representation of views: 'It would have been better if they had more people from different areas of the new town' and 'They could have had more people, so you could get more of an idea of whether it's typical'.

Their understanding of the programme

When asked if there was anything they had not understood, almost all the students felt that the programme had been easy to understand. However, one 13-year-old could not comprehend why it had been decided to build an airport on the new land, when houses were clearly desperately needed. Another student would have liked more information on how the last layer of stones was put into the sea: 'What happens to the ship on the last load? How does the boat avoid getting stuck?'

Suggested Improvements

Several students suggested additions to the programme, including: more interviews with Japanese people; more detailed information; a map showing more of Japan than just Osaka and Kobe; discussion of the environmental impact of destroying mountains to make new land; and showing more of 'old' Japan (something that was included in the original version of the programme, but was cut from the version used in the research, in order to shorten the broadcast).

What they learned

The students felt they had learned quite a lot from the programme, particularly about the building of new land in the sea (mentioned in five groups). Three groups said they had learned from the aerial footage about the density of the buildings in the city, the lack of trees and open spaces, and the immense size of the city. Three groups mentioned specific factual information they had learned from the commentary: that Japanese people have only one week's holiday a year; that 60 per cent of the population live on three per cent of the land; and that it is very expensive to join a tennis club. (One student suggested that too many facts had been given in a short space of time, and it would have been better to spread them out through the programme.) Two groups recalled information given in the interviews: that there was pressure on students to work hard; and that men have to look after the children. One girl said she had been surprised to find out that Mrs Hashimoto did not want to go out to work.

Specific questions on programme content

In order to assess the students' comprehension and recall of some of the main points made in the programme, the researcher asked questions about three aspects. The first question, asked both before and after the programme, was: 'Compared to British cities, are Japanese cities more or less crowded?' Students were asked to give reasons for their answers. In the programme, it was explained in the voice-over commentary, that the population density in Japanese cities was very high due to the lack of suitable flat land for building.

PUPILS' AND TEACHERS' VIEWS

Before the programme, all but one of the students agreed that Japanese cities were more crowded. The main reason for their answer, given in five groups, was that there is a higher population in Japan than in Britain. In some cases, this was expressed in rather pejorative terms: 'There's millions of people crammed together in the streets. There's loads of them, ain't there?' Two groups suggested that there were more business people in Japan, therefore leading to a greater density of population in the cities. One student knew that countryside in Japan was mountainous, thus limiting the amount of habitable space.

After the programme, the majority of the students still thought the population density to be greater in Japanese than British cities. However, four students now believed the cities to be less crowded in Japan. On further questioning, it emerged that they had been led to this (erroneous) conclusion by the fact that the aerial shots had shown a great many buildings, but not many people; and that the living conditions on Rokko island had appeared fairly spacious.

For the majority who believed the population to be denser in cities in Japan, the main reason given for this conclusion was the apparent density of the buildings in the city (five groups). Individual students also pointed out that the high cost of land, and the necessity of building new land, must mean that the cities were crowded. Two groups were still of the opinion that the overcrowding was caused by the high population in Japan. Three students were able to correctly identify the cause of population density: the mountainous terrain and lack of flat land suitable for building.

This suggests that the programme had been partially successful in conveying the crowded nature of Japanese cities, and in getting over the geographical reason for this. However, perhaps the point about the mountainous terrain could have been more strongly reinforced and the students' misconceptions about Japanese population growth addressed in the programme itself.

The second question, asked after the programme only, was: 'How is new land being created in Osaka Bay, and what is the new land being used for?' Students in all six groups were able to answer the first part of the

VIEWING, LISTENING AND LEARNING

question in some detail (i.e. that this was achieved by quarrying rock and soil from mountains/hills inland, and transporting the rocks to the sea). In the programme, it was stated that the new land at sea was used for building an airport, new towns and quays for container ships. Students in six groups recalled that the land was used for an airport, and five groups also correctly said that the land was used for building living accommodation. Two groups mentioned docks/expansion of the port (this aspect was given much less attention within the programme). Students in three groups also recalled that the quarry sites inland had been used to build sports facilities. One student commented that the new land had created 'freedom for architects'. These answers suggest that key information from the section on the creation of new land had been comprehended and retained by the students.

The final two-part question, asked after the programme, concerned the interviews with Mr and Mrs Hashimoto. We asked: 'How have the Hashimotos benefited from living on Rokko Island?' and 'What difficulties have they experienced from living there?'

Most groups correctly identified the advantages of living on Rokko Island, given in the programme. All six groups mentioned the increased space available, including larger rooms and a spare room in the Hashimotos' apartment. Five groups recalled that the lack of cars meant the Hashimotos' child could play safely outside; and four groups mentioned that there was a pleasant environment on the island, with flowers and trees. Two groups noted the conveniently sited facilities (shops, hospital, schools). In addition, two girls in the same group felt that living on the island had indirectly led to greater equality between the sexes, because the need to pay for their new apartment had prompted Mrs Rokko to work outside the home.

Two main disadvantages of life on the island were identified in the programme and these were recalled by the students: the lack of old buildings, such as temples (mentioned in all six groups); and the greater cost of living (three groups). These answers suggest that the students had picked up and retained information from the interviews with the Hashimotos.

Target age range

Five groups gave their views on the programme's suitability for their age group. Most of the students (including all the 13- and 14-year-olds and one 15 year old) judged it to be suitable for their age group. However six of the older students (that is, those aged 15 and 16) judged the programme to be more suitable for students younger than themselves. The reason given for this was that the programme, although quite interesting, did not contain enough information and was a little too basic for older students.

How they would describe the programme to their friends

Five groups responded to the question about how they would describe the programme to their friends. They agreed that they would say the programme was about Japan, and the building of new land. Individuals in three groups added positive comments, for example, that the programme gave information, rather than simply describing what was on the screen; that it was quite interesting; and would be 'good value for your work'.

SUMMARY POINTS *The Geography Programme*

- ❑ This programme was favourably received by the students who viewed it. They liked the interesting subject matter, and felt that the programme had successfully explored its chosen theme.
- ❑ Levels of attention during the screening of the programme were high, with particular attention paid to a sequence using animation to show the build up of land under the sea.
- ❑ Specific features liked by the students included: the aerial camera-work, the inclusion of interviews with Japanese people, and the use of computer graphics.
- ❑ Three elements were disliked: an interview with a young Japanese woman, the voice of the male narrator, and the music. The interview was disliked because the young woman was perceived to be moaning about her situation. They felt that the narrator's voice had been rather monotonous, and they found the music boring and not sufficiently 'Japanese'.

VIEWING, LISTENING AND LEARNING

- The students felt they had learned quite a lot from the programme, particularly about the creation of new land in Japan. Specific questioning revealed that the students had understood the programme's explanation of how the new land was created, and about the use of the new land. They had also retained information given in the interviews, about the pros and cons of living on Rokko island.
- Most students had not understood that the overcrowding in Japanese cities was due to the lack of suitable flat land for building, although this was explained in the voice-over commentary. Students had pre-existing stereotypes about the population of Japan, which the programme did not address.
- Students suggested that the programme would be improved by including interviews with more Japanese people, and by giving more detailed information.
- The programme was thought to be most suitable for 13- and 14-year-olds. Older students were interested in the subject-matter of the programme, but found it a little too basic in terms of the level of information it contained.

Children's reactions to selected BBC schools programmes: an overview

It is quite difficult to compress the richness of the information gained from the observations and interviews into a set of concise statements. One thing to emerge from this research is the impressive range of aspects noticed by the children, and the sophistication of their critical appreciation.

What follows is an attempt at an overview of the main findings which have been organised into a broad framework, in an attempt to provide useful information for programme-makers and teachers about the design and use of this resource. Some of these findings confirm the work of previous researchers, reported earlier.

The findings have been grouped under seven main headings relating to: the reactions of children from different age groups; programme content; the structure of programmes; presenters; sound; visual elements; and points specific to radio broadcasts.

Reactions from the different age-groups

The pupils appreciated programmes that combined elements of entertainment with education. They were well motivated to learn from the programmes and responded well when an interesting topic was treated in an enjoyable and accessible way. They were also sensitive to aspects of programme quality, such as: colour, lighting, photography, camera angles, acting, sound and music.

The programmes researched were successful at gaining the attention and interest of the children. The immediate reactions of the youngest age group were easiest to observe: they were the most willing to interact with the programme (e.g. by singing along, or answering a presenter's questions) and were also more likely to show if their attention wandered from the broadcast.

Older children were generally more critical of the programmes, and were particularly sensitive to elements they considered to be 'babyish' or 'patronising'. At secondary level, there was more variation in opinion

between viewers, with some features being praised by one student and criticised by another. It seems a particularly difficult task to design a programme to appeal to all secondary students in a mixed ability setting.

Programme content

Many of the points raised concerned the content of the programme. The pupils responded well to content that was perceived to be interesting and relevant. Older pupils liked subject matter that was new to them (e.g. Boudicca, the science programme on artificial legs and the geography programme about the creation of new land in Japan). Younger pupils responded positively to programmes that successfully reinforced and extended their existing knowledge (e.g. *Numbertime*, *Words and Pictures*). Their interest was enhanced when the programmes provided an opportunity for new experiences – things that were outside the ordinary parameters of everyday life, such as the chance to see an octopus (*Words and Pictures*), watch a volcanic explosion (*History File*), or travel into space (*Look and Read*). However, novel experiences were not enough, in themselves, to engage the children's interest. They needed the programme to help them participate, by stimulating their imaginative abilities to connect with the experience. This is where the programme from the *Landmarks* series failed, because despite excellent photography the children did not engage with the subject matter in the particular extract shown.

Devices aimed at involving the children in the programme (such as questions and songs) when used judiciously were generally welcomed, particularly by the youngest children. (It is interesting that one of the junior children who listened to the *History 9-11* tape suggested that by including a song for the audience to sing, the programme would have been improved.) They also liked the inclusion of themes that were of interest to them, for example the theme of pollution in the *Look and Read* story and the discussion of gender roles in *History File* and *The Geography Programme*.

Programme content needed to be aimed at an appropriate level – too simple and it was perceived to be patronising, too complex (especially difficult vocabulary or lengthy explanations) and the pupils became

bored and frustrated. This is obviously a fine balancing act, and one which the children felt was not successfully achieved all of the time.

Children and young people liked the use of humour in the programmes, as long as this was appropriate to the context, tailored to their age group and not over-played. Drama was a popular device, something that was felt to be particularly appropriate to the treatment of historical themes (for example, in *History 9-11* and *History File*).

There was a positive reaction to the presence of actors, who were seen as helpful in conveying meaning and immediacy. Similarly, the use of interviews with 'real' people in *The Geography Programme* was welcomed because it gave students first-hand information. There was also support for the use of children of the same age as the intended audience, although some of the young people we interviewed had reservations about this, particularly if they thought the children in the programmes were behaving unnaturally (*Quinze Minutes*, *History 9-11*, *The Geography Programme*).

In contrast to the finding from previous research (Alwitt *et al.*, 1980; Anderson and Levin, 1976), the presence of 'live animals' was observed to increase children's attention and interest, which even young children were able to sustain for a relatively long sequence (for example, the octopus section in *Words and Pictures* and the desert animals in *Landmarks*).

Finally, the children responded well to programmes that were perceived to be modern and up to date (for example, *Look and Read*, *Seeing Through Science*, *The Geography Programme*). On the other hand, *Quinze Minutes* (first broadcast in the late 1980s) was disliked because it was perceived to be dated.

Programme structure

Pupils responded positively to programmes with a strong story-line, and were frustrated if the narrative was interrupted for any reason (e.g. in *History 9-11*, and *Look and Read*).

Some of the programmes used in the research were relatively complex, with a large number of short scenes (e.g. *Numbertime*, *History 9-11*, and *Look and Read*). Pupils were able to cope well with this complexity, providing that the structure was clear, and that changes in scene were clearly 'signposted' (some children admitted to being confused at transitions between scenes in *History 9-11* and *Quinze Minutes*). As in previous research (Alwitt *et al.*, 1980; Anderson and Levin, 1976; Rice *et al.*, 1987), the observers noticed that the younger children tended to be particularly attentive at the beginning of a new scene, then attention waned a little until another scene regained their attention.

The type of complexity that was not appreciated was when too many things were happening at once. The prime example of this was *History File*, which gave information in a number of different ways (including speech, writing, pictures, graphics, and camera effects), often simultaneously. This type of presentation was felt to be confusing, and interfered with the children's comprehension of the programme content.

In terms of pace, children criticised elements of programmes for being too fast or too slow. In general they wanted the speed of delivery to be tailored to the complexity of information being given. For example, in *Quinze Minutes* the film of children's leisure pursuits with little talking was perceived to be time-wasting. However, children were frustrated by the fast pace in other programmes (notably *History File*) which gave them insufficient time to focus in on relevant points and absorb information.

It was interesting to find that children were attentive to programme title sequences, and commented on them in the interviews. For younger children the opening sequence prompted recognition of a favourite programme and a chance for immediate interaction with the programme (for example, saying the title '*Words and Pictures*'). Some older students also commented on the opening sequence as something they had particularly liked or disliked.

Another area for comment was how the programmes differentiated between essential and irrelevant information. As previous research has found, children benefit when essential information is clearly signalled

(Huston-Stein and Wright, 1979; Williams, 1981). On the whole, the pupils we studied did not have problems in this regard. However, some points of confusion did arise, notably over the significance of the angler scene in *Look and Read*, and the group of children shown at the beginning of *Landmarks*. Children expected information given at the beginning of programmes to be important, and were puzzled when their expectations were not met. In the case of the angler scene, its apparent significance may have been highlighted by the use of novelty and incongruity which are both perceptually salient features.

It was also apparent that care should be given to the inclusion of material that pupils find particularly stimulating, as this may distract them from the main point of the programme (for example, the inclusion of spiders in *Numbertime*, and the scene in *Landmarks* where men cut down trees and a young child was shown digging with a knife).

Presenters

Many of the children's comments focused on the programme presenters. On the whole, reactions to the presenters were positive, with children praising them for their genuine enthusiasm for a subject and their ability to communicate meaning.

Younger pupils seemed impressed by the talents of certain presenters (for example, the ability to sing, dance, and draw). Despite the finding from previous research that adult males are not well attended to by young children (Alwitt *et al.*, 1980; Anderson and Levin, 1976), the male presenter in *Words and Pictures* was well liked by the children interviewed for this research, and his presence was not associated with a loss of attention. However, some presenters of programmes for older children were criticised for signs of condescension, such as: adopting a patronising tone of voice; smiling inappropriately; and speaking too slowly when giving simple information.

One 13-year-old described the ideal presenter as follows: 'not too flamboyant; in their early twenties; and someone who should know just who they're dealing with (in order to avoid talking down to the audience)'.

VIEWING, LISTENING AND LEARNING

She also suggested that it was important to see the presenter, as she did not like the presenter to be a disembodied voice in the background – a point also made by some of the viewers of the *Landmarks* programme, who would have preferred to see the presenter because they would have been able to gain information from her gestures. (However, older students viewing *The Geography Programme* did not share this view.)

There were also some comments about the inclusion of people of both sexes and from different cultural backgrounds (as both presenters and other participants). This was welcomed as a positive statement against gender and racial stereotyping.

Sound

Aspects of sound were important in creating atmosphere and conveying meaning. Children were sensitive to vocal qualities, especially clarity of speech (the deliberately 'distorted' voices of the Cabbage Monster in *Letterbox* and the Curator's voice in *History File* were difficult to understand). They also commented on voice tone and modulation (several actors were praised for the expressive way they used their voices).

There were positive comments on the songs and background music. Young children seemed to enjoy the songs included in their programmes (especially those with which they could join in), although a song in the *Letterbox* programme which included some nonsense lyrics was received less favourably by some. Pupils also commented on the use of background music, which was felt to be particularly evocative in the programme about Boudicca (*History 9-11*), but less effective in *Seeing Through Science* and *The Geography Programme*.

Sound effects were generally very effective in gaining attention, especially those included in the programmes for younger children. They were also identified as features that the children had liked (e.g. in *Numbertime*, the ticking of a clock and the sound of babies crying were singled out for positive comment).

Visual features

Children commented on a wide range of visual aspects of the seven television programmes. It was clear they were relying on the pictures for a great deal of information. There was praise for some programmes which had high quality visual effects (for example, the close-up wildlife photography in the *Landmarks* programme, the special effects for the spaceships and Zot character in *Look and Read*, and the use of computer graphics in *The Geography Programme*).

Children seemed to attend well during the short sequences of cartoons and animation in *Numbertime*, although the use of animation did not in itself guarantee sustained attention (for example, the attention of some children wandered during the *El Nombre* model animation). The use of cartoon animation in *The Geography Programme* was appreciated because the students felt it was the most effective way to convey the information.

Pupils commonly noticed the colour in a programme, and in one case, the lighting level (*Quinze Minutes*). The aerial camera-work in *The Geography Programme* was found to be interesting and effective.

The use of text was noted: children found this helpful in *Landmarks*, where key words appeared on the screen, but they felt that the words should have been displayed for longer. One of the suggested improvements to *Quinze Minutes* was that key French words could be displayed on screen. Criticisms of the use of text in *History File* included: that there was too much text, the writing was difficult to read, displayed too quickly, and it interfered with the children's attempts to make sense of information presented in other ways.

Comments on radio programmes

The two radio broadcasts included in this study were in some ways atypical of the most popular schools radio programmes, in that they were not music or dance/movement tapes. These types of programme were deliberately excluded because of the practical difficulties of obtaining

the necessary space and equipment, and because the programmes usually require a level of teacher involvement that would have conflicted with the researchers' non-participatory role.

One important point to make about the reactions of younger groups (four- and five-year-olds) was that although several children appeared distracted and bored during the broadcast, the subsequent discussion revealed that most had attended to the broadcast and had enjoyed it. Although the junior children who listened to the *History 9-11* programme were attentive, they felt that if the radio programme were to be used with the whole class, some of their classmates might become bored and misbehave.

The younger children also seemed more hesitant to join in with the radio programme than with the two TV programmes for the age-group, although this may have been due to their greater familiarity with the TV programmes (*Numbertime* and *Words and Pictures*).

The dramatisation of the stories in the two programmes was well liked by the children. The *History 9-11* programme seemed to have been particularly successful in conveying the narrative about Boudicca, and although one child would have preferred to see this on TV, another felt the medium of radio was more effective at helping the audience form their own picture of the people and events. The use of music and in telling the Boudicca story was praised, although some children would have liked to hear more sound effects.

Of course, all the comments about sound made above are particularly important for radio. Children commented on the quality and appropriateness of the voices in particular but sometimes found it difficult to follow explanations given by one adult voice (for example, in *History 9-11*). Some children were confused by changes in scene in this programme and felt there was not a clear enough demarcation between sections of a programme.

Summary

- ❑ This chapter draws primarily on information from group interviews with 240 pupils and individual interviews with 47 teachers.

Research findings on educational TV

- ❑ Previous research carried out in the USA, has found that educational programmes differ from 'mainstream' children's programmes. Pupils and teachers interviewed for this research agreed that the main point of difference between schools and mainstream broadcasts, was that the former were designed to educate, and the latter to entertain. There were also perceived differences in the types of programmes watched, and in the child's freedom of choice of viewing.
- ❑ Research has found that certain features of children's TV broadcasts are associated with higher and lower levels of apparent attention. There is evidence of a maturational effect in children's ability to comprehend and integrate information from TV programmes. Television broadcasts may be particularly helpful in enabling learners to make connections between reality and abstraction.

Contribution of school broadcasts to learning

- ❑ Teachers interviewed in this research provided evidence of how broadcasts contribute to pupil learning. They focused on programme content, structure, pace, presenters and visual quality as important elements of effective broadcasts.

Research methods

- ❑ The NFER research played extracts from ten recently broadcast schools programmes to groups of pupils, without mediation. The programmes were designed for different age groups: there were eight television and two radio programmes.

Pupils' reactions to selected BBC programmes

- Observations and interviews with the pupils produced a wealth of information on each programme. On the whole, pupils were attentive to the broadcasts, and were positive in their views. They had noticed a wide range of features and were sensitive to many different aspects of programme quality.
- In terms of content, pupils and students praised programmes which provided opportunities for new and exciting experiences, and those that engaged the interest of the audience. In their view, programmes needed to be aimed at an appropriate level and to be up to date. There was also support for the use of humour, actors, children, and animals.
- Programme structure was an important element. Young children were able to cope well with rapid changes of scene, providing that the structure was clear and the transitions were clearly signalled.
- Programmes needed to adopt an appropriate pace: some programmes were felt to have been less successful in this respect. There were a few instances where children became confused between essential and irrelevant information.
- Many of the children commented on the presenters. They responded well to enthusiastic presenters with clear voices. They did not like presenters to 'talk down' to them. Some of the younger pupils preferred to see TV presenters, rather than to have information conveyed entirely by voice-over.
- Pupils reacted well to auditory features, such as sound effects, music and songs. There was some criticism of the background music employed in two of the programmes.

5. USING BROADCASTS IN SCHOOL

Benefits and Limitations

Introduction

This chapter uses questionnaire data to focus on a variety of issues surrounding the use of schools TV and radio broadcasts. It begins with a look at the existence of school policies on the use of broadcasts and at the use of teachers' notes. The chapter then considers the relative importance of a number of factors in promoting and limiting teachers' use of schools broadcasts. It goes on to report teachers views on the main advantages of using schools broadcasts for themselves and their pupils. There is also information on the perceived disadvantages of using broadcasts and on teachers' requests for improvement of the BBC schools service and for the development of new series. The chapter ends by considering teachers' attitudes towards the use of schools TV and radio broadcasts.

School policy on broadcast use

All primary and secondary respondents were asked whether their school had a written policy on the use of TV and radio broadcasts. As can be seen from Table 5.1. very few schools did so.

In addition, primary teachers were asked if there was any limit set on the number of TV or radio series used per year group. Twelve per cent reported the existence of such a limit: the average maximum limit for these 79 primary respondents was around two TV series and one-and-a-half radio series per class.

Table 5.1 Written school policy on the use of broadcasts

	Primary %	Secondary %
School has a written policy	2	1
Don't know	13	17
School does not have a written policy	81	80
No response	4	2
Total %	100	100
N	658	1020

Use of teachers' notes

The 607 primary and 643 secondary respondents who used schools broadcasts were asked a series of questions about their use of teacher notes designed by the broadcast companies to accompany schools TV and radio series. The proportion of respondents using teachers' notes is shown in Table 5.2.

Table 5.2 Use of teachers' notes by primary and secondary users of schools broadcasts

	Primary %	Secondary %
Notes used	96	61
Notes not used	3	38
No response	1	1
Total %	100	100
N	607	643

The table shows that almost all primary respondents had made use of some teachers' notes to accompany schools radio or TV programmes.

BENEFITS AND LIMITATIONS

However, this practice was less common among secondary heads of department. There was no significant difference in the use of teachers' notes among teachers of different primary age-groups. An analysis of the secondary responses from heads of different departments revealed a significant difference ($p < .01$). This can be seen in the following table.

Table 5.3 Use of teachers' notes by secondary heads of department

Department	Notes used %
Modern languages (N=118)	76
Science (N=109)	61
Geography (N=130)	60
History (N=138)	59
Maths (N=24)	58*
English (N=87)	58*
Technology (N=37)	38*

** Care should be taken in the interpretation of results based on small numbers of respondents.*

Table 5.3 shows that the proportion of respondents who used teachers' notes was higher in modern languages than in other subject areas.

Those who had not used teachers' notes were asked to give their reasons for not doing so. There were 242 secondary respondents who did not use teachers' notes (so few primary teachers answered the question that their responses were not analysed further). The most common response (from 35 per cent of secondary heads of department) was that they preferred to preview the programmes and devise their own schemes of work, rather

than use commercially produced materials. Other factors affecting secondary respondents' non-use of teachers' notes included: the expense of the materials (17 per cent); that the notes were not available within the school (10%); and simply forgetting to send for them (ten per cent). (See also Table A.2 in the Appendix.)

The 582 primary and 393 secondary respondents who had used teachers' notes were provided with a list of possible uses. Respondents were asked to indicate the purposes for which they used the notes (from a list provided on the questionnaire) and then to rate the usefulness of the material for each purpose on a five-point scale (very useful – not useful). Their responses to the first part of this question are shown in Table 5.4.

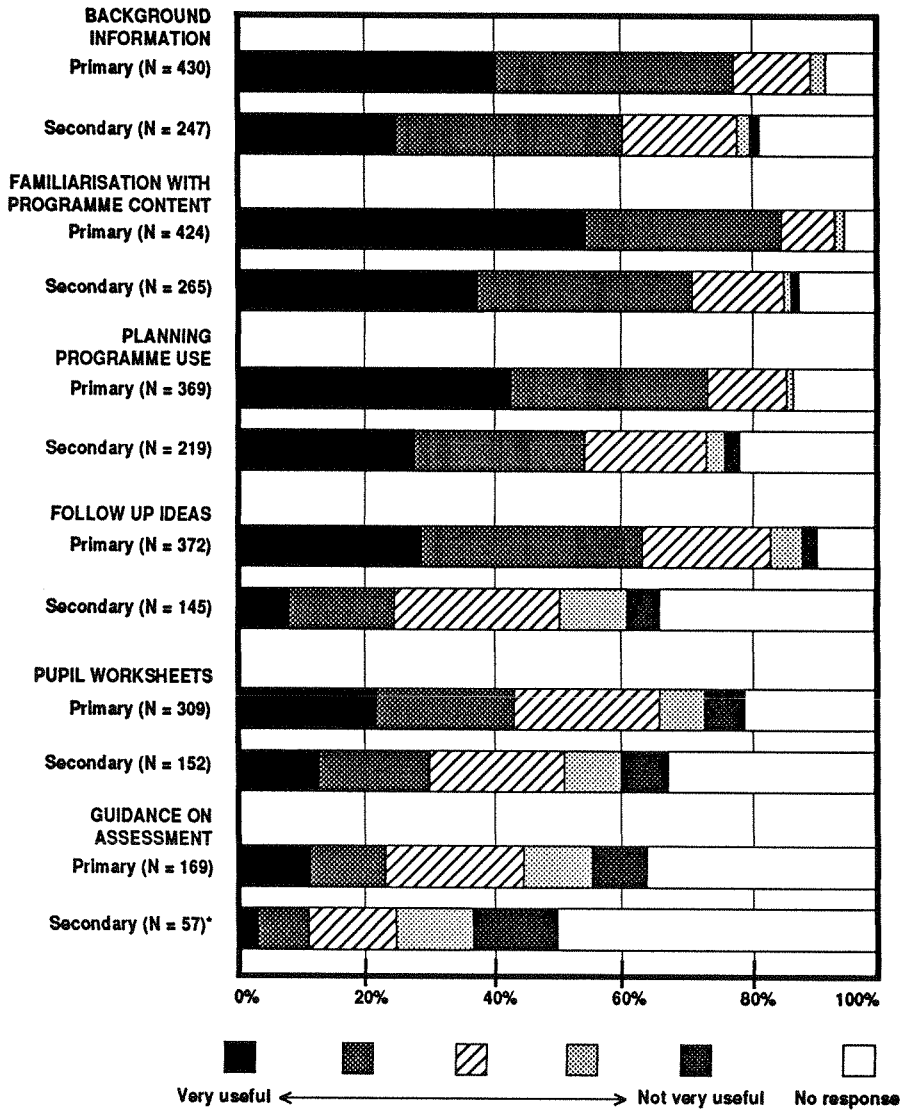
Table 5.4 Purposes for which teachers' notes were used

	Used for the purpose	
	Primary %	Secondary %
Background information	74	63
Familiarisation with programme content	73	67
Planning programme use	63	56
Follow-up ideas	64	37
Pupil worksheets	53	39
Guidance on assessment	29	15
N	582	393

The table shows that almost three-quarters of the primary teachers who used teachers' notes did so for background information and familiarisation with the content of the programme. In addition, over half of the primary teachers who responded used teachers notes for planning the use of the programme, as a source of follow-up ideas, and for pupil worksheets. There was a similar pattern of use at secondary level, although a lower proportion of heads of department used the notes for any one purpose. In particular, fewer secondary respondents used the teachers' notes as a source of follow up ideas than was the case among primary teachers.

BENEFITS AND LIMITATIONS

Figure 5.1 Ratings of the usefulness of teachers' notes: primary teachers and secondary heads of department



* Care should be taken in the interpretation of results based on small numbers of respondents.

VIEWING, LISTENING AND LEARNING

Those who had used teachers' notes for a particular purpose were asked to rate the usefulness of the notes on a five-point scale (very useful – not useful). The results from this analysis are shown in Figure 5.1.

In general, primary teachers rated the usefulness of teachers' notes fairly highly, with the highest ratings being given to the aspects of the notes used by the highest proportions of teachers (in other words teachers were unlikely to use notes for a particular purpose if they did not find them of use!) However, there are some differences in the ratings which are illuminating.

The highest ratings were given to the usefulness of the notes for familiarisation with programme content (over half the teachers who used the notes for this purpose rated them as 'very useful'). There would also seem to be a fairly high degree of satisfaction with the content of teachers' notes for the planning of the use of the programme and in the provision of background information.

Primary teachers were less satisfied with the usefulness of the notes for follow-up ideas and pupil worksheets, and only 23 per cent of teachers expressed satisfaction with the provision of guidance on assessment contained in the notes. This last item produced the only significant difference between teachers of different age-groups: there was least satisfaction on the provision of assessment guidance in the notes among teachers of children aged nine or more ($p < .05$).

There was a similar pattern of response from secondary heads of department, although there was a general tendency for secondary respondents to rate the notes somewhat less highly than the primary teachers.

The aspect of the notes considered particularly useful by secondary respondents was the information about programme content. Most respondents found the notes useful for background information and for planning the use of the programme. A majority of respondents did not find the notes particularly useful for follow-up ideas, pupil worksheets, or guidance on assessment.

There was one significant difference between the ratings given by heads of different departments (see Table A.3 in the Appendix.) Teachers' notes were found to be most useful for familiarisation with programme content by heads of modern languages, but they were rated as least useful for this purpose by heads of technology ($p < .01$). (However, as only seven heads of technology departments responded to this question, care should be taken in the interpretation of this analysis.)

Factors influencing the use of schools broadcasts

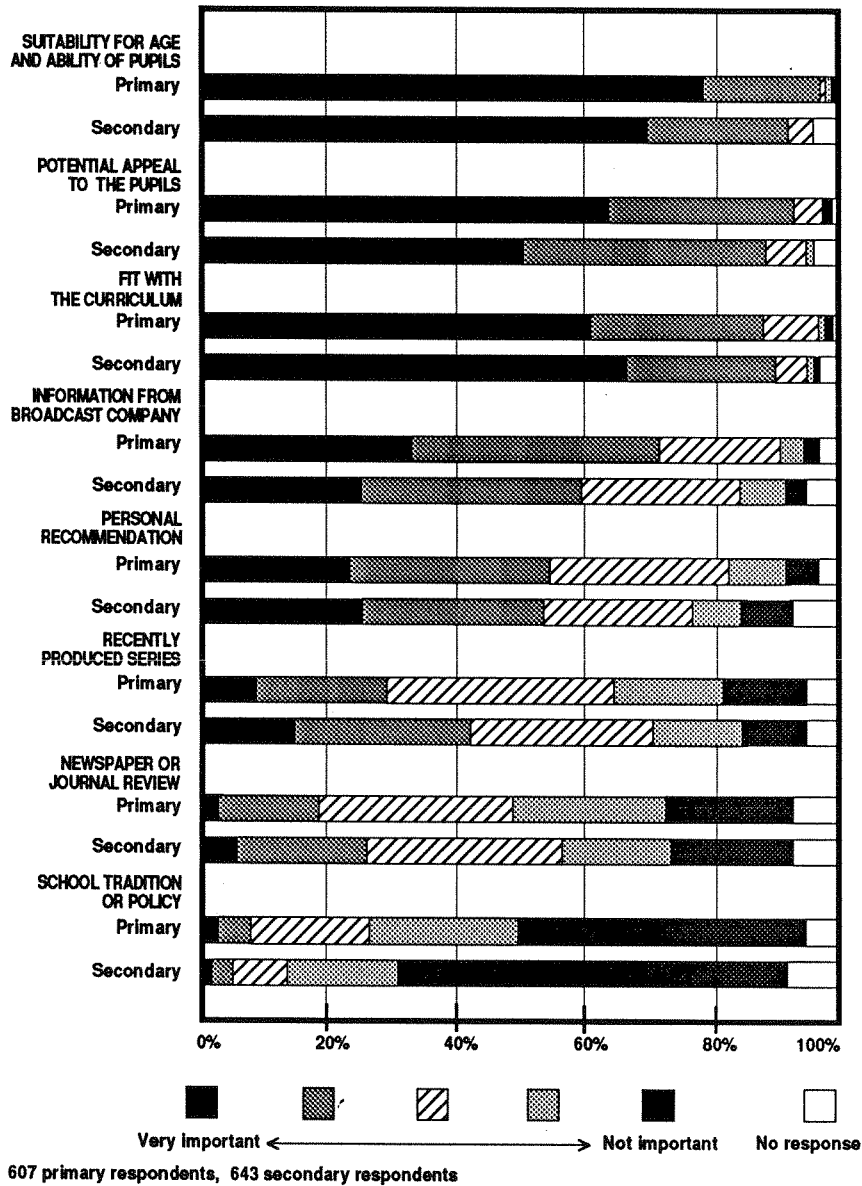
Robin Moss and his colleagues (Moss *et al.*, 1991a and b) suggest that there are a number of sequential decisions or 'gates' in the decision-making process. They identify six gates: availability and suitability of equipment; availability of information; accessing the resource; integrating the programme; delivering the curriculum; and evaluation/feedback. Several of these items were included in the questions we asked about use and non-use of broadcasts.

The questionnaire asked respondents who had used schools radio and/or TV broadcasts in the past two academic years to consider the importance of a number of factors in influencing their decision to use the broadcasts. Teachers were asked to look at each item and then to rate its importance on a five-point scale (very important – not important). The results of these analyses for primary and secondary respondents are given in Figure 5.2.

Figure 5.2 shows a fairly high degree of agreement between primary and secondary respondents about the factors that influence their decision to use schools TV and radio broadcasts. Three factors were rated highly by both primary and secondary respondents: suitability of the programmes for the age and ability of the pupils; potential appeal to the pupils; and the degree of fit with the curriculum.

Two items were rated as very important by about a quarter of primary and secondary respondents: information about the programmes from the broadcast company, and a personal recommendation from a colleague.

Figure 5.2 Importance of factors influencing the decision to use schools broadcasts: primary teachers and secondary heads of department



BENEFITS AND LIMITATIONS

Two factors were of less importance to the majority of respondents: that the series was recently produced and that it had been reviewed in a newspaper or journal. Very few respondents felt that school tradition or policy was an influence on their decision to use schools broadcasts.

There were, however some differences of opinion between teachers of different age-groups at primary level, and between heads of different departments at secondary level.

In the primary sample, the potential appeal of the programmes for children in the class was rated as significantly more important by teachers of the youngest age-group ($p < .05$).

At secondary level, there were significant differences between heads of different departments on three factors (see Tables A.4 – A.6 in the Appendix). The degree of fit with the curriculum was of significantly greater importance for heads of geography, history and science, than for heads of maths ($p < .0001$). Heads of modern foreign languages rated the importance of a programme's potential appeal to students more highly than departmental heads for technology and geography ($p < .0001$). Heads of department for geography and modern languages rated the fact that the series was recently produced as more important than heads of English, maths and history departments ($p < .0001$). (As only 35 heads of technology and 23 heads of maths departments responded to the question, care should be taken in interpreting the results of these analyses.)

Limiting factors

Users of schools broadcasts were asked the question 'Which factors, if any, limit your use of schools broadcasts?' The answers to this open-ended question are summarised in Table 5.5.

Table 5.5 Factors limiting teachers' use of schools broadcasts (most common responses)

<i>Analysis of open-ended responses</i>	Primary %	Secondary %
Lack of teacher time	30	29
Limited access to equipment	21	26
No limitations	11	13
Recording difficulties	10	3
Limited class time	9	12
Lack of suitable programmes	5	12
No response	22	12
N	607	643

Percentages may sum to more than 100, since respondents could make more than one comment.

Clearly the limiting factor identified by the highest proportion of both primary and secondary respondents was a lack of teacher time. Respondents acknowledged that to make good use of broadcasts took time in recording, previewing and preparation, and that they did not always have the time to devote to these activities.

A second factor limiting the use of schools broadcasts was the teacher's access to suitable equipment, particularly to a TV and video recorder. Recording problems were experienced by some teachers, including difficulties in obtaining a good quality tape of a programme. Far fewer secondary heads of department reported problems relating to recording than did primary teachers, possibly reflecting the greater degree of assistance and equipment available for recording in secondary schools and colleges.

Limited contact time with the class and a lack of suitable programmes were reported to be limiting factors by a minority of primary and secondary respondents, but would appear to be a slightly greater problem in secondary schools.

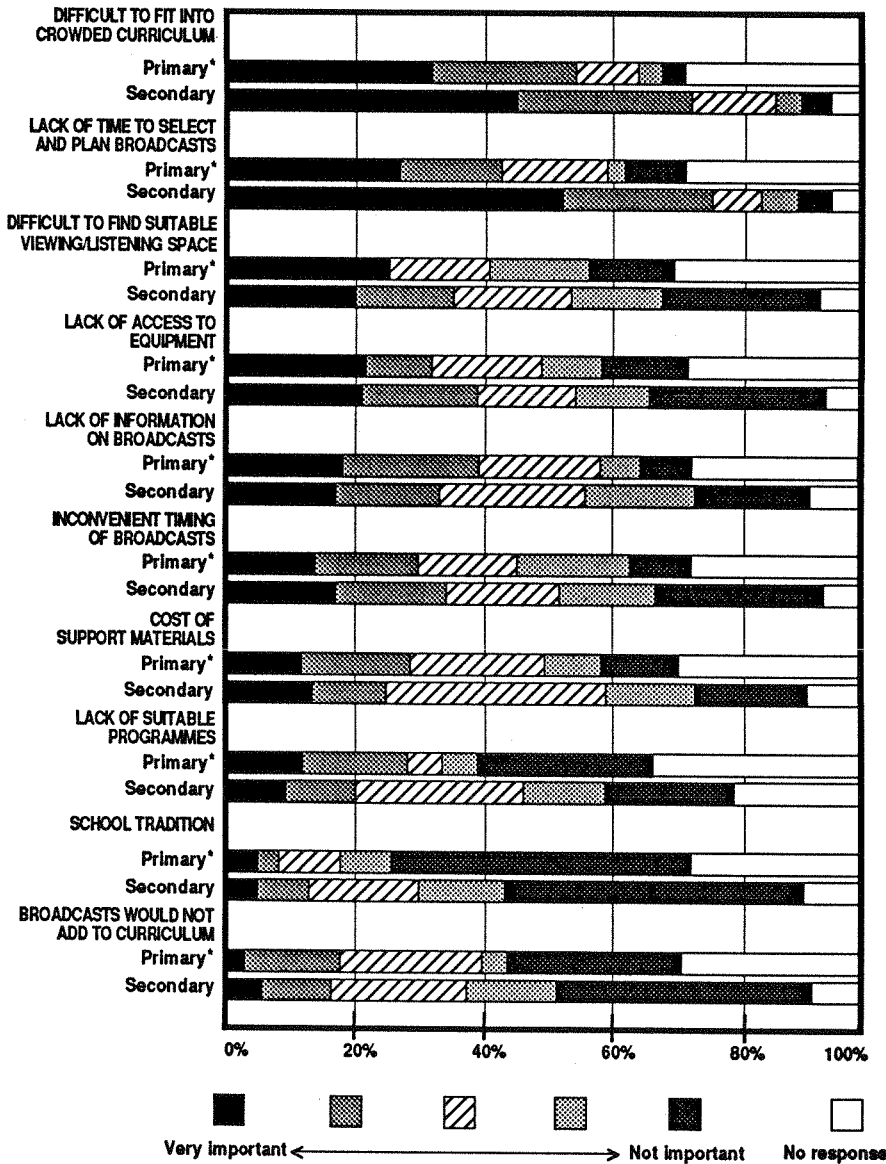
Factors affecting non-users of schools broadcasts

In order to discover why some teachers do not make use of schools broadcasts, respondents who rarely or never used this resource were asked to rate the importance of a number of statements, provided on the questionnaire, reflecting a range of practical and philosophical barriers to use. Each item was rated on a five-point scale (very important – not important). There were 356 respondents to this section in the secondary survey, but only 51 of the respondents to the primary survey were non-users of schools broadcasts. The results are displayed in Figure 5.3.

The information from primary and secondary respondents about their reasons for not using schools broadcasts has produced a fairly clear picture. Of prime importance to both groups were limitations on their time, and on the available time within the curriculum. Lack of access to equipment and space were identified as important factors by about a third of secondary, and over a quarter of primary non-users. Lack of information about programmes and the inconvenient timing of broadcasts were important factors for about a third of primary and secondary respondents. The cost of support materials supplied by the broadcast companies and a lack of suitable programmes were identified as important factors by under a third of respondents. Only a small minority indicated that their own doubts about the contribution of broadcasts, or a school tradition not to use broadcasts, were important factors in their decision not to use this resource.

There were significant differences in the secondary non-users' responses to certain items according to departmental area (see Tables A.7 – A.12 in the Appendix). Lack of time to select and plan the use of broadcasts was a particularly important factor for heads of modern languages, English and maths ($p < .01$). Problems with access to equipment were more important for heads of modern languages and English ($p < .05$). Difficulties in finding a suitable space for viewing/listening were rated as more important by heads of English and maths ($p < .01$). Inconvenient timing of broadcasts was more important for heads of English than mathematics ($p < .001$). A lack of suitable programmes was rated as more important by heads of technology and history ($p < .05$). Although not generally rated as an important item, 'do not feel broadcasts would add anything to the curriculum' was rated as more important by heads of

Figure 5.3 Importance of factors influencing the decision not to use schools broadcasts: primary teachers and secondary heads of department



51 primary respondents, 356 secondary respondents

* Care should be taken in the interpretation of results based on small numbers of respondents.

BENEFITS AND LIMITATIONS

department for technology, maths, English and science ($p < .05$). (As there were fewer than 50 respondents to this question for geography, history, science, modern languages, and English, care should be taken in the interpretation of these analyses.) There were no significant differences in the responses of primary teachers when analysed by age-group taught.

It is interesting to find a measure of agreement between users and non-users about the main factors limiting the use of schools broadcasts. In both cases, lack of time and access to equipment were identified as key issues.

Advantages and disadvantages of using schools broadcasts

Benefits to teachers and pupils

Primary and secondary questionnaire respondents who used schools TV and/or radio broadcasts were asked to give their views on the main benefits of schools broadcasts for teachers and for pupils. These questions were similar to those asked earlier in relation to the use of specific TV and radio series (see also Tables 2.11 and 3.6). However, in this case respondents were being asked about the benefits of schools broadcasts for teachers and pupils, whereas the previous questions asked for their reasons for choosing a particular series. The most common answers to these more general questions are shown in Tables 5.6 and 5.7.

Table 5.6 shows a high degree of agreement between primary and secondary respondents about the main benefits of schools broadcasts for teachers. The answer given by over a quarter of primary teachers and over a third of secondary heads of department was that the use of schools broadcasts enabled them to vary their teaching by introducing a visual element. Another benefit identified by about one in five of primary and secondary respondents, was that using schools broadcasts enabled them to give their pupils experiences that would be difficult to provide in any other way.

Table 5.6 Benefits of schools broadcasts for teachers (most common responses)

<i>Analysis of open-ended responses</i>	Primary %	Secondary %
Introduces a visual element	27	45
Adds experiences not easily provided by the teacher	21	19
Provides extra material	19	16
Provides ideas for class work	14	4
Interesting/fun	14	19
Reinforces teaching	13	14
Good programme content/presentation	7	12
Provides (real life) examples	4	11
No response	10	7
N	607	643

Percentages may sum to more than 100, since respondents could make more than one comment.

Table 5.6 shows a high degree of agreement between primary and secondary respondents about the main benefits of schools broadcasts for teachers. The answer given by over a quarter of primary teachers and over a third of secondary heads of department was that the use of schools broadcasts enabled them to vary their teaching by introducing a visual element. Another benefit identified by about one in five of primary and secondary respondents, was that using schools broadcasts enabled them to give their pupils experiences that would be difficult to provide in any other way.

Primary and secondary respondents differed slightly in the frequency of certain types of comment. For example, a higher proportion of primary than secondary teachers commented that broadcasts could be helpful to teachers by providing ideas for follow-up work. On the other hand, the ability of schools broadcasts to exemplify theory, and the high quality of programme content and presentation, were mentioned as benefits slightly more frequently by secondary heads of department.

BENEFITS AND LIMITATIONS

Table 5.7 Benefits of schools broadcasts for pupils/students (most common responses)

<i>Analysis of open-ended responses</i>	Primary %	Secondary %
Introduces a visual element	32	41
Interesting/fun	28	25
Adds experiences not easily provided by the teacher	17	14
Good way to learn	11	13
Reinforces teaching	8	12
Good programme content/presentation	6	10
Provides (real life) examples	4	13
No response	10	8
N	607	643

Percentages may sum to more than 100, since respondents could make more than one comment.

As the table shows, many of the benefits of schools broadcasts to teachers were also identified as advantages to pupils. Several respondents pointed out that, by providing benefits to their pupils, broadcasts were directly benefiting teachers. This is apparent in the fact that a visual presentation of information was identified as the most important benefit from using schools broadcasts for both teachers and their pupils.

However, there are some differences in the patterns of responses to the two questions. For example, providing interest and fun were identified as advantages of broadcasts for teachers, but a higher proportion of respondents saw these as benefits for pupils. It is also interesting to note the appearance of a new factor in Table 5.7: some respondents felt schools broadcasts to be particularly beneficial for pupils because this was considered to be a good way to learn.

As might be expected, there are strong similarities between the identified benefits of broadcasts and the reasons given by teachers for their choice of TV and radio series (see Tables 2.11 and 3.6), although there are differences in emphasis in the responses to the specific questions.

Disadvantages in using schools broadcasts

As well as identifying benefits of using schools broadcasts, those who used them were asked to respond to the question: 'Are there any disadvantages in using schools broadcasts?' The most common types of response to this question are given in Table 5.8.

Table 5.8 Disadvantages in using schools broadcasts (most common responses)

<i>Analysis of open-ended responses</i>	Primary %	Secondary %
No disadvantages	32	32
Don't know	11	14
Children do not attend to broadcasts	10	18
Programmes may not be suitable	9	23
No response	29	12
N	607	643

Respondents could make more than one comment.

As the table shows, only a few common disadvantages of using schools broadcasts were identified. One concern, mentioned by a minority of primary and secondary respondents, was that children viewed TV as a medium for entertainment, so they found it hard to concentrate on the broadcasts and use them as a learning medium (a problem which several respondents referred to as the 'couch potato' syndrome). Another problem, raised by just under a quarter of the secondary respondents, was that programmes may not be entirely suitable for the class. This could be due to a variety of factors, including: poor programme content (e.g. not focused enough on the curriculum; too much or too little content); inappropriate programme style (e.g. boring delivery; teaching points lost in a slick presentation); and programme length (respondents criticised programmes both for being too long and too short). It could also be difficult for teachers to use broadcasts as a whole-class teaching resource, because of the diversity of ability within their teaching group.

Teachers' views on the development of the BBC's schools service, including new series

Requests for service development

The questionnaire respondents who used TV and/or radio broadcasts for schools were asked if there were any ways in which the BBC could improve its service to schools. The most common answers to this question are given in Table 5.9.

Table 5.9 Suggested improvements to BBC schools service (most common responses)

<i>Analysis of open-ended responses</i>	Primary %	Secondary %
Satisfied with current service	18	19
Improve programme-related materials (e.g. teachers' notes)	11	14
Improve programme information	6	19
Increase range of programmes	5	16
No response	42	21
N	607	643

Respondents could make more than one comment.

A number of teachers took the opportunity of this question to express their satisfaction with the current service, and a high proportion of primary teachers did not respond. However there were some areas for development mentioned by a minority of respondents. Both primary and secondary respondents felt that the content and availability of materials to accompany programmes (e.g. teachers' notes, pupil worksheets) could be improved.

Secondary respondents in particular wanted to receive more, better-designed programme information. A point made by several respondents (and emphasised by the secondary heads of department interviewed)

was that information on programmes for secondary schools and colleges should be sent to individual heads of department, rather than via a general mailing to schools and colleges. More secondary than primary respondents requested an increase in the range of programmes available for their subject areas.

Advice to the BBC

During the interviews with 47 teachers, the interviewer asked if they had any advice to offer the BBC about the future of their radio and TV broadcasts for schools. As might be expected, the comments were broadly representative of the questionnaire responses concerning suggested improvements, but the interviews enabled us to explore some issues in greater depth.

The most common piece of advice (offered by about a quarter of interviewees) was that the BBC should foster a closer relationship with schools, and do as much as possible to discover teachers' needs for broadcast material. For example, one head of science commented: 'The programme makers must work as closely as possible with teachers, and they must listen to teachers.' Others suggested that the programme makers should visit schools to trial programmes before broadcasting them.

Another main area of comment (made by a similar proportion of interviewees) related to the need to improve programme information. This included pleas for more information on forthcoming programmes, made available further in advance of the time of broadcast. As one primary teacher explained: 'There is so much going on in the summer term that we need them (i.e. the brochures) earlier; they need to reach us before Easter.'

Some teachers felt strongly that advance information was not detailed enough for them to decide whether or not to plan for the use of a series, and to make the commitment of ordering the accompanying materials. For example, one head of modern languages explained that she rarely used schools broadcasts, although she would like to do so: 'When I was

BENEFITS AND LIMITATIONS

doing the questionnaire I was thinking why don't I use it more? I think it's about having really accessible information. The last set of information I looked at, it didn't go into much depth, and I couldn't see on the brochure where I was supposed to get the teaching materials from. I think they are badly presented for people in a hurry.'

Similarly, a head of science felt that the publicity material produced by the BBC and Channel 4 compared unfavourably with that provided by other publishers of educational materials: 'They sell themselves short! A busy teacher may not use a programme because he hasn't the time to suss it out. If there was more attempt to persuade and guide, that would be helpful.' This teacher went on to give details on the kind of information he would like, including precisely where the programme fitted into the curriculum, who it was aimed at, and how it could be used.

Other pieces of advice offered by a minority of interviewees included: make programmes more closely related to the curriculum; improve the quality of programme-related materials; produce more programmes, and improve the timing of broadcasts (there was some support for the practice of broadcasting a series as a block, so that all the programmes could be recorded on tape in one session). However, as in the questionnaire responses, several teachers emphasised that they felt the BBC was providing a useful service, and should simply strive to keep up the good work in future.

Demand for new series

The questionnaires asked school broadcast users if they felt there were any areas of the curriculum that were not currently well covered by schools broadcasts. Table 5.10 shows their responses.

The table reveals that very few of respondents said 'no' to this question. At primary level, a large minority answered 'don't know', whereas a high proportion of secondary respondents felt that there were areas of their subjects which could be better served by broadcast material. At secondary level there was a significant difference between heads of different departments ($p < .0001$). This is shown in the Table 5.11.

VIEWING, LISTENING AND LEARNING

Table 5.10 Are there areas of the curriculum which are not well covered by schools broadcasts?

	Primary %	Secondary %
Yes	26	60
Don't know	46	18
No	19	9
No response	9	13
Total %	100	100
N	607	643

Table 5.11 Are there any areas of the curriculum which are not well covered by schools broadcasts? Responses from heads of different departments

Department	Yes %	Don't know %	No %	No response %	Total %
History (N=138)	75	10	8	7	100
Geography (N=130)	71	11	8	10	100
Science (N=109)	63	18	7	12	100
Modern languages (N=118)	50	25	8	17	100
Technology (N=37)*	49	21	3	27	100
Maths (N=24)*	46	38	4	12	100
English (N=87)*	37	25	23	15	100

* Care should be taken in the interpretation of results based on small numbers of respondents.

BENEFITS AND LIMITATIONS

As can be seen from Table 5.11, about three-quarters of history and geography respondents and just under two-thirds of science respondents felt broadcasts did not cover the curriculum adequately, compared with about half of modern languages, technology, and maths respondents and just over a third of English heads of department. It is interesting to note that the highest users of schools TV broadcasts (history and geography respondents) were also the most likely to feel that there were areas of the curriculum which could be better served by broadcasts.

Respondents who answered 'yes' or 'don't know' to this question were asked to give some further information on the kinds of broadcasts they would like to see developed. The question was also put to non-users of schools broadcasts.

Types of new series requested

Respondents wanted a wide variety of different types of broadcast to be developed. At both primary and secondary level, there was a demand for programmes to be more tightly focused on fulfilling the requirements of the National Curriculum in all subject areas. Some of the respondents from Northern Ireland, Scotland (and to a lesser extent in Wales) wanted more programmes designed with their needs in mind. They pointed out that some of the programmes aimed at English schools were inappropriate for the requirements of their curricula and the experiences of their students. There was felt to be a need to use more local presenters and to have more Welsh language broadcasts.

New broadcasts needed for primary schools

There were 270 responses from primary teachers, covering a wide range of subject areas. Overall, the most common requests were for new series for geography, history, science, English, and religious and moral education. There were also a few comments from primary teachers criticising the style adopted by some recent schools programmes. There was a feeling that in a bid to entertain children, programmes (and presenters) had become too 'zany' and 'wacky', thereby detracting from the learning outcomes. One teacher summed this up in a plea for 'programmes with less clowning around ... children latch onto this and not the concept being studied'.

Programmes for infants

The 105 respondents who taught children up to the age of seven wanted a wide range of new programmes to be designed for infants. They most commonly requested new series for history, science (focusing on the development of basic concepts) and geography.

Programmes for lower juniors

The 76 respondents who taught children aged between seven and nine years were particularly interested in new series for: geography; history; English; technology; and science. Specific requests included: programmes to address National Curriculum units not adequately covered in history and geography (e.g. the history of land use); new dramatisations of children's literature and serialisation of stories; more programmes on designing and making (materials and skills) for technology; and a variety of science topics.

Programmes for upper juniors

The 89 respondents who taught upper juniors (i.e. children aged nine and over) were particularly keen to see the development of new series on: geography; English; history; and religious and moral education. Areas of interest included: a history series on the 1930s; story-telling and dramatisations of children's literature; and programmes on religious themes, including a study of world religions.

New broadcasts needed for secondary schools and colleges

Although secondary heads of department requested programmes for all secondary age-groups, there was a consistent demand for series aimed at older students, particularly for those studying to A-level. A few secondary respondents wanted shorter programmes (or programmes with short 'segments' which could be used independently), and there were specific requests for programmes to be accompanied with related materials for teachers and pupils. An analysis of the types of new programmes commonly requested was carried out for each of the seven curriculum areas, and the results are discussed below.

History

For history, 129 heads of department put forward ideas for new schools broadcasts. The two most commonly requested topics were: medieval

BENEFITS AND LIMITATIONS

realms and the French Revolution. Also of interest were programmes dealing with: twentieth century world history; the First and Second World Wars; native people of North America; and late nineteenth century Europe.

A few history respondents wanted programmes to develop historical skills and feature historians talking about their work. There was felt to be a need for A-level material in particular.

History respondents wanted the programmes to feature reconstructions as well as including documentary material. Some respondents took the opportunity of the question to express their dislike of the fast-paced, technological style adopted for the recent BBC TV series of *History File*. A few respondents suggested adapting mainstream broadcasts for use in schools, by re-editing and broadcasting them with a simplified commentary.

Geography

For heads of geography (101 of whom responded to this question), the main area of need was physical geography. Respondents requested programmes dealing with rivers and coasts, glaciers, volcanoes, soil, deserts and weathering. Other areas of interest were: meteorology and climate; and aspects of human geography – aid and trade, population growth, settlement, industry and agriculture. Geography specialists wanted programmes to feature particular case studies of countries, including Japan, USA, CIS, Brazil, Europe and regions of the UK. There was also some interest in programmes dealing with case study and fieldwork techniques. While demand was high for programmes for all ages, programmes for A-level students were felt to be particularly needed.

Modern languages

The 105 heads of department for modern languages who responded to the question mentioned a wide range of topics. The most common requests were for more programmes on topical issues/current affairs in other countries. There was also a demand for programmes on the culture and lifestyle of the people whose language was being studied. Heads of department wanted a range of programmes to be made available in languages such as German and Spanish, as well as in French.

It was felt that the needs of less able students, and those with special needs, were not being well served in the available material for modern languages. Respondents suggested that short, simple programmes featuring dramatic situations and role play, on topics of particular interest to adolescents, would be a useful addition to the current schedules. For this audience it was thought to be appropriate to use subtitles and to present information in English, as well as in the foreign language.

On the other hand, there was a demand for programmes entirely in the foreign language, including extracts from 'real' foreign language broadcasts (e.g. news/current affairs, adverts, cookery, cartoons and game shows). More advanced programmes for A-level students were requested, as well as programmes designed to 'bridge the gap between GCSE and A-level'.

Science

Two topics were of particular interest to heads of science departments, as far as the development of new broadcasts was concerned. A substantial minority of the 88 respondents asked for programmes on earth science (e.g. the formation of rocks and minerals) and/or on the topic of 'the Earth in space'.

There was an expressed need for demonstrations of experiments it would be difficult or impossible for teachers to carry out themselves (due to lack of equipment, or for reasons of safety), and for programmes designed to foster students' investigative skills. Other areas of interest included: the application of science in industry (e.g. oil refining and other industrial processes); atoms and molecules; human biology; radioactivity; materials; ecology; lasers and optics; plant biology; electronics; and genetics. New science programmes were requested for students of all ages.

Mathematics

The 73 responding heads of department for mathematics wanted new series to be developed in two main areas: using and applying mathematics; and handling data (particularly in relation to surveys). Other specific areas of interest were: mechanics; real-life applications of mathematics; shape and space; and algebra.

BENEFITS AND LIMITATIONS

There was some feeling that broadcasts should provide a valuable opportunity to engage and interest students in the study of maths (e.g. by showing how maths is used in everyday life, in industry, and in computer graphics). As one respondent said: 'Any broadcasts that make mathematics relevant would be welcome.' A few respondents made the point that broadcasts were most valuable when they used graphics or showed applications of maths that could not easily be reproduced by teachers. There were requests for programmes aimed specifically at pupils of high and of low ability, and a particular demand for A-level material.

Technology

There were 70 responses to this question from heads of technology departments. Their main area of interest was in new programmes featuring the use of technology in industry (for example, programmes showing the design, manufacturing and marketing process for a new product; or looking at industrial production techniques). Areas of specific interest included: generating a design; planning and making; graphics; electronics; pneumatics and hydraulics; structures and materials; food technology; and health and safety. A few respondents requested programmes designed to demonstrate specific skills (e.g. how to use a centre lathe). Broadcasts were requested for students of all ages.

English

Among the 69 heads of English departments who responded, there was a general request for more dramatisations of set texts. These could be accompanied by literary criticism/discussions and an examination of the dramatisation process, including interviews with authors and actors. There was also some interest in providing a social and historical background to particular authors and their work. Named authors for study included Shakespeare (particularly for younger pupils), Dickens, Chaucer, and pre-twentieth century women writers.

Programmes on aspects of language (e.g. use of language, accent and gesture) and media studies (e.g. advertising, news and bias) were requested by some respondents. There was felt to be a particular need for GCSE and A-level material for English.

Teachers' attitudes towards the use of schools broadcasts

A final part of the questionnaire invited all respondents to respond to a number of positively and negatively worded statements about schools broadcasts. Respondents were asked to indicate their level of agreement with each statement on a five-point scale (strongly agree = strongly disagree). Six statements were provided for secondary heads of department. A similar set of statements was provided for primary teachers, with one addition: 'The teachers in my school approve of the use of schools broadcasts.' This statement was added to the primary questionnaire because it was thought that primary teachers were more likely to be influenced by their colleagues' views on the use of broadcasts than would secondary heads of department. The statements and responses from primary and secondary teachers are shown in Figure 5.4.

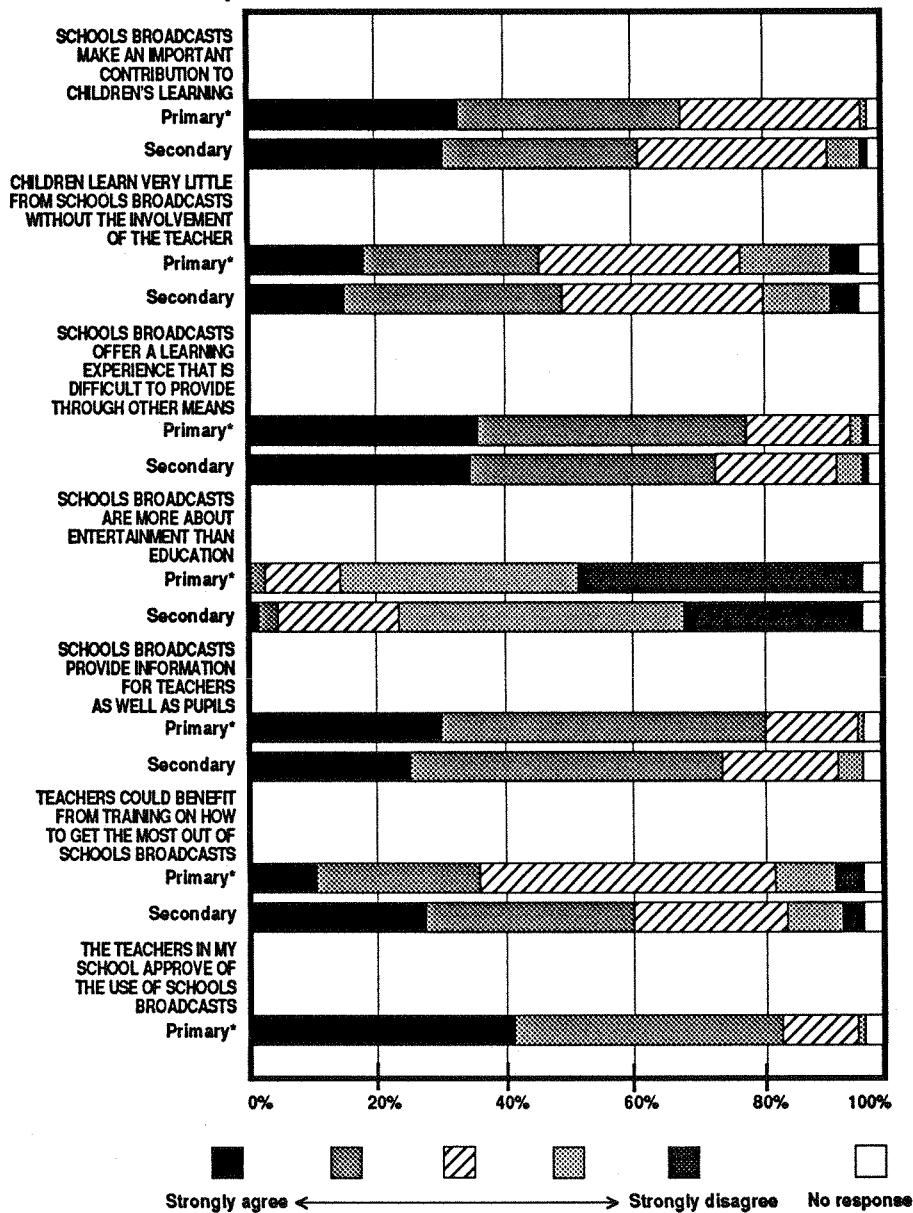
The figure shows a positive set of attitudes towards the value of schools broadcasts. The primary teachers agreed strongly with three statements: over three-quarters of the primary respondents agreed that their colleagues approved of the use of schools broadcasts; that schools broadcasts provided information for teachers as well as pupils; and that schools broadcasts offered a learning experience that was difficult to provide through other means. Over two-thirds of primary respondents agreed that schools broadcasts make an important contribution to children's learning.

There was less agreement on the importance of the role of the teacher in mediating learning from broadcasts. Under half of the primary teachers agreed that: 'Children learn very little from broadcasts without the teacher's involvement' (almost a third of respondents gave this a neutral rating). A high proportion of primary teachers held neutral views about the benefit of training on the use of broadcasts, and most teachers disagreed that broadcasts were 'more about entertainment than education'.

Similar results were achieved from the survey of secondary schools and colleges. Just under three-quarters of heads of department agreed that schools broadcasts provided information for teachers as well as students, and that schools broadcasts offered a learning experience that was difficult to provide through other means.

BENEFITS AND LIMITATIONS

Figure 5.4 Attitudes towards the use of schools TV and radio broadcasts: primary teachers and secondary heads of department



51 primary respondents, 356 secondary respondents

* Care should be taken in the interpretation of results based on small numbers of respondents.

Between half and two-thirds of secondary respondents agreed that schools broadcasts make an important contribution to children's learning. A similar proportion agreed that teachers could benefit from training on how to get the most out of schools broadcasts (a higher proportion than at primary level).

As with the primary teachers, secondary respondents were less sure that 'Young people learn very little from schools broadcasts without the teacher's involvement', and very few respondents agreed that entertainment was the main characteristic of schools broadcasts.

Comparisons between groups

There were some differences between teachers of different age-groups at primary level (see Tables A.13 and A.14 in the Appendix) and between heads of different departments at secondary level. In the primary sample, agreement with the statement 'Schools broadcasts offer a learning experience that is difficult to provide through other means' was greatest for teachers of upper juniors, and least strong for teachers of infants ($p < .01$). Teachers of the youngest age-group (four- to seven-year-olds) were less likely to agree that teachers could benefit from training on the use of schools broadcasts ($p < .05$).

At secondary level, there were significant differences between heads of different departments on five of the six items (see Tables A.15 – A.19 in the Appendix). Heads of history and geography were most likely (and heads of maths least likely) to agree that schools broadcasts make an important contribution to children's learning ($p < .0001$).

The statement 'Schools broadcasts offer a learning experience that is difficult to provide through other means' achieved most agreement from heads of geography, science and history, and least from heads of maths ($p < .0001$). Heads of geography and history were least likely to agree that 'Schools broadcasts are more about entertainment than education' ($p < .0001$).

The statement 'Schools broadcasts provide information for teachers as well as for young people' achieved most agreement from heads of geography, and least from heads of maths, English, modern languages

BENEFITS AND LIMITATIONS

and science ($p < .0001$). Finally, heads of modern languages were most likely to agree that teachers could benefit from training on how to get the most from schools broadcasts ($p < .0001$).

As might be expected, non-users had less positive attitudes towards schools broadcasts than users (see Table A.20 in the Appendix). This was apparent in comparisons between the two groups within the secondary sample, where there were sufficient non-users to make meaningful comparisons. Non-users were less likely than users to agree that schools broadcasts make an important contribution to children's learning ($p < .0001$), that broadcasts offer a learning experience that is difficult to provide through other means ($p < .0001$), and that the broadcasts provide information for teachers as well as pupils ($p < .0001$). Non-users were more likely than broadcast users to agree that young people learn very little from schools broadcasts without the teacher's involvement ($p < .01$) and that schools broadcasts are more about entertainment than education ($p < .0001$).

Summary

School policy

- Only a very small minority of respondents said that their school had a written policy on the use of TV and radio broadcasts. Twelve per cent of primary teachers reported that there was a limit on the number of series that could be used per year group.

Teachers' notes

- Almost all the primary respondents who used schools broadcasts had also used some commercially produced teachers' notes. This was less common among heads of department, 61 per cent of whom said they had used teachers' notes.
- Teachers' notes were most commonly used to provide background information and to familiarise teachers with the content of the programmes. Respondents found teachers' notes most useful for these two purposes, and least useful for the provision of guidance on assessment.

Influences on the use of broadcasts

- The most important factors influencing respondents' decision to use schools broadcasts were: the suitability of the material for the age and ability of the students; the potential appeal to the pupils; and the degree of fit with the curriculum. Two factors were of some importance to most respondents: published information about the broadcasts and a personal recommendation from a colleague.
- Users of schools broadcasts commonly identified two factors which limited their use of programmes: constraints on their time, and a lack of access to suitable equipment. These were also identified by non-users as major reasons for not taking advantage of this resource. Other important reasons for non-use of schools broadcasts included the difficulty of fitting broadcasts into an already crowded timetable, and the problem of finding a suitable space for viewing or listening.
- Reasons for non-use were more practical (i.e. related to time or accommodation) than philosophical. Most non-users of broadcasts did not feel that school tradition/policy not to use broadcasts, or a belief that schools broadcasts did not add to the curriculum, had influenced their decision.

Benefits and disadvantages

- Schools broadcasts were thought to have similar benefits for teachers and their pupils. The most commonly identified benefit of using schools broadcasts was the inclusion of a visual element which enabled the teacher to vary his or her teaching approach. Other benefits included: interest and fun, the addition of experiences not easily provided by the teacher and, for pupils, that it was a good medium for learning.
- The most commonly identified disadvantages in using schools broadcasts were: that children may not attend to the broadcasts; and, for secondary respondents in particular, that the programmes may not be suitable, due to the programme content or to the diversity of ability within the class.

Satisfaction with BBC schools service

- ❑ Respondents were generally satisfied with the service offered by the BBC. However, some respondents suggested that improvements could be made to programme-related materials (e.g. teachers' notes); to programme information; and to the range of programmes currently available, particularly at secondary level.

Demands for new series

- ❑ In terms of new series, both primary and secondary respondents wanted programmes to reflect the requirements of the curriculum. Respondents from Northern Ireland, Scotland and Wales wanted more programmes to be designed with the needs of their pupils in mind.
- ❑ Primary teachers wanted new broadcasts for a wide range of subjects. The most commonly requested areas for development (listed in order of frequency) were geography, history, science, English and religious and moral education.
- ❑ At secondary level, there was some demand for tightly focused inputs, with accompanying teacher and pupil materials. There was felt to be a particular need for programmes aimed at A-level students. (Details of the types of series requested for each subject area are given in the text.)

Attitudes towards using broadcasts

- ❑ Teachers' attitudes towards the value of schools broadcasts were mostly positive. About three-quarters of all respondents felt that broadcasts provide information for teachers as well as pupils, and offer a learning experience that it is difficult to provide through other means. Over half of primary and secondary respondents agreed that schools broadcasts make an important contribution to pupils' learning.

6. SUMMARY AND CONCLUSIONS

This NFER research study has used both qualitative and quantitative methods to address key issues in educational broadcasting. Information has been collected through a selective review of the research literature, a large-scale questionnaire survey sent to schools throughout the UK, in-depth interviews with teachers and pupils, and observations of pupils' reactions to specific schools TV and radio broadcasts.

This chapter summarises the research findings on how teachers use educational broadcasts and which factors influence teachers' decisions to use broadcasts in their teaching. It examines the perceived benefits of educational broadcasts and their defining characteristics. It also presents evidence on the contribution of broadcasts to pupil learning and details the impact of specific programme features on pupils' attention to, interest in and comprehension of programme content.

The chapter ends with a series of statements on key findings and the implications arising from these.

Patterns of use of educational broadcasts

Primary teachers

The questionnaire responses of 658 primary teachers confirmed that most of them use schools TV broadcasts in their teaching. The typical primary teacher has used at least three or four series in the past two years, and tends to use most of the programmes in a series. Primary teachers used broadcasts to aid teaching in a variety of subject areas, most commonly for language, geography and history.

SUMMARY AND CONCLUSIONS

Just over half of the primary teachers surveyed used schools radio broadcasts: radio use was more common among teachers of infants than among teachers of older children. On average, radio users had used between one and two series in the past two years. The most popular radio programmes were concerned with dance/movement and music.

Most primary teachers pre-recorded the programmes they used, although one in five used TV broadcasts 'live'. The pre-recording of broadcasts was more common among teachers of upper primary children than teachers of younger children. Most primary teachers did not routinely preview the programmes they used with their class, although previewing was more common among teachers of upper juniors.

Typically, primary teachers chose programmes that fitted in with their curriculum, had good content and presentation, and were interesting and fun for their pupils. In addition to these criteria, radio programmes are chosen for their ability to provide support for areas of the curriculum, such as music and dance/movement, in which teachers felt they lacked confidence and expertise. Most primary teachers were highly satisfied with the appropriateness of the broadcasts they used.

A minority of primary teachers used 'mainstream' broadcasts in their teaching. Those who did, tended to choose TV programmes on wildlife and ecology.

Secondary heads of department

A questionnaire survey of 1,020 secondary heads of department revealed that the use of schools television broadcasts varied according to subject area. Of the seven subject areas included in the survey, geography and history departments were the highest users, (nearly 90 per cent of respondents from these departments used schools TV broadcasts). Over three-quarters of modern languages and science departments used schools TV, and just under two-thirds of English departments. Use was much lower in technology (about a third) and lowest in maths, where only 15 per cent of respondents reported using schools broadcasts.

Unlike their primary colleagues, secondary teachers tended not to use all of the programmes in a series. Almost all secondary teachers pre-

recorded the TV broadcasts they used, and most previewed the programmes before showing them to their classes. Programmes were selected for their fit with the curriculum, good content and presentation, and their ability to introduce a visual element into teaching. Most secondary heads of department were satisfied with the appropriateness of the broadcasts for their pupils.

There was very little use of schools radio broadcasts in secondary departments, although 19 per cent of modern language departments used schools radio. Most heads of department used the occasional mainstream broadcast, particularly science and technology, documentary and current affairs programmes.

Factors influencing teachers' decisions to use educational broadcasts

The research investigated a number of possible influences on teachers' decision to use schools broadcasts. The most important factors were the suitability of the programme for the age and ability of the pupils, the potential appeal of the programme to pupils, and the programme's degree of fit with the curriculum. These three factors were rated as 'very important' by a majority of both primary and secondary broadcast users.

Two factors were of some importance to most teachers in their decision to use broadcasts: the information supplied about the programme by the broadcast company, and a personal recommendation from a colleague.

Broadcast users identified two main factors which limited their use of schools broadcasts: restrictions on the teacher's time for recording, previewing and preparation; and limited access to suitable equipment (particularly a TV and video recorder). A minority of primary teachers said they found it difficult to obtain a good recording of broadcasts. At secondary level, two additional factors were of some importance in limiting broadcast use: the restricted amount of time the teacher spent with the class and a lack of suitable programmes.

SUMMARY AND CONCLUSIONS

Non-users were more influenced by practical difficulties than by doubts about the usefulness of schools broadcasts. The most important factors in non-use were related to time: the difficulty of fitting broadcasts into an already crowded timetable, and the teacher's lack of time to select and plan broadcast use. Some teachers were prevented from taking advantage of broadcasts by a lack of access to equipment and by the difficulty of finding a suitable space for viewing or listening.

About half of the responding non-users found the timing of broadcasts inconvenient, and they were influenced to some extent by the cost of support materials and a lack of suitable programmes. School tradition/policy not to use broadcasts, or a belief that broadcasts would not add to the curriculum, were much less important factors for the majority of non-users.

Responses to a question asking for suggested improvements to the BBC schools service indicated that many teachers were satisfied with the service they receive. Issues raised by a minority of respondents indicated that improvements could be made to programme information (particularly at secondary level), programme-related materials and to the range of broadcasts available to schools.

Attitudes towards use of broadcasts

Responses to questionnaire items revealed that teachers had very positive attitudes towards the value of schools broadcasts. For example, most respondents agreed that schools broadcasts offer a learning experience that is difficult to provide through other means and that schools broadcasts make an important contribution to children's learning. A majority agreed that the broadcasts provide information for teachers as well as for pupils, and most disagreed that schools broadcasts are 'more about entertainment than education'. (As might be expected, non-users of broadcasts tended to hold less positive attitudes towards the benefits of schools broadcasts than users.)

These findings suggest that suitability and appeal of broadcasts to the target audience are key factors in motivating teachers to use this resource. Broadcasts must also be directly relevant to the curriculum. Most teachers are well disposed to the use of broadcasts in teaching, but constraints on time restrict teachers' ability to utilise broadcasts, as do problems with access to appropriate equipment and space. In order to select suitable broadcasts, teachers need access to well targeted and accessible information. Appropriate programme materials can be a valuable aid in helping teachers with the time-consuming process of integrating the broadcasts into the curriculum. There is a continuing demand for the development of a wide range of new broadcasts.

Perceived benefits and disadvantages of educational broadcasts

Teachers felt that the major benefit of schools broadcasts was their ability to introduce a visual element into teaching. The broadcasts were valued because they could give pupils access to experiences that would be difficult for teachers to provide in any other way. They were also helpful in providing extra material that the teacher may not have covered otherwise, and in adding interest and fun. Primary teachers found broadcasts beneficial in giving them ideas for class work. Secondary teachers emphasised the ability of broadcasts to exemplify theoretical concepts, and praised the high quality of the programme content and presentation. Both groups of teachers found broadcasts helpful in reinforcing their teaching.

Similar points were made about advantages to pupils. Broadcasts were perceived to benefit pupils by introducing a different learning medium and by providing an interesting and enjoyable learning experience. Some teachers felt that broadcasts represented a particularly good medium for learning.

There were few perceived disadvantages in using broadcasts, although some teachers were concerned that their pupils might not actively engage with broadcasts as a learning medium. There was also concern, particularly

SUMMARY AND CONCLUSIONS

at secondary level, that broadcasts might not be suitable for less able students in a mixed ability class.

These findings suggest that broadcasts are valued by teachers for a variety of reasons. Teachers are keen to use broadcasts because they offer an alternative teaching medium which is popular with pupils. They appreciate programmes which enable pupils to have access to new experiences, add new content, and reinforce their teaching. Some primary teachers like to use programmes as a source of ideas for teaching. Some secondary teachers find broadcasts particularly helpful when they provide examples of theoretical concepts. Teachers feel that broadcasts offer a potentially effective learning medium, but are concerned that pupils may not actively engage with them as a tool for learning. This highlights the importance of the teacher's role in helping their pupils to learn from broadcasts.

Defining characteristics of schools broadcasts

Previous research in the USA has investigated the characteristics of mainstream children's TV programmes and those with an educational brief (Huston *et al.*, 1981). Their analysis revealed that there were differences between the two. Educational programmes were more reflective in character, including such elements as singing, long zooms, moderate character action and child dialogue. Mainstream programmes were faster paced and contained more non-verbal humour and animation.

The 240 pupils and 47 teachers interviewed in this research were asked to identify the differences between mainstream and schools broadcasts. Pupils distinguished clearly between the intended purpose of the two types of programme: schools programmes were perceived to be primarily educational, whereas mainstream children's programmes were recognised to be intended for entertainment. Schools broadcasts were thought to be more factual and targeted at a specific audience and age-group. In contrast to a school situation, viewing in the home meant that pupils could select different types of programme (e.g. soap operas, cartoons, films and sports programmes) and choose whether or not to attend to a broadcast. Some pupils also pointed out that schools broadcasts were

less humorous and up-to-date than mainstream broadcasts, and said that they found them less interesting and exciting.

The teachers we interviewed made similar points, adding that schools broadcasts tended to be shorter and more tightly focused on a specific subject. Some secondary heads of department felt that schools broadcasts should aim to be similar to mainstream broadcasts, but some teachers of young children felt that mainstream children's broadcasts were presenting children with poor role models which should not be emulated in broadcasts for schools.

The contribution of educational broadcasts to learning

From the survey it was apparent that teachers felt their pupils learn specific knowledge and skills from the broadcasts they use (although some secondary teachers pointed out that they use broadcasts to reinforce prior learning, rather than as a primary information source). In addition to subject-specific learning, teachers said that broadcasts helped to develop pupils' cognitive and listening skills. Primary teachers felt that radio broadcasts were useful in developing their pupils' listening skills.

Interviews with primary and secondary teachers enabled the researchers to document teachers' experiences of pupil learning arising from school broadcasts. Teachers found that broadcasts could be a good way of gaining pupil attention and motivating pupils to learn. Broadcasts were able to put across information in a particularly memorable way, and could exemplify concepts which teachers themselves found difficult to teach. They also helped give pupils confidence to try new activities, and lent credibility to the teacher's approach.

By playing taped examples of radio and TV broadcasts to pupils, the researchers demonstrated that pupils are able to learn new information from programmes without adult intervention. The researchers were also able to study the influence of media techniques on different aspects of pupil learning.

The influence of specific techniques

Previous research has found that certain features of television programmes are influential in attracting the attention of young children, while others are associated with a loss of attention. Researchers have coined the term 'perceptual salience' to indicate features which young (i.e. pre-school) children find particularly relevant and attractive. These features include intensity, movement, contrast, change, novelty and incongruity.

Researchers have found that older children are more interested in the content of programmes, rather than simply responding to the entertainment value of the presentation. As children mature and gain in experience they become more sophisticated viewers, and learn to interpret the meaning of media conventions, such as zooms, cut to close up, dissolves, slow motion and special effects. Younger children may find it difficult to distinguish between essential and irrelevant information, and this can make it difficult for them to understand and interpret the content of a programme. Programmes which use salient features to distinguish relevant from irrelevant information help pupils to comprehend meaning.

This research used ten BBC schools broadcasts to study the impact of programme features on pupil learning. Each broadcast was played to six groups of four children in the appropriate age-range, making a total of 60 group interviews with 240 pupils. The researchers adopted a non-participatory role. We used observation to assess the effects of programme features on pupil attention (a necessary, but not sufficient prerequisite for learning). Features which prompted pupils to interact with broadcast material were noted. Interviews with pupils yielded insights into the aspects of programmes which were of more or less interest to the audience, and assessments of comprehension and recall enabled us to identify how programmes can help (or sometimes hinder) learning.

Attention and involvement

The ten BBC programmes played to pupils were highly successful in gaining their attention. The only apparent exception to this was a radio programme designed to teach four- and five-year-olds about the alphabet. The pupils who listened to the programme were observed to be restless

and seemingly inattentive, yet subsequent questioning revealed that the pupils had enjoyed the programme and could recall it in some detail. This suggests that although young children find it difficult to sit still in response to an aural stimulus, their apparent distraction does not necessarily denote a lack of attention to the broadcast.

The NFER research used naturalistic observation to examine pupil reactions to programme features. Certain programme features were associated with higher or lower levels of attention. These are listed below.

Table 6.1 Programme features and attention

Features associated with higher levels of attention
changes in scene
movement/action
dramatic content
film of animals
partially clad people
cartoons and animation
visual effects
visual detail/close up
lively/dramatic music
sound effects
female voices

Features associated with lower levels of attention
long scenes
long/complex speeches
lack of development (i.e. scenes where nothing new occurs)

The reactions of the pupils differed according to age. Older pupils showed fewer signs of distraction than younger ones (perhaps because they had learned to comply with their teachers' expectations that they should attend to schools broadcasts). Changes in scene were more frequent in programmes for younger children and were observed to be effective in attracting their interest.

SUMMARY AND CONCLUSIONS

Many of the features associated with high levels of attention involved movement and action, while loss of attention was associated with long scenes, lengthy speeches and a lack of development. Visual special effects were generally observed to be attractive, as were parts of programmes containing visual details important to an understanding of learning points (such as close up photography of an octopus, word-building in French, film of an artificial leg in use). Two TV programmes for secondary students included incidental footage of partially clad adults and children. Not surprisingly, this was associated with heightened attention among the viewers. Aural features such as lively or dramatic music, sound effects and female voices were associated with attention, particularly in radio programmes.

Many of these findings confirm and add to the results of previous research carried out with young children in the USA. However, one finding in the NFER study that directly conflicts with previous research is the positive relationship observed between the presence of animals in TV programmes and pupil attention.

A possible explanation for the difference in outcomes is that the treatment of animal subjects differed in the programmes studied. Alwitt *et al.* (1980) suggest that the negative effect of animals on children's attention found in their study may have been due to the way in which the animals were portrayed: 'Many animal sequences on children's television are edited in such a way that there is not continuity or apparent purpose in the animal's behaviour, nor is the audio track usually well integrated with, or supportive of the animal scenes. These factors, we believe, also contribute to the low attention young children pay to animals on TV' (Alwitt *et al.* 1980, page 62).

The animals in the programmes shown in this research were presented in an interesting manner (using high quality photography and close up). The programmes included animals outside the children's everyday experience (e.g. octopus, rain forest and desert animals) and some (such as tarantula spiders and snakes) which children have learned to fear. These factors may have contributed to the observed association between the presence of animals and heightened pupil attention in our study.

Another point of difference from previous research related to the presence of adult males and male voices. Alwitt *et al.* (1980) suggest that men's voices were associated with lower attention in their study because, from their experience as TV viewers, the children associated men's voices with adult-oriented topics. The NFER study did not find a consistent relationship between male voices and loss of attention, even among infants (who were closest to the age group studied in the previous research). Perhaps this reflects a change in the roles of women and men in television programmes. At the time of the previous research, the researchers commented that there was a clear distinction between the roles of men and women on TV. Males tended to present serious, adult topics, whereas females were more often associated with children's programmes. The situation has changed somewhat: many contemporary children's programmes have male presenters. In other words, the 'saliency' of male voices for young children may have changed in the years since the previous study was carried out.

As well as gaining attention, certain features were observed to be successful in increasing pupils' active involvement with the programme (i.e. their physical and verbal interaction with programme content). These are listed below.

Table 6.2 Features associated with pupil involvement

songs
modelling of actions pupils can emulate
humour
questions/prediction
controversial statements
surprising events and information

Some of these features (such as songs and actions for pupils to emulate) are more appropriate for younger than older pupils. However, other features such as humour, questions, prediction and controversial or surprising information, when used appropriately, are potentially effective devices for provoking reactions from pupils of all ages.

Pupil attitudes towards programme features

Almost all of the programmes included in the study were favourably received by the pupils. Questioning the pupils about what they liked and disliked about each programme revealed a variety of elements which made the broadcasts more or less interesting to the audience. These are listed below.

Table 6.3 The influence of programme features and content on pupil attitudes

Aspects of programmes liked by pupils

unusual/dramatic subject matter
topical content
clear structure
fairly fast pace
relevant factual information
visually attractive (effects, colour, lighting, photography, camera angles)
aurally attractive (music and sound effects related to programme content)
issues relevant to young people (e.g. gender, racism, environmental awareness)
appropriate use of humour
enthusiastic and talented presenters
dramatisation/reconstruction
showing people from other cultures/times in ways which encourage empathy
suggested follow-up activities

Aspects of programmes disliked by pupils

dry factual detail
irrelevant information
unmodulated voices
repetitive background music
certain visual effects
adults with a patronising manner
interruption of an interesting narrative
lack of development
dated presentation

The research identified a wide range of programme aspects which pupils liked and disliked. Some features are common to both lists, indicating that it is not simply the presence of certain features, but how they are used which is important. For example, although visual special effects were generally liked by pupils, one visual special effect attracted a negative response.

Similarly, the presence of children in the programme of the same age as the intended audience received both positive and negative comments. Although the appearance of children was singled out as a positive feature in some cases, pupils objected if the children were perceived to be acting unnaturally (e.g. repeating what they had been told to say or talking too slowly) or if they expressed opinions which were not shared by the audience.

Many of the comments related to presenters. Pupils liked enthusiastic and knowledgeable presenters (such as the male presenter in *Words and Pictures*) but disliked monotonous commentaries. Secondary students, in particular, hated any signs of condescension from adult presenters (examples of this included smiling inappropriately, speaking slowly when giving simple information, and adopting a condescending tone of voice).

The pupils' comments about what they liked and disliked can be grouped into three main themes. These are: the perceived coherence of the programme; the ability of the programme-makers to connect with the experiences and interests of young people; and the educational value of the programme.

Pupils liked programmes which put across information in a coherent manner. They appreciated programmes with a clear structure, where each element contributed to the programme's central theme.

Pupils responded well to programmes which enabled them to relate to the information and people portrayed. This could be achieved with the help of a good presenter, through dramatisation, and by making explicit connections with the experiences of the audience. Junior and secondary pupils also liked programmes which included coverage of social and ecological themes, even though these sometimes raised difficult and emotive issues.

SUMMARY AND CONCLUSIONS

In terms of educational value, pupils appreciated it when programmes provided them with access to experiences that they may not otherwise have had, and they liked programmes which focused on topical or dramatic subjects (e.g. the design of an artificial leg, the creation of new land in Japan, or the story of the landing of a spaceship). They were sensitive to many aspects of programme quality, such as sound effects, visual effects, camera work, colour and lighting. Secondary students liked programmes to have a direct value for their school work.

Understanding and recall

Understanding and recall of programme content were investigated by questioning pupils before and after the programmes were shown. Pupils were also asked what they had learned from the programme and if there were any aspects they had failed to understand. Again, the programmes used in the research were successful in promoting knowledge and understanding (although some information was known by the pupils before exposure to the programme and some of the concepts would require further explanation and reinforcement before they were fully understood).

The aspects of programmes found to help (and occasionally hinder) pupil learning are given in Table 6.4.

As might be expected, pupils found that clear visual and aural presentation of information was important in helping them retain information from the programmes. The use of graphics and animation to explain theoretical processes was also found to be helpful. For example, *The Geography Programme* used computer animation to show what Osaka bay had looked like 26 years previously, before the addition of new land in the sea. Students singled this out as a particularly effective technique. The programme also used cartoon animation to show the process whereby new land is built up under the sea. Again, students felt this had been an effective element of the programme, and their answers to a question about the creation of new land revealed that they could recall and describe the process in some detail. This adds weight to the suggestion made by previous researchers (Bates, 1981; Kozma, 1991) that the ability to make connections between real phenomena and theoretical concepts is a particular strength of television as a learning medium.

Table 6.4 The influence of programme features on pupil understanding

Aspects of programmes found helpful in aiding understanding

clear explanations
clear visual images (including close-up photography)
use of graphics and animation to relate real phenomena to theoretical concepts
repetition/reiteration
display of key words

Aspects of programmes found to impede understanding

complex vocabulary
long speeches
electronically distorted voices
too many simultaneous stimuli
lack of clear transitions between sections
pace too fast
insignificant events presented in a significant way

Pupils experienced difficulties when voices were unclear and when the vocabulary was too complex for their age-group. In one case (*History File*) they found a programme difficult to comprehend because too many things were happening too quickly (information was given simultaneously in fast-paced visual images, voice-over commentary, words and symbols). They could also be confused by a lack of clear transitions between scenes.

As found in previous research, programmes which drew attention to key pieces of information were successful in helping pupils to learn. Information which was stressed through simultaneous reinforcement in audio and visual presentation was more easily comprehended and retained. Repetition (present in programmes for infants) and reiteration were both helpful elements in aiding recall of information.

SUMMARY AND CONCLUSIONS

On the other hand, programmes which did not draw sufficient attention to relevant material or which inadvertently stressed non-essential information were less successful in this regard. Pupils could be confused by presentation of non-essential information in a stimulating way (e.g. through the use of humour, repetition, dramatic/emotive images and unexpected events). One example of this was a short scene at the beginning of the *Look and Read* programme, which was incidental to the plot, but which depicted a humorous, unexpected event (the landing of a space probe in a river, splashing an angler and landing a fish in his arms). This scene was associated with high levels of attention and was singled out by the pupils as an element they had particularly liked. However, children in one of the groups said they were puzzled that the character in this scene had played no further part in the narrative.

There was some evidence (from the responses to this and to the *Landmarks* programme) that pupils expected information given at the beginning of a programme to be particularly important, and could be misled if such information was incidental to an understanding of the content.

It is interesting that close-up photography was found to be helpful in aiding recall and understanding, even among the youngest age-group. This conflicts to some extent with the findings from previous research (Clark and Salomon, 1986) which suggest that an understanding of the function of 'cut to close-up' is necessary for learning from close-up images, and that some children may experience difficulties in learning from programmes using this technique.

In the NFER study, sequences using close-up were associated with heightened attention, and were also found to be helpful in pupils' recall and understanding of the programmes. It may be that the way in which the technique was used was an important factor. In the *Words and Pictures* programme, the close-up sequence was well integrated with film of the octopus showing the whole animal, and the pace of the programme was fairly slow, perhaps enabling pupils to better comprehend the visual information. Close-up in this and in programmes for older pupils (*Quinze Minutes, Seeing Through Science*) was used to highlight details of importance to learning. The viewers seemed to recognise that

this was the case, and were observed to be looking intently at the screen during these scenes. It is possible that although some of the younger pupils did not find it particularly easy to understand close-up, they compensated for this by concentrating hard on these scenes because they recognised that the detail was material to an understanding of important information.

Key research findings and implications

This section presents the main research findings in the areas of programme design, programme content, the teacher's role, series development, radio broadcasts, programme-related materials, and the need for further research.

Programme design

This research made a detailed study of the reactions of 240 pupils to ten schools programmes designed for different age groups. The study drew on the findings of previous research to look at the impact of schools broadcasts on pupil attention, interest and aspects of learning. The research is important because it makes a contribution to the knowledge-base on how programme content and presentation work together to help or hinder pupils' understanding.

The research findings have confirmed the commonly held view that children and young people are sophisticated viewers in the sense that they can recognise and comment upon many aspects of programme quality (sometimes to an extent which surprised the researchers). However, it has also confirmed that decoding the meaning of TV programmes is not a simple task for young viewers, and that children do not respond to programmes in the same way as adults.

If pupils find a programme interesting and entertaining, they will be better motivated to devote the mental effort required to learn from it. The research has found that it is the combination of attractive content and features into a coherent structure which helps pupils to learn. Programmes

SUMMARY AND CONCLUSIONS

designed for pupils should help guide the viewer to the key learning points. This can be achieved by stressing important information (using 'perceptually salient' forms) and avoiding drawing the viewer's attention to non-essential information.

The pace of the programme is dictated by the programme maker, not by the individual child. Aspects of programmes which are not fully comprehended at the time will either be missed or the viewer will spend time puzzling over them and not attend to the next part of the programme. This has implications for the pace and density of information: programmes must be fast-paced enough to keep the viewers' attention, but avoid giving too much information in too short a space of time. Changes in scene should be clearly signalled. Revisiting key points and making explicit connections between one piece of information and the next are helpful in pupil learning. Programmes which enable pupils to relate their own experiences to those portrayed will make it easier for pupils to assimilate new information.

Programme content

Teachers are particularly keen to use programmes which give their pupils access to experiences they cannot provide. Some teachers are concerned that the use of TV programmes may encourage pupil passivity. A few primary teachers felt that programme-makers were concentrating on entertainment at the expense of education. Pupils respond well to entertaining content and presentation, but these could occasionally interfere with the learning process. This has implications for programme makers, who need to make their programmes appealing to pupils, but without conflicting with learning.

Although most of the programmes we played to pupils were well received, pupils often had valuable insights to offer on how programmes could be improved. Some programmes were felt to be inappropriate (e.g. in terms of appeal and complexity) for their target audience. This highlights the importance of trialling programmes with pupils and teachers to ensure that they are tailored to the needs of the audience.

The teacher's role

Previous research has established that adult intervention during broadcasts has a positive impact on pupil attention and learning. This research found that teachers varied in their level of intervention. Both primary and secondary teachers may be constrained because they do not have long enough with the television, or with the class, and some primary teachers are restricted in their ability to intervene during programmes because they do not pre-record broadcasts.

These findings suggest that schools need to consider how the availability and allocation of resources can best facilitate learning from broadcasts. Teachers need to take an active role in helping pupils interpret and learn from broadcasts. This might include aiding younger pupils in the understanding of media conventions (such as replays, fades, camera techniques, or the use of documentary film). Teachers can also help pupils of all ages to identify key learning points within a programme, and distinguish these from less relevant material.

There is a role for teacher training courses in providing teachers with information on how pupils' understanding of radio and broadcasts is influenced by the use of programme features and by the child's stage of development. (There is also need to raise awareness of these issues, because teachers may not recognise the necessity for such training.)

Series development

The research revealed a continuing demand for new schools broadcasts. Teachers want programmes to reflect changing demands and to focus on new elements of the curriculum. Pupils do not respond well to material that they perceive to be out of date.

Primary teachers would like to see the development of new broadcasts in many areas of the curriculum. At secondary level, there is a particular demand for new programmes in history, geography and science, and for A-level students in most subjects. Use of schools broadcasts is lowest amongst heads of department for technology and mathematics, although these teachers are not necessarily opposed to the use of broadcasts in their

SUMMARY AND CONCLUSIONS

area of the curriculum. There is also some demand from teachers in Wales and Scotland for broadcasts to take account of their cultural and curricular needs. This suggests the need for continuing development of new broadcasts, taking into account the needs of teachers of specific age-groups, the demands of particular subject areas, and the needs of schools located in different parts of the UK.

Radio broadcasts

Radio broadcasts are used by over half of primary teachers, with over two-thirds of infant teachers using radio broadcasts. Radio is most commonly used for dance/movement and music (areas in which many primary teachers lack confidence).

In the age of television and computers, young children need help with the development of listening skills. Teachers may be deterred from using radio for areas other than music and movement because of pupils' apparent inattention and possible misbehaviour when using an aural stimulus. Yet this research found that young children did attend to radio despite appearing distracted, and teachers who use radio said that it improved their pupils' listening skills. This suggests that radio can be a useful aid for developing listening skills. Teachers may find it helpful to have support materials which provide a visual focus for radio broadcasts (apart from those in music and movement).

Programme materials

Almost all primary teachers used teachers' notes and pupil resources supplied by the broadcast company. Fewer secondary heads of department used these materials, although a high proportion of modern language teachers said they did so. Some respondents from both primary and secondary schools felt the availability and content of programme materials could be improved.

Careful planning and integration of any resource can enhance its impact on pupils. The research found that not all teachers were able to pre-record and preview programmes before using them with their

class. This reinforces the need for appropriate pupil materials and for good programme information which includes details of the programme content and target audience to help teachers make the most effective use of schools broadcasts.

Further research

Both academic and market research are valuable means of discovering areas for new development. There is still much to be learned about the ways in which broadcasts can most effectively contribute to learning. Research could provide more specific in-depths information on: the design of programmes; pupil perceptions of programme techniques; and the effects of teacher interventions on pupil learning. In order to make better use of the medium, we need to identify why certain programmes (or parts of programmes) are particularly effective, and how teachers can best use them to stimulate and reinforce learning.

In conclusion

This research has confirmed that teachers value schools broadcasts for their ability to add variety and interest to the learning experience, provide new experiences, and reinforce their teaching. The programmes studied in the research were successful in gaining attention, providing enjoyable experiences and contributing to pupil learning. The findings of this research provide confirmation of what many programme makers and teachers have learned from their experience of designing and using educational television. Pupils respond positively to well-designed, coherent, high-quality programmes which help them to learn.

REFERENCES

ALWITT, L. F., ANDERSON, D.R., LORCH, E.P. and LEVIN, S.R. (1980). 'Preschool children's visual attention to attributes of television', *Human Communication Research*, 7, 1, 52-67.

ANDERSON, D.R. and LEVIN, S.R. (1976). 'Young children's attention to "Sesame Street"', *Child Development*, 47, 4, 806-11.

BAGGALEY, J.P. (1985). 'Design of a TV character with visual appeal for preschool children', *Journal of Educational Television*, 11, 1, 41-8.

BATES, A. W. (1981). *Some Unique Characteristics of Television and Some Implications for Teaching and Learning* (IET Paper on Broadcasting No. 180). Milton Keynes: Open University, Institute of Educational Technology.

BRITISH BROADCASTING CORPORATION (1993). *Survey of Broadcast Use 1992/3: Primary Schools. Tables of Results and Technical Appendix* (Broadcasting Research Tracking Report 93/74). London: BBC Broadcasting Research.

CAIN, J. and WRIGHT, B. (1994). *In a Class of Its Own... BBC Education 1924-1994*. London: BBC Education.

CALVERT, S., HUSTON, A., WATKINS, B. and WRIGHT, J. (1981). 'The effects of selective attention to television forms on children's comprehension of content'. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Boston, MA, April 2-5.

CAPRON, J. (1993). *The Use of Broadcasting in Further Education: an FEU/BBC Research Study (RP708)*. London: Further Education Unit.

CHOAT, E. (1988). 'Children, television and learning in nursery and infants' schools', *Journal of Educational Studies*, 14, 1, 9-21.

CHOAT, E. and GRIFFIN, H. (1986a). 'Young children, television & learning: part 1. The effects of children watching a continuous off-air broadcast', *Journal of Educational Television*, 12, 2, 79-89.

CHOAT, E. and GRIFFIN, H. (1986b). 'Young children, television & learning: part 2. Comparison of the effects of reading and story telling by the teacher and television story viewing', *Journal of Educational Television*, 12, 2, 91-104.

CHOAT, E. and GRIFFIN, H. (1989). *Using Television in the Primary School*. London: Routledge.

CHOAT, E., GRIFFIN, H. and HOBART, D. (1987). *Teachers and Television*. London: Croom Helm.

CLARK, R. E. (1983). 'Reconsidering research on learning from media', *Review of Educational Research*, 53, 4, 445-59.

CLARK, R.E. and SALOMON, G. (1986). 'Media in teaching.' In: WITTRICK, M.C. (Ed) *Handbook of Research on Teaching*. London: Collier Macmillan.

COLLINS, W.A., WELLMAN, H., KENISTON, A.H. and WESTBY, S.D. (1978). 'Age-related aspects of comprehension and inference from a televised dramatic narrative', *Child Development*, 49, 2, 389-99.

GREAT BRITAIN. OFFICE FOR STANDARDS IN EDUCATION (1993). *The Use of Educational Broadcasts in Primary Schools (Report No. 29/93)*. London: OFSTED.

GREAT BRITAIN. STATUTES (1988). *Copyright, Designs and Patents Act 1988. Chapter 48*. London: HMSO.

GREAT BRITAIN. STATUTES (1990). *Broadcasting Act 1990. Chapter 42*. London: HMSO.

HUSTON, A. C., WRIGHT, J. C., WARTELLA, E., RICE, M. L., WATKINS, B. A., CAMPBELL, T. and POTTS, R. (1981). 'Communicating more than content: formal features of children's television programs', *Journal of Communication*, 31, 3, 32-48.

REFERENCES

- HUSTON-STEIN, A. and WRIGHT J. C. (1979). 'Children and television: effects of the medium, its content and its form', *Journal of Research and Development in Education*, 13, 1, 20-31.
- KOZMA, R. B. (1991). 'Learning with media', *Review of Educational Research*, 61, 2, 179-211.
- MOSES, D. and CROLL, P. (1991). *School Television in Use*. London: John Libbey.
- MOSS, R., GUNTER, B. and JONES, C. (1991a). 'Teachers using television', *Journal of Educational Television*, 17, 2, 109-12.
- MOSS, R., JONES, C. and GUNTER, B. (1991b). *Television in Schools*. London: John Libbey.
- RICE, M., HUSTON, A. and WRIGHT, J. (1987). 'The forms of television: effects on children's attention, comprehension and social behaviour.' In: BOYD-BARRETT, O. and BRAHAM, P. (Eds) *Media, Knowledge and Power*. London: Croom Helm.
- SCOTTISH OFFICE EDUCATION DEPARTMENT (1993). *Annual Survey of Viewing and Listening and the Use of Computers: Draft Report*. Glasgow: Scottish Office Education Department.
- TWITCHIN, R. (1991). 'Fact + fiction = faction', *Topic*, 6, 1.
- WACKMAN, D. B. and WARTELLA, E. (1977). 'A review of cognitive development theory and research and the implication for research on children's responses to television', *Communication Research*, 4, 2, 203-24.
- WILLIAMS, T. M. (1981). 'How and what do children learn from television?', *Human Communication Research*, 7, 2, 180-92.

APPENDIX:

Supplementary Tables

A.1 Number of programmes used in a selected schools TV series: Secondary heads of department

	One or two %	Some %	Most %	All %	No resp. %	Total %
Technology (N=26)*	39	39	11	11	-	100
Geography (N=121)	12	32	41	13	2	100
History (N=135)	6	34	45	13	2	100
Maths (N=17)*	24	41	-	35	-	100
Science (N=103)	14	43	38	4	1	100
Mod. languages (N=114)	6	26	41	27	-	100
English (N=74)*	28	45	12	14	1	100

* Care should be taken in the interpretation of results based on small numbers of respondents.

A.2 Reasons for non-use of teachers' notes: Secondary heads of department

<i>Analysis of open-ended responses</i>	%
Prefer to devise own schemes of work	35
Teachers' notes are too expensive	17
Notes are not available in school	10
Forget to send for them	10
No response	15
N	242

Respondents could make more than one comment.

A.3 Secondary heads of department: ratings of the usefulness of teachers' notes

Familiarisation with programme content (p < .01)

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=7)*	2.00	0.82
Geography N=55)*	1.73	0.78
History (N=48)*	1.58	0.68
Maths (N=10)*	1.90	0.74
Science (N=43)*	1.93	0.67
Mod. languages (N=58)*	1.41	0.73
English (N=31)*	1.77	0.76

* Care should be taken in the interpretation of results based on small numbers of respondents.

◆ ◆ ◆ ◆ ◆ ◆ ◆

Secondary heads of department: ratings of importance of factors influencing decision to use schools broadcasts

(Details provided for three factors with significant differences between departments: p < .0001)

A.4 Degree of fit with the curriculum

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=35)*	1.57	0.81
Geography (N=125)	1.27	0.63
History (N=132)	1.30	0.63
Maths (N=23)*	1.91	0.73
Science (N=107)	1.33	0.55
Mod. languages (N=116)	1.48	0.65
English (N=83)*	1.47	0.82

* Care should be taken in the interpretation of results based on small numbers of respondents.

VIEWING, LISTENING AND LEARNING

A.5 Potential appeal to students

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=35)*	1.83	0.79
Geography (N=125)	1.73	0.80
History (N=131)	1.56	0.63
Maths (N=23)*	1.61	0.66
Science (N=106)	1.58	0.62
Mod. languages (N=116)	1.32	0.52
English (N=82)*	1.49	0.59

** Care should be taken in the interpretation of results based on small numbers of respondents.*

A.6 Recently produced series

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=33)*	2.88	1.29
Geography (N=124)	2.31	0.97
History (N=130)	3.08	1.23
Maths (N=23)*	3.17	1.11
Science (N=104)	2.81	1.15
Mod. languages (N=113)	2.38	1.05
English (N=80)*	3.23	1.23

** Care should be taken in the interpretation of results based on small numbers of respondents.*

◆ ◆ ◆ ◆ ◆ ◆ ◆

Secondary heads of department: ratings of importance of factors influencing decision not to use schools broadcasts

(Details provided for factors with significant differences between departments.)

A.7 Lack of time to select and plan broadcasts ($p < .01$)

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=74)*	1.93	1.26
Geography (N=9)*	2.11	1.69
History (N=15)*	3.00	1.60
Maths (N=140)	1.70	0.95
Science (N=21)*	1.90	1.58
Mod. languages (N=30)*	1.53	1.01
English (N=50)*	1.68	1.08

** Care should be taken in the interpretation of results based on small numbers of respondents.*

A.8 Lack of access to equipment ($p < .05$)

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=72)*	3.19	1.55
Geography (N=9)*	3.33	1.73
History (N=16)*	3.69	1.78
Maths (N=138)	3.06	1.49
Science (N=23)*	3.83	1.23
Mod. languages (N=30)*	2.87	1.78
English (N=48)*	2.56	1.56

** Care should be taken in the interpretation of results based on small numbers of respondents.*

VIEWING, LISTENING AND LEARNING

A.9 Difficult to find suitable viewing/listening space ($p < .01$)

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=70)*	3.23	1.46
Geography (N=7)*	4.00	1.53
History (N=16)*	3.56	1.59
Maths (N=137)	2.85	1.41
Science (N=23)*	3.83	1.50
Mod. languages (N=30)*	3.33	1.73
English (N=48)*	2.77	1.53

** Care should be taken in the interpretation of results based on small numbers of respondents.*

A.10 Inconvenient timing of broadcasts ($p < .001$)

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=69)*	3.01	1.45
Geography (N=9)*	2.22	1.64
History (N=16)*	3.13	1.59
Maths(N=136)	3.56	1.36
Science (N=23)*	3.35	1.37
Mod. languages (N=30)*	2.77	1.63
English (N=47)*	2.64	1.42

** Care should be taken in the interpretation of results based on small numbers of respondents.*

APPENDIX

A.11 Lack of suitable programmes ($p < .05$)

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=63)*	2.86	1.34
Geography (N=6)*	3.17	0.98
History (N=15)*	2.93	1.94
Maths (N=112)	3.35	1.20
Science (N=19)*	3.37	1.26
Mod. languages (N=29)*	3.66	1.08
English (N=37)*	3.78	1.27

** Care should be taken in the interpretation of results based on small numbers of respondents.*

A.12 Do not feel broadcasts would add to the curriculum ($p < .05$)

Department	Mean rating (1=v. useful, 5=not useful)	Standard Deviation
Technology.(N=70)*	3.66	1.36
Geography (N=8)*	4.50	0.93
History (N=15)*	4.20	1.47
Maths (N=132)	3.68	1.23
Science (N=23)*	3.87	1.39
Mod. languages (N=30)*	4.40	1.00
English (N=46)*	3.74	1.20

** Care should be taken in the interpretation of results based on small numbers of respondents.*

◆ ◆ ◆ ◆ ◆ ◆ ◆

Primary teachers: ratings of agreement with attitude statements about schools broadcasts

A.13 Schools broadcasts offer a learning experience that is difficult to provide through other means ($p < .01$)

Department	Mean rating (1 = strongly agree, 5 = strongly disagree)	Standard Deviation
Teachers of infants (N=220)	2.01	0.88
Teachers of lower juniors (N=176)	1.84	0.81
Teachers of upper juniors (N=196)	1.75	0.75

A.14 Teachers could benefit from training on the use of schools broadcasts ($p < .05$)

Department	Mean rating (1 = strongly agree, 5 = strongly disagree)	Standard Deviation
Teachers of infants (N=218)	2.93	0.96
Teachers of lower juniors (N=175)	2.63	0.96
Teachers of upper juniors (N=192)	2.72	1.05

◆ ◆ ◆ ◆ ◆ ◆ ◆

Secondary heads of department: ratings of agreement with attitude statements about schools broadcasts

A.15 Schools broadcasts make an important contribution to children's learning ($p < .0001$)

Department	Mean rating (1 = strongly agree, 5 = strongly disagree)	Standard Deviation
Technology (N=117)	2.57	0.89
Geography (N=137)	1.64	0.74
History (N=155)	1.66	0.82
Maths (N=167)	2.75	0.86
Science (N=132)	1.95	0.84
Mod. languages (N=147)	2.03	0.91
English (N=131)	2.23	0.91

A.16 Schools broadcasts offer a learning experience that is difficult to provide through other means ($p < .0001$)

Department	Mean rating (1 = strongly agree, 5 = strongly disagree)	Standard Deviation
Technology (N=117)	2.18	1.04
Geography (N=137)	1.68	0.79
History (N=157)	1.77	0.77
Maths (N=166)	2.30	0.89
Science (N=131)	1.68	0.80
Mod. languages (N=148)	1.91	0.91
English (N=131)	2.17	0.94

VIEWING, LISTENING AND LEARNING

**A.17 Schools broadcasts are more about entertainment than education
($p < .0001$)**

Department	Mean rating (1 = strongly agree, 5 = strongly disagree)	Standard Deviation
Technology (N=111)	3.77	0.92
Geography (N=136)	4.35	0.70
History (N=153)	4.14	0.75
Maths (N=166)	3.77	0.86
Science (N=131)	4.03	0.82
Mod. languages (N=148)	3.95	0.91
English (N=132)	3.95	0.87

**A.18 Schools broadcasts provide information for teachers as well as
for young people ($p < .0001$)**

Department	Mean rating (1 = strongly agree, 5 = strongly disagree)	Standard Deviation
Technology (N=116)	1.98	0.73
Geography (N=135)	1.73	0.74
History (N=155)	1.95	0.81
Maths (N=165)	2.25	0.79
Science (N=131)	2.07	0.76
Mod. languages (N=149)	2.07	0.95
English (N=131)	2.12	0.80

APPENDIX

A.19 Teachers could benefit from training on how to get the most out of schools broadcasts ($p < .0001$)

Department	Mean rating (1 = strongly agree, 5 = strongly disagree)	Standard Deviation
Technology (N=116)	1.98	0.73
Geography (N=134)	2.36	0.97
History (N=156)	2.44	1.07
Maths (N=168)	2.01	0.93
Science (N=131)	2.64	1.17
Mod. languages (N=147)	1.89	0.93
English (N=132)	2.30	1.21

◆ ◆ ◆ ◆ ◆ ◆ ◆

A.20 Secondary heads of department: ratings of agreement with attitude statements about schools broadcasts (users and non-users)

Statement	Mean rating (1 = strongly agree, 5 = strongly disagree)				
	Users (N = 625)		Non-users (N = 361)		Significance
	Mean	SD	Mean	SD	
Schools broadcasts make an important contribution to children's learning	1.83	0.84	2.62	0.90	$p < .0001$
Young people learn very little from schools broadcasts without the teacher's involvement	2.59	1.06	2.42	1.04	$p < .01$
Schools broadcasts offer a learning experience that is difficult to provide through other means	1.76	0.80	2.30	0.97	$p < .0001$
Schools broadcasts are more about entertainment than education	4.14	0.80	3.75	0.89	$p < .0001$
Schools broadcasts provide information for teachers as well as pupils	1.94	0.79	2.19	0.85	$p < .0001$

nfer

VIEWING, LISTENING AND LEARNING **the use and impact of schools broadcasts**

It is now over 70 years since the BBC began its broadcasts for schools. Today most schools use broadcasts, but why do they use them, and how do radio and TV programmes contribute to pupils' learning?

This report presents evidence on fundamental issues in educational broadcasting. The result of a wide-ranging research study, the report looks at the use and impact of educational broadcasts in UK primary and secondary schools.

Based on the results of a survey of over 1,500 teachers in more than 700 schools, the report provides comprehensive information on: which series are preferred, how broadcasts are integrated into the curriculum, and teachers' perceptions of what their pupils learn from the broadcasts.

To examine the impact of educational broadcasts on learning, the researchers studied pupils' reactions to selected broadcasts. This part of the research evaluated the effects of programme content and presentation on pupil attention, attitudes, and understanding.

The results of this research are discussed in the light of the existing research literature. The final chapter presents key findings and highlights their implications for teachers and programme makers.



ISBN 0 7005 1373 6
£9.00