DOCUMENT RESUME

ED 358 035 SP 034 259

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TITLE Thirteen Hundred and Thirty Days. A Pilot Study of Teacher Time in Key Stage 1. Final Report.
INSTITUTION Warwick Univ., Coventry (England). Policy Analysis Unit.
SPONS AGENCY Assistant Masters and Mistresses Association, London (England).
PUB DATE May 90
NOTE 56p.; For related reports, see SP 034 260 and SP 034 402.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Educational Policy; Elementary Education; *Elementary School Teachers; Employee Attitudes; Foreign Countries; Surveys; *Teacher Attitudes; *Teaching Load; Time Management; Work Attitudes; Work Environment; *Working Hours
IDENTIFIERS *British National Curriculum; Education Reform Act 1988 (England); *England; Wales

ABSTRACT

Ninety-five teachers in Key Stage 1 in England and Wales completed a questionnaire and records of time spent on work over a period of 14 consecutive days, resulting in detailed records of 1,330 days of teachers' time. The data are analyzed in terms of overall time spent on work; time distribution; and time spent specifically on teaching, preparation, administration, inservice training, and other activities. The range of time spent overall was considerable, with the lowest being equivalent to a working week of over 38 hours and the highest being equivalent to nearly 73 hours a week. The average was 49 hours 35 minutes. Overall, teachers spent 35 percent of their time teaching, 31 percent in preparation, 29 percent in administrative activities, 18 percent in inservice training, and 6 percent in other activities. Implications for education policy are discussed, focusing on conditions of work and activity-led staffing, the delivery of the national curriculum, the use of teachers' time, and issues in conceptualizing teacher time at work. Appendices contain the form used for recording teacher time, a copy of the time survey questionnaire, and statistical data from the study. (JDD)

THIRTEEN HUNDRED AND THIRTY DAYS

Final report of a pilot study of teacher time in Key Stage 1 commissioned by

the

Assistant Masters and Mistresses Association

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Department of Education, University of Warwick

May 1990

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We gratefully acknowledge the help of Keith Halstead, Deputy Director, Computing Services Unit, Warwick University, who provided a special program to analyse the Time Data in this study, and advised us on its operation and interpretation. We would also like to record our thanks to the Data Preparation Section in the Computing Services Unit for their painstaking and good-humoured preparation and inputting of our data.

1 INTRODUCTION AND BACKGROUND

INTRODUCTION

This is the final report of a study of teacher time in Key Stage 1. The study differed in one important respect from a conventional survey by questionnaire, in that it used a specially designed and trialled Record of Teacher Time. This required teachers to record regularly the time they had spent on work, in units of three minutes. They were asked to fill this in as soon after the time spent as possible, and in any case by the end of each day. In this way the research attempted to reduce the problems of faulty memory and unreliable guesses, that can arise when people are asked to say, or to estimate, or to remember things, in broad terms. The teachers in this study had to record, as accurately as the instrument allowed, the actual amount of time they had spent, soon after spending it.

Each teacher completed such records for 14 consecutive days. The total number of teachers was 95, so that this report is based on detailed records of 1330 days of teachers' time spent on work. The record ran from 7.00 am to midnight. The evidence created by the Record of Teacher Time therefore was able to include evenings and weekends.

BACKGROUND

In establishing this pilot study, the Association had one main purpose; it wished to obtain evidence about the amount of time being spent on work by teachers in Key Stage 1. But teacher time does not exist in a vacuum insulated from educational policy, especially policy on the delivery of the curriculum. Therefore, in seeking evidence about teacher time, the research was deliberately designed to identify issues arising from current policy. For although it was widely claimed that, following the implementation of the national curriculum, teachers were having to spend considerably greater time than previously on their work, there was little hard evidence. Indeed, the last major study of English primary schoolteachers' work, Hilsum and Cane's The Teacher's Day, had been published in 1971, and referred to junior teachers only. A very recent survey by the NAS/UWT did not distinguish between Key Stage 1 and Key Stage 2 and used a less detailed form of recording time, covering 24 hour periods for a week per teacher. It enables comparison with the present findings in broad brush terms, (for example in time spent working overall) though not in more specific issues (such as time spent on assessment while teaching).

That there is perceived to be a problem of some kind with teachers' time in primary education does not seem to be in dispute. A large number of official and semi-official reports and papers, including the 1985 White Paper Better Schools, the 1986 House of Commons ESAC 3rd Report, Achievement in Primary Schools, and 1988-89 Annual Report of HM Senior Chief Inspector of Schools, Standards in Education, all contained the message that primary school teachers required more time to do what was being required of them. Thus the latter stated:

> "as new arrangements are introduced, including the requirement for teachers to assess, record and report upon children's attainments more thoroughly than in the past, more time will be required for those tasks during the school day if the teachers are to fulfil effectively the requirements of the National Curriculum." (para 42)

The difficulty, however, with such claims, despite their inherent logic, is that they do not start from a known baseline of information about the amount of teacher time either actually spent, or needing to be spent. It is difficult to maintain or accept the argument that teachers need more time, if we do not know how much time they are

actually spending. We believe that this study, albeit a pilot, has provided a potentially important baseline, against which later studies might be set.

Teacher time: visible, invisible and distributed

There are at least three aspects of teacher time. First there is the time spent on work with children and parents, that everyone can see, for example teaching, discussions at parents' meetings etc. This might be called "visible time." Second, there is "invisible time", - time spent on work and work-related activities out of sight of the public, for example on In-service courses, or at home on preparation. This distinction is broadly, but not precisely, that between "directed" and "non-directed" time which was built into teachers' conditions of work in 1987. One relevant feature is the dependency relationship of the latter on the former. If the amount or intensity of work in directed time, (arising from innovation, for example), increases, so almost inevitably does the latter, since it is defined as "such additional hours as may be needed to enable (teachers) to discharge effectively (their) professional duties." (School Teachers' Pay and Conditions Document, 1989, para. 36 (1) (f))

The third aspect of time is "time distribution". This refers to the way teachers' time is distributed across different work and work-related activities within the overall time. This has become especially important for analysing time during school, as teachers have attempted to take account of the expectation that their pupils should spend a "reasonable" amount of time on the core and foundation subjects. But it is not only a matter of time spent on teaching. Teachers spend time on activities other than teaching children directly, for example in In-service training on "Baker" days, and other times; in reading the range of documentation from the NCC and SEAC; in courses or conferences concerned with their own professional development; and in activities associated with assessment, recording and reporting.

For Key Stage 1 teachers, the most authoritative claim that time was a problem came in the report of a survey by HMI at the end of 1989, called The Implementation of the National Curriculum in Primary Schools. The survey, based on approximately 1000 classes of 5 - 7 year olds, was designed "to monitor the progress of primary schools in preparing for and implementing the national curriculum requirements for Key Stage 1." Although they found the schools working hard to prepare for implementing the curriculum, the Inspectors reported that,

> "a pressing problem for almost all of the schools was the *lack of time* for teachers to plan and prepare work, and in the case of subject coordinators, to assist their colleagues during the school day ... Some schools were pressing ahead with improving recording procedures but again lack of time for undertaking work on assessment and recording was a major obstacle." (paras 10 and 36).

A later survey by HMI, was published in Spring 1990, and also called The Implementation of the National Curriculum in Primary Schools. It was based on 400 lessons in 100 of the 500 schools in previous survey, This covered work in the Autumn term, 1989, that is, as the core subjects of the national curriculum were being implemented in Key Stage 1. In this survey, time distribution was causing difficulties, with half the schools "devoting a reasonable amount of time to core and foundation subjects in Key Stage 1", while in "a minority of schools far too great an emphasis on the core subjects was leading to a neglect of other areas of work" (para.8).

Likewise, time within school was proving a difficulty, since "coordinators fulfilled their delegated responsibilities adequately, but their roles seldom included influencing the work at the planning stage and very few were given non-contact time to work alongside their colleagues" (para.39).

In general, teachers were working hard, (much of it in what we have called above invisible time, according to the Inspectors), to deliver the national curriculum, but "anxieties about assessment and recording and about time to fulfil requirements and responsibilities were still high" (para.53). Even the teachers who were the most effective at class management were "finding it difficult to create enough time" for observation, assessment and intervention (para.5a).

2 THE PILOT STUDY

The time, so to speak, was therefore right for an independent investigation into the amount of time spent working, and the activities on which time was spent, by teachers in Key Stage 1. It was designed, conducted and reported over a four month period under a mutually agreed pre-condition of academic autonomy; an explicit understanding that we would report what we found, not what the Association might wish us to find.

Response and attitude to the survey

One hundred and ten AMMA members volunteered to be contacted, and of these, 88 returned completed forms. A further seven responses came from 10 independently approached non-AMMA members, to be treated as a comparator group. 95 out of 120 is a very high level of response, doubtless partly due to the fact the 88 AMMA respondents had volunteered in advance.

It was also due in part to the interest the survey itself generated. Although they were not asked to do so, some forty teachers included notes or letters commenting on the survey. These notes reflected something of the ambivalence in the profession about the impact of current policies upon their working lives. . However, nearly all were positive about the survey itself. For example, "This was a good exercise for a teacher to complete. It will be interesting to see your analysis of how teachers do spend their time - how typical or untypical we find that we are." And the simple, "Good luck with the survey!" One or two notes, however, embodied a powerful sense of bitterness about what was happening to teachers' work. For example, one teacher wrote, "Where there is one teacher to thirty pupils, it is hard enough to achieve the basic aim of teaching the children to read and write. We are now being expected to fill in endless tick sheets and records which are an insult to our professional judgment, and are very little use to anyone, taking up valuable teaching time ... For my own part I am leaving shortly to have a baby and whereas I had always intended to return to teaching after having a family, I am now intending to retrain for an alternative career. I hope your survey does something to alert people to what teachers are experiencing before too many teachers are compelled to leave in order to be taken notice of ..." One teacher sent back all the forms empty, saying, "I am sorry to say that I cannot face filling in these time sheets as promised. There seems to be so much extra work to be done this year and child-oriented work must take precedence." However, this tone of bitterness was not widespread; the survey appears to have provoked an engaging warmth and wit amongst most of those who wrote in. Thus one teacher, 13 of whose Records of Teacher Time were full of time spent on work, had one Saturday entirely blank. At the bottom by the date, she had simply written, "Happy Birthday to me!". Another, explaining her inability to complete any of the forms, wrote:

> "I'm very sorry not to have joined in the teacher time survey. Unfortunately Mrs. Smith was absent or unwell for most of the last month of term and I was totally involved in supporting her and her class and in preparing to leave for a new position after Easter in Special Education in Key Stage 2.... I think it's fair to say I only stopped school work in the last 4 weeks for the relaxation of feeding and cleaning for my family or advising on the completion of GCSE

projects for my daughter, my husband being totally preoccupied with implementing the Poll Tax. We're a very tranquil family at the moment as you can imagine!"

The evidence from these unsolicited notes, therefore, suggests that the survey was working in an area of considerable importance to the teachers themselves.

THE INSTRUMENTS

The teachers provided data anonymously on two forms, the Record of Teacher Time, (Appendix 1) and a Time Survey Questionnaire. (Appendix 2)

The Record of Teacher Time

This was a time sheet for each of fourteen consecutive days, mostly completed within a four week period from 26 February 1990. The time sheet had to be completed following guidance provided, using a trialled coding system. The coding system broke teachers' work into five broad categories, viz, TEACHING, PREPARATION, IN-SERVICE TRAINING, ADMINISTRATION and OTHER ACTIVITIES. The first four of these were further broken down into sub-categories. These were as given on the page overleaf.

Thus the coding system, in effect, defined what counted as work and work-related activities for the teachers.

The Time Survey Questionnaire

At the end of the fourteen days, the teachers completed a questionnaire about their professional biographies, (eg. age, length of teaching experiences), current conditions of work, (eg, class size, amount of non-contact time) and their opinions about the amount of time spent on work.

1. TEACHING

Include activities where you are in direct contact with children helping them to learn. There are five codes.

TM	**Teaching Maths and Number**
TE	**Teaching English, Language, Reading, Talking, Listening**
TS	**Teaching Science**
TO	**Teaching other subjects**
TA	**Assessment andor recording carried out during teaching**

Do not try to go into great detail. If there is any maths going on in a given teaching session, simply enter **TM**. Some sessions could have all five codes entered.

2 PREPARATION/MARKING

Include activities in which you prepare or mark children's work, but are not in direct contact with them. There are three codes.

PR	**Preparing and planning for children's learning, writing lesson plans, forecasts, schemes of work, organising the classroom and resources in it, briefing classroom assistants, parent helpers, etc.**
PM	**Marking children's work, writing comments on it, recording results**
PO	**Organising or collecting resources, organising visits/trips**

3 IN-SERVICE TRAINING

Include formal and informal activities intended to help in your professional development, such as training days, all courses (including those leading to a further qualification), conferences and workshops. There are four codes.

IN	**Organised courses, conferences, training days, etc.**
IT	**Travel to organised courses, conferences, etc.**
IS	**Staff meetings, informal consultation with colleagues, advisers, advisory teachers**
IR	**Reading of professional magazines, journals, national curriculum documentation and other sources of information**

4 ADMINISTRATION

Include activities concerned with the routines of school work. There are seven codes.

AP	**Discussion/consultation with parents**
AD	**Mounting displays**
AS	**Supervising children before the school day begins, at break/lunch, end of school day, etc.**
AL	**Liaison meetings/activities with teachers in other stages, other schools, etc.**
AW	**Attending/participating in assembly/act of worship**
AB	**Lunch, coffee/tea break**
///	**Registration and collecting dinner money; and/or moving children from one location to another (eg, from class to hall, playground to class, school to swimming baths), tidying up, etc** (The code for this is simply to fill diagonal lines in the time space thus /////, since these are sometimes short time spaces)

5 OTHER ACTIVITIES

Activities that you cannot easily allocate to one of the other codes, eg. filling in this record, dealing with lengthy interruptions, and other things. There is one code for this, viz **OA.**

3 CHARACTERISTICS OF THE PARTICIPATING TEACHERS

A note on typicality

There were 95 teachers participating in the study. This is a small number, given that there are some 159,600 primary school teachers in England of whom about 50,000 teach in Key Stage 1 according to the Primary Staffing Survey Tables issued by the DES in 1988. In addition, the majority of the 95, viz, the 88 AMMA members, were a self-selected group, since they had volunteered to participate. It is not known how far AMMA's primary membership is typical of primary teachers generally, and how far the 88 are representative of AMMA's membership. The remaining 7 were non-AMMA members, who were paid for their participation and in that sense were not volunteers or self-selecting. They were all teachers in Key Stage 1 who had been on in-service courses or higher degree programmes in primary education at Warwick University. Thus we can not claim that the 95 are self-evidently representative of Key Stage 1 teachers generally.

However, there are three characteristics of the 95 teachers as a group that suggest that they are not so wildly untypical as to bring the findings of this study into question. First, the 95 were spread widely throughout England and Wales. They worked in 54 LEAs in all the regions classified by the DES for statistical purposes. Appendix 3 gives details, from which it can be seen that there is no substantial concentration of the teachers in any one authority, which if it had poor staffing levels might bias results unduly. Second, although the number of teachers is relatively small, the number of days involved, 1330, is considerable, by comparison with the only major previous study, by Hilsum and Cane, where 200 days from 129 teachers in one authority were involved. We know of no other detailed set of data about infant teachers' working time. Thirdly, there is considerable internal evidence that the characteristics of the teachers in this study, match much of what is known of teachers' working conditions (See Appendix 4).

In addition, there is a technical reason, the results of split-half reliability tests, for our having some confidence that the group is internally consistent and not unrepresentative (See Appendix 9).

Data from the Time Survey Questionnaire

The Time Survey Questionnaire contained 19 items which provided evidence about characteristics of the participating teachers. This is presented under four main headings, viz professional biography, conditions of work, opinions of time spent on work, and opinions about the representativeness of the two weeks they had recorded. All relevant tables are presented in Appendix 5.

Professional biographies (Tables 1-3)

Sex

Of the 95 teachers, 89 were female and 4 male, and 2 did not complete this item. Although this kind of sex distribution was expected, given the dominantly female teaching force in Key Stage 1, it makes comparisons between the sexes and other variables technically not feasible.

Age

The age distribution of the teachers was as follows:

Age	n. teachers	%
21-30	11	11.6
31-40	22	23.2
41-50	49	51.6
51-60	13	13.7
61+	0	0.0
Total	95	100

We can see that most teachers, nearly 75% fall into the middle age (though not the middle-aged) bands (31-40 and 41-50), with relatively few in the young and older age groups.

This compares with the national figures provided in the Primary Staffing Survey (DES, 1988), which showed that, for primary teachers as a whole, 10.1% were under 30, 30.5% were between 30 and 39, 34.7% were between 40 and 49, and 24.7% were 50 or over.

Experience

We thought it important to establish not merely the age of the teachers, but the length of experience they had had as teachers of infants. This is because although it was likely that older teachers would also have more experience, it did not necessarily follow that it would have been with infants. Table 3 in Appendix 5 gives the details, but just over 70% of those responding had 11 or more years teaching experience in the infant stage. The rest, 27 in all, were spread fairly evenly across the length of experience levels, from 2 teachers in their first year, to 3 in their 10th year of infant teaching.

In general, therefore the teachers involved in this study were almost all female, mainly over 30 years of age, and mainly with substantial experience of teaching at what is now called Key Stage 1. Thus, the findings relating to the amount of time spent on work which we report later in this study can not be easily attributed to inexperience or youthfulness.

Working Conditions (Tables 4 - 12)

Working conditions in this study include the salary status of the teachers, the type and size of school, composition and size of class, amount of time working with other adults, non-contact time and responsibilities for coordinating a subject or subjects.

Salary status

The teachers were asked to say which level of salary they were currently on, including, if they had an incentive allowance, whether it was temporary or permanent. The figures are as follows:

Salary status

	n. teachers	%
Main Scale	41	43.2
Incentive A	21	22.1
Incentive B	17	17.9
Incentive C	1	1.1
Incentive D	0	0.0
Deputy Head	15	15.8
Total	95	100

By national comparison (for example with the allocations indicated in the 1990 Teachers' Pay and Conditions Report or with the Primary Staffing Survey of the DES) this is a slightly skewed distribution, with fewer main scale teachers, and more incentive allowance holders (33% nationally, 41% here) than in the country overall. Of the teachers who were above main scale, 14 (32.6%) were on temporary allowances or held temporary deputy-headships, a factor that may have contributed to the skewed distribution. We know of no national figures, but 1 in 3 seems an unusually high proportion for temporary positions above main scale.

Type and size of school

Although teaching in Key Stage 1, the teachers worked in five types of school, viz, Infant, First, JMI, Combined 5-12, and other (unspecified). The figures for teachers in each school type are:

School Type

	n. teachers	%
Infant	28	29.5
First	24	25.3
JMI	33	34.7
Combined 5-12	8	8.4
other	2	2.1
Total	95	100

By comparison with national provision, there were more teachers working in First schools in this study.

In respect of school size, the figures are given in terms of Number of pupils on Roll, but categorised in a way that would enable Group Size to be calculated for analysis if necessary.

Pupils on Roll

	n. teachers	%
below 51	0	0.0
51 - 100	4	4.2
101 - 150	14	14.7
151 - 200	18	18.9
201 - 250	22	23.2
251 - 300	20	21.1
301+	17	17.9
Total	95	100

It can be seen that we have no teachers working in very small schools and only 4 in schools with fewer than 101 pupils. In one sense, this is a pity since it is widely reported (for example, in the DES 1990 The Implementation of the National Curriculum) that teachers in these schools are under the greatest pressure to find time to fulfil all their responsibilities. Conversely, it illustrates that in the main, the overall time spent working by teachers in this study can not be attributed to their working in small schools.

Class size and class composition

We asked the teachers to indicate the number of pupils in the class for whom they were responsible as class teachers (i.e. their registration group), and the age composition of the class. For this latter characteristic teachers had to categorise the class as "mainly single age group", "two age groups" or "more than two age groups". The following table gives the figures for class size.

Class Size

	n. pupils	n. teachers	%
	17 - 20	7	7.4
	21 - 24	27	28.4
	25 - 28	23	24.2
*	28 - 31	19	20.0
*	31 - 34	15	15.8
	35+	4	4.2
	Total	95	100

*(Uncorrected errors on the original questionnaire led to these unclear categories, though apparently no teacher had difficulty allocating her class to the categories. Where necessary in the later analyses the categories have been collapsed to provide exclusive classifications.)

Thus 64% of the teacher have classes of 25 or over, which is a threshold figure in teachers' perceptions about the stage at which class size becomes a problem, (alongside lack of time) in implementing the national curriculum (see pp.16 below).

In respect of the age composition of classes, the figures are straightforward. 53 teachers (55.8%) had mainly single age groups, 33 (34.7%) had 2 age groups, and 9 (9.5%) had more than 2 age groups in their classes.

Within school time: non contact time, time working alongside colleagues, time working with a paid assistant.

The teachers had relatively little non-contact time per week formally allocated to them (irrespective of whether they actually experienced it): 45.7% had no non-contact time, and 25.5% had no more than 30 minutes. Thus on average 7 out of 10 teachers in this study had approximately one minute per day within the timetabled day to fulfil obligations other than class teaching. A further 17.9% had between 31 and 60 minutes per week, while a small number of teachers had over an hour. Full details are given in Appendix 5, Table 7.

The amount of non-contact time was not related to the salary status of the teachers, the size of the school, the size or composition of the class, or to whether or not a teacher had coordination responsibilities. It was related to school type (teachers working in infant schools had more non-contact time than those working in other types of school) and with the length of experience of the teachers (more experienced teachers had more non-contact time). These issues are discussed further below (p.17).

If we calculate the average non-contact time, taking the mid-point in each time category in Table 7 in Appendix 5, teachers in this study had 22 minutes per week within school time free of teaching pupils, i.e. four and a half minutes per day. It has already been shown that the teachers included 15 deputy heads, and 39 Incentive Allowance holders, and it will be shown below (p.12) that the 95 teachers had between them, at least 137 coordination responsibilities.

Table 8 in Appendix 5 shows the amount of time the teachers spent working alongside a colleague, so that there were 2 teachers in a class group. This arrangement has been proposed, (for example by the 1986 House of Commons ESAC 3rd Report, Achievement in Primary Schools), as needed both to help teachers develop confidence in areas that they are uncertain about, and to enable formative assessment by teachers of individual children or groups in connection with the national curriculum. It is a key objective of activity-led staffing proposals. In this study the majority of teachers (66%) had no time in the week working with other colleagues. For the remaining 34%, the picture varies, although 23 teachers had some time up to 2 hours per week, and 9 teachers had more than 2 hours per week.

The teachers were asked how much time a week they spent working alongside a paid assistant. The figures are given in the following table.

Time per week working with a paid assistant

Amount (hours)	n. teachers	%
none	28	29.5
1 - 5	43	45.3
6 - 10	13	13.7
11 - 15	9	9.5
16 - 21	1	1.1
22+	1	1.1
Total	95	100

There are no national figures known to us for comparative purposes.

Coordination responsibilities

Part of the role of teachers in contemporary primary schools is to take responsibility for an aspect or aspects of the work of the school, usually an area of the curriculum or specific aspects such as home-school liaison. Of the teachers who replied to this item, 87 (91.6%) had such responsibility, whilst 8 (8.4%) did not. Given that we already know (from p. 8 above) that 41 teachers were on main scale, the large number in excess of this is a measure of how far the policy of allocating responsibility without an Incentive Allowance has progressed, at least amongst the teachers in this study.

The cross-tabulations enabled us to see that it was only in the larger schools that there were teachers who had no coordination responsibilities. This seems to mean that small schools cannot afford to have teachers without responsibilities, since to do so would adversely affect their ability to deliver the curriculum, a problem perceived already as especially great for small schools. Secondly, those coordinating an area had more time working with a colleague than those not doing so. Both these findings are statistically significant (at $p<.05$ and $p<.01$ levels respectively), though there are relatively small numbers involved in the category of "not coordinating". A further finding of interest concerns the fact that fewer of those teachers who do not coordinate an area, saw lack of time as the main problem in implementing the national curriculum.

Taken together all three findings provide some internal evidence of the representativeness of our findings, since they seem to relate to the "real world" of contemporary teaching. Small schools find it harder to function effectively in respect of the national curriculum, coordinators will have a greater share of whatever time is available in school for working alongside colleagues, and if you are a coordinator, lack of time will be a greater problem within school than if you have no coordination responsibilities.

The number of coordination responsibilities held by individual teachers is given in the following table overleaf. (This table understates the picture to some extent, since teachers were given a list of subjects or areas followed by a space for 'other areas'. There were 14 teachers who made entries in this space, but whatever this number of entries, it has been counted as one entry only).

Coordination responsibilities held

number	n. teachers	%
none	8	8.4
1	45	47.4
2	30	31.6
3	10	10.5
4	2	2.1
Total	95	100

The aspects of the work of the school for which responsibility was exercised varied considerably, as the following table shows.

English	29
Maths	17
Music	14
Science	11
Technology	10
Home-school	10
Special Needs	9
Art	6
History	6
Geography	5
P.E.	4
Topic	2
Other	14
	137

It should be borne in mind that the figures simply show which areas the teachers in our study coordinated: they do not show which areas were coordinated in the schools from which they came. Nevertheless, the pattern it portrays is not unexpected, with most coordination devoted to the core subjects and Music, (historically a common responsibility in primary schools) and to Special Needs and Home-School Links, both of special concern at Key Stage 1.

Teachers' perceptions of time (Tables 13-15)

The teachers were asked three questions about their opinions of the time available to them in school. The first was a forced choice about what they saw as "the most serious obstacle for you in implementing the national curriculum and assessment". The table below gives the figures.

Most serious obstacle to implementation of the national curriculum

Obstacle	n. teachers	%
Lack of time	69	72.6
Large classes	16	16.8
Poor Resources etc.	7	7.4
Lack of Information	2	2.1
Poor Pay	1	1.1
Poorly maintained buildings	0	0.0
Total	95	100

A considerable number of important and interesting findings emerged from this table, and the issues associated with these findings are discussed below. For the present we should note that lack of time is seen to be the most serious problem by the overwhelming majority of teachers, even by comparison with class size (but see the discussion on p.16 where an important qualification is identified in this respect).

The second question asked the teachers for which purpose they would use hypothetical extra teacher time, equivalent to one morning a week, to help in the implementation of the national curriculum. This was again a forced choice. The table below gives the figures:

Priority use for extra teacher time

	n. teachers	%
To teach smaller groups intensively	46	48.4
To help with assessment/recording in class	37	38.9
To work alongside colleagues	8	8.4
For non-contact time for preparation	4	4.2
Total	95	100

The hypothetical amount of a session is roughly equivalent to 10% increase in teacher time, the amount regarded by the House of Commons Select Committee, and confirmed by Sir Keith Joseph, as needed for adequate staffing levels in primary schools if improvement in quality were to be delivered.

Perhaps the most surprising result is the figure for non-contact time, with only 4% of the teachers seeing this as the main use to which they would put such an amount of teacher time. For non-contact time in primary schools is a basic claim being made by teachers' associations. Yet the overwhelming majority of the teachers, 87.4%, would use it to improve their effectiveness in their classrooms, either for assessment or for small group teaching.

We regard these two sets of findings as quite striking. They are both tied in explicitly to time demands arising from the national curriculum, and are answers from teachers engaged in its implementation for the first time. Taken together they present a clear picture of the teachers' priorities. First the lack of time itself is the major obstacle, much more so than large class size, the traditionally defined problem for teachers' effectiveness in primary schools. Second, if more time were available, teachers would use it for more effective working within their classroom, not outside them, and particularly not for non-contact. That members of a teachers' association placed higher priority on time for working more effectively, than upon reductions in class size or increases in non-contact time may seem surprising, but we read it as evidence about the strength of teachers' feelings about the time constraints, within the school day, that they are operating under as the national curriculum comes in. The evidence is perhaps the more striking as it has come from teachers with very little non-contact time overall (on average 22 minutes per week) and classes that are not already small (over 64% have 25 or more children in them) for the

infant phase. The policy implications of these findings are discussed further below (pp. 30-31).

Non-directed time: the conscientiousness factor?

Thirdly we asked teachers to say how many hours they thought it was reasonable for them to be expected to spend in non-directed time. This was intended to help us compare the time actually spent by them with what they regarded as reasonable for them to spend. But there was a further purpose. We suspected that there might be a polarity developing in the teaching profession between those who were attempting to meet all the expectations being laid upon them by current changes, and those who, either as a coping strategy, or through low morale, or for other reasons, perceived their non-directed time obligations in a more limited way. The basis for this suspicion was anecdotal but commonplace, and tended to be expressed along the lines such as: "It is the really conscientious teachers that are under greatest strain". We thought this polarity might show up especially in the ways that teachers defined for themselves expectations of non-directed time.

The figures for the teachers in this study do suggest a considerable range of expectations, as the following table shows:

Reasonable time expectations for non-directed time

Amount (hrs per week)	n. teachers	%
none	0	0.0
1 - 5	21	22.8
6 - 10	46	50.0
11 - 15	14	15.2
16 - 20	10	10.9
21+	1	1.1
Total	92	100

The relationship of the figures in this table to other variables is discussed later (p. 35-37), but the point worth drawing out at this stage is the apparent lack of general agreement about what is a reasonable expectation for un-directed time. The spread is quite wide, although 72% thought it should be between 1 and 10 hours. Taking the mid-point of hours in each category as the mean, the overall mean expectation is about 9 hours.

We might expect a wide spread of hours given the different salary status, and therefore extra responsibilities, held by different teachers but the cross-tabulation analysis showed only a small positive correlation, not statistically significant, between salary status and expectations for non-directed time. There was a positive correlation, statistically significant ($p<.05$) between the size of class and the expectations for non-directed time. Those with larger classes saw it as reasonable for them to be expected to work longer outside directed hours. Neither age nor experience of teaching infants was statistically significantly correlated with expectations for non-directed time, nor, with the one exception identified above, was any other variable.

The fact that the only statistically significant relationship with "reasonable expectations" for non-directed time is a non-contractual one (class size), suggests that the teachers were setting limits to non-directed time on some basis of a

personal kind (conscientiousness?) rather than a *positional* kind, such as status, or coordination responsibilities. We examine this issue later (p. 23).

Typicality of the two weeks sampled in the study (Tables 16-17)

Teachers were asked two questions about how typical they regarded the two weeks in which they had recorded the time spent on work, by comparison with the rest of the spring term 1990. They were asked about time spent on work overall, and time spent on Inservice off school premises (i.e. Column B only so as to exclude staff meetings at school).

The details are given in Tables 16 and 17 in Appendix 5. As far as time spent on work overall is concerned 97% said either that it was similar or that they would spend considerably more time in other weeks of the term. The majority (83% of those who replied) said that they would spend a similar amount of time in other weeks. As the teachers saw it, this fortnight of recorded time was not overstating the time they would have spent on work throughout the spring term, and for some it was understating it.

As for time spent on Inset off the school premises, the picture was more varied, as might be expected. While 56.8% of the teachers said it would be similar to the rest of the term, 28.4% said they would have spent considerably more time in other weeks. 7.4% said they would have spent considerably less time on Inset in the rest of the term.

Thus overwhelmingly, whether for time spent overall, or for time spent on Inservice training off school premises, the teachers perceived their record of time for these two weeks as representing similar amounts of time to, or smaller amounts of time than, what they would have spent in other weeks of the Spring term 1990.

There is internal evidence that supports this view. When we analysed the amount of time teachers spent on Inset and compared it with their responses on Table 17, a statistically significant relationship emerged ($p<.01$). Those who said that in these two weeks they spent more time, or a similar amount of time, on Inset, compared to the rest of the term, were actually spending more time on it than the other teachers.

4 SOME ISSUES ARISING FROM THE TIME SURVEY QUESTIONNAIRE

A number of interesting issues arose from cross-tabulating variables identified on the questionnaire data. We have selected the following since they also relate to evidence from the Record of Teacher Time, which is discussed in the next section, and they signal policy implications, discussed in the final section of this study.

1. Perceived problems in implementing the national curriculum: the 25 pupil threshold

More than 7 out of 10 teachers saw 'Lack of Time' as the major obstacle to their implementing the national curriculum. Since Key Stage 1 teachers are in the van of implementation, it is a general message that is important on its own.

However, within this general picture there is an interesting variation. When we cross-tabulated class size with perceived problems in implementing the national curriculum, a more complex picture emerged. This showed that with classes below 25 in size, lack of time is the dominant concern. But as class size increases, large class size is more often seen as a problem. The relationship, statistically significant at ($p<.05$), is interesting on two counts. First, it suggests that we have tapped into a 'real world' view, since teachers with larger classes cite them as a problem whereas teachers with smaller classes do not. Secondly, it suggests that although lack of time is perceived as the main problem by the sample overall, (including all four teachers with classes of over 35 pupils), perceived large class size, *after the 25 pupil-level is reached*, becomes identified as a problem also for the teachers.

From the point of view of policy on curriculum-led, or activity-led, staffing, this finding is of considerable interest. It suggests that there is a limit on the extent to which headteachers and governing bodies can increase class size in order to create more time for teachers within the school day. The threshold at Key Stage 1 for our teachers is about 25 pupils, after crossing which you might solve one problem to some extent (the perceived lack of time), by creating another (perceived large classes).

2. School type and school size

The schools were identified by the teachers as falling into five types, viz Infant, First, JMI, Combined 5-12 and other. We had expected that broadly speaking, Infant and First schools would be smaller than JMI and Combined 5-12, and that any findings relating to school type would also be reflecting size, not type. However, when we cross-tabulated size and type of school there was no statistical relationship between them.

The sample included an infant school, two JMI and a 5-12 school each with less than 100 pupils in it. At the other end, six Infant schools, 14 First schools, 14 JMI schools and 4 5-12 schools had more than 250 pupils in them. Thus the findings associated with school type cannot be explained directly by size of school.

a. School type and class composition

There are more single age classes in the Infant schools than in the other types of school, with more 2+ and 3+ age groups in single classes in the First and JMI schools particularly. This difference approaches statistical significance.

Furthermore the Infant school teachers have no classes with 3 or more age groups in them, even though this is technically possible.

b. Non-contact time and school type

One of the most interesting findings about school type, is highly statistically significant, ($p<.01$). Relatively few teachers overall have more than 30 minutes a week non-contact time allocated to them, but more teachers in Key Stage 1 who work in Infant schools get non-contact time, and more of it, than teachers working in other school types.

One possible explanation for this finding is that in the other school types, and especially in JMI and 5-12 schools, what non-contact time there is, is allocated to teachers of older children. In Infant schools, non-contact time can not 'drift upwards' in this way. It can not be explained by differential numbers of teachers on Incentive Allowances, for example, since there is no statistical relationship between salary status and school type. And there is no statistical relationship between salary status and non-contact time allocated.

3. Salary status

The position of a teacher in respect of salary status is interesting. By salary status we mean whether a teacher is on Main Scale, has an Incentive Allowance (A, B or C) or is deputy head. We do not mean whether they are on a higher salary level within one of these statuses.

Salary status was not correlated with school type, but was to some extent related to age. Those in the 31-40 or 41-50 age groups were more likely to be in positions other than main scale, than were their younger and older colleagues.

There was no relationship between salary status and non-contact time, or time spent working alongside another colleague. That is to say teachers above main scale were not deployed in order to help them deliver or develop the curriculum by working alongside colleagues, or by curriculum planning, any more than were main scale teachers.

Salary status was not related to the "conscientiousness factor", viz to the answer to the item about reasonable expectations for non-directed time. This is important from the point of view advanced later in this report, that teachers' time commitment is related to personal factors (eg. conscientiousness) rather than positional ones, such as pay differentials.

5 FINDINGS FROM THE RECORD OF TEACHER TIME

94 teachers returned completed Records of Teacher Time and 1 returned the forms indicating that she had been ill for the period in question. We have ignored this last return, so that the analysis is based upon the 94 returns.

A TIME SPENT ON WORK

TIME SPENT WORKING OVERALL

Appendix 6 provides a summary table of the average (mean) time per day spent on work over the 14 days by the teachers. The entries in this appendix are presented in hours and minutes, and in order to calculate a weekly mean, need to be multiplied by 7.

The first point is that the range of time spent overall is considerable, with the lowest (5 hours 31 minutes) equivalent to a working week of 38 hours 27 minutes. The highest (10 hours 24 minutes) is equivalent to nearly 73 hours a week. The average was 49 hours 35 minutes.

The second point is that although the range is considerable, a fairly clear pattern of unusually long hours working is shown. Fifty teachers, over half, are working more than 50 hours a week, while 20 are working more than 56 hours a week, and 10 are working more than 60 hours.

Third, Appendix 6 overstates somewhat the amount of time spent working, because it includes time recorded as breaks and lunchtimes, which in theory are times when teachers are free of work. However, these teachers had, on average, only 40 minutes a day in breaks or lunchtimes free of work. Appendix 7 provides a calculation in which the figures, excluding all breaks free of work, are extrapolated to show annual hours. These show the teachers working for 1785.6 hours per year, some 520 more than directed hours. 520 hours amounts to 13.7 hours per week being spent in non-directed time, when breaks free of work are excluded.

Fourth, Appendix 6 shows mean hours per day for the 14 day period. Because most of the work has to be done within a 10-day period, the actual working weekday of the teachers has to be longer than the means shown here. The mean hours have been re-calculated for the equivalent of 10 working weekdays, excluding breaks and lunchtimes. On this basis, the "equivalent working weekday" of the sample as a whole is 9 hours 54 minutes per day, with three teachers working the equivalent of 14 hours per weekday. These figures overstate to some extent the teachers' working weekday in practice, because some of the time is actually spent at weekends, but the "equivalent working weekday" captures something of the intensity of the working week of infant teachers.

It might be helpful to illustrate the position, and to show the form of analysis, with a concrete example from a teacher, Teacher 43. She is fairly near to the middle of the time range when it is ranked according to the amount of time spent working, being 39th from the top in the table in Appendix 6.

One Day in the Life of Teacher 43

Figure 1 below shows a working schoolday of Teacher 43. Her biographical details and working conditions are as follows.

Age: Under 30
Experience of teaching infants: 4 years
Salary status: Main scale
Class size: 24
Class composition: single age
Non-contact time: between 1 and 30 minutes per week
Responsibilities: English, Technology

Figure 1

UNIVERSITY OF WARWICK - DEPARTMENT OF EDUCATION

043

POLICY ANALYSIS UNIT

Record of Teacher Time (ROTT)

	COLUMN A	COLUMN B
0700		
0715		
0730		
0745		
0800	PR	
0815		
0830	OA	
0845	PR	
0900		
0915	TM	
0930	TE	
0945	TS	
1000	TA/PM	
1015	AW	
1030		
1045	AB/IS	
1100	TM	
1115	TE TS	
1130	TA/PM	
1145	TO	
1200		
1215	AB	
1230		

	COLUMN A	COLUMN B
1230		
1245	AB	
1300	PR	
1315	TE TA	
1330	TE TM	
1345	TO TA/PM	
1400	TE	
1415	TE TM TO	
1430	TA/PM	
1445	TE	
1500		
1515	AS	
1530		
1545		
1600		
1615	IS	
1630		
1645		
1700		
1715		IT
1730		
1745		IN
1800		

	COLUMN A	COLUMN B
1800		IN
1815		
1830		IT
1845		
1900		
1915		
1930		
1945		
2000		
2015		OA
2030		
2045		
2100		
2115		
2130		
2145		
2200		
2215		
2230		
2245		
2300		
2315		
2330		
2345		
0000		

DATE TO WHICH THIS SHEET REFERS Monday 25th Feb

Commentary

The working day started at 7.30 am when she was in school preparing (PR) for the day's teaching until about ten to nine, though she was probably interrupted for ten minutes (OA) by a colleague. She saw the children into the classroom and registered them (///), and then taught them until 10.00am. She appears to use an integrated approach since mathematics (TM), English (TE) and science (TS) were being learned simultaneously. She took time to do some assessment (TA) and marking (PM) of children's work whilst teaching. Then she moved her class (///) to the hall for assembly and the act of worship (AW), which lasted about 27 minutes. Then she took them back and supervised them into the playground (///), which took about 6 minutes. At break (AB) she was engaged in some discussion with a colleague about work (IS). After break she taught and assessed in the core subjects again, until 11.30. From 11.30 until about 11.55 she taught something other (TO) than the core (Music perhaps), and then saw the children out of the class to their parents or to the playground or hall. Her lunch break (AB) lasted about 57 minutes and then she did some further preparation (PR) for a few minutes before supervising the children into the classroom (///). At the end of the afternoon's teaching, she had a staff meeting (IS) until nearly 5 o'clock. Then she travelled (IT) to an In-service course (IN), which finished at ten past six. She travelled home, and did no other work except for half an hour of "other activities", whose nature is unspecified.

Her working day, which amounted to just under 10 hours and 45 minutes, (excluding lunch and that part of the evening period when she did no work), started at 7.30am and finished at 8.30pm.

Three points need to be made about her day. First, the proportion of time on Inset was untypically high on this day, since she had a staff meeting and attended an Inset course of some kind. This reduces the proportion of time, though not the actual time, she spends on teaching. Second, there are five time periods when she was engaged in different activities simultaneously, for example AB/IS and TE/PM. Third, there are 63 minutes on Administration, which includes assembly and registration. If these two are omitted, there remain 21 minutes of time recorded as ///, and AS, largely moving children from one place to another, seeing them out into the playground etc. This kind of activity, which is important for the development of children's personal and social skills, has been referred to as "evaporated" time, because it tends not to be noticed in considerations of the teachers' time. 21 minutes might not seem like very much time, but if repeated over the week it comes to an hour and three quarters.

To place the one day in the context of her overall two weeks' time, we need to look at her working fortnight. It was as follows, (hours rounded to the nearest 15 minutes and expressed as decimals):

	WEEK 1 Hours	WEEK 2 Hours
Monday	10.75	10.25
Tuesday	8.00	9.50
Wednesday	7.50	8.25
Thursday	9.50	9.00
Friday	8.25	8.50
Saturday	0.50	0.50
Sunday	1.75	2.75
TOTAL	46.25	48.75

Monday was her busiest day in both weeks, and excluding breaks and lunches (4.25 hours per week in her case) she worked about 47.5 hours per week over the two week period. If we calculate it over ten days instead of the fourteen, (ie, if we allow her weekends free of work, for purposes of analysis), she worked on average the equivalent of between a nine and a nine and a half hour day during weekdays. On her questionnaire responses, she described these hours as "rather similar" to the other weeks of the term. Teacher 43 does not by any means work the longest hours of those in the sample, as can be seen in Appendix 6.

Time distribution

Teacher 43 was teaching, excluding registration, breaks, lunchtimes and assemblies, for just under 20 hours a week, and spending over 27 hours on other aspects of her work. She spends more time on work away from children (58%), than with them (42%).

Inspection of the detail of her record shows that she spends approximately 8 hours per week on Preparation, and 6 hours 15 minutes on In-service. These hours are from her "own" time, since they exclude weekly staff meetings (approx 1 hour 45 minutes per week), preparation/marking in teaching time, and parents' meetings, mounting displays and other matters that might be considered directed time. They include preparation and in-service in breaks and lunchtimes. On her questionnaire she said she considered it "reasonable" to be expected to work between 6 and 10 hours a week in non-directed time.

Teacher 43, with four years' teaching experience was responsible for coordinating the work in English and Technology through the school. She was formally allocated half an hour a week for these responsibilities together.

B TIME DISTRIBUTION

Table 5a shows the mean time spent by the 94 teachers on the five major activities into which the teachers' work was broken down, and expressed in minutes per day.

The table shows the mean time, calculated over 14 days and calculated over 10 days, in order to illustrate the mean minutes equivalence in a ten-day working period as well as the actual average for the 14 days.

Table 5a: Mean time per day on five different work activities*

	(a) mins	(b) mins
TEACHING	149	208
PREPARATION	132	185
ADMINISTRATION	124	174
IN-SERVICE	77	108
OTHER	26	36

Col (a) = mean calculated for 14 days.
Col (b) = mean calculated for 10 days.

* The totals of these columns are not calculated here, and would exceed the total time worked, shown on Page 18, since teachers often performed more than one activity at the same time.

The proportion of teaching to non-teaching work

If we set the time spent teaching (including registration and supervision, but excluding breaks and assembly) against other time, the proportion of teaching to non-teaching activities is 43.9% teaching to 56.1% non-teaching. This compares with Hilsum and Cane's study where the proportion was 58% teaching to 42% non-teaching. On average, the teachers in this sample were spending the equivalent of 2 hours 12 minutes a day on Preparation and 1 hour 17 minutes on In-Service (both calculated on 14 days).

C TIME WITHIN TEACHING

The time spent within teaching on each of the core subjects and on other subjects per weekday is shown by the following table (Table 5b). This must be interpreted carefully since it does not represent a precise count of how much time is spent on each subject with a proportion to be allocated to each subject within a fixed 100 percent ceiling. Instead teachers were asked to indicate whether, in any given time space, some teaching of a given subject was occurring. The advantage of this approach was that teachers who taught in an integrated way, or those who organised their classes so as to have some children working on number, others on science and so on, would be able to indicate it. The disadvantage was that it did not provide a precise measurement of the time spent on any one subject. This is because in one session the amount of time spent on English and Mathematics would not necessarily be equal, even though each subject had an entry on the record in one time space. Although this is not a clear cut measure, it was intended to represent more appropriately the curriculum practice in most infant classes.

Table 5b

ACTIVITY	mean time (minutes per weekday)
TEACHING ENGLISH	144.3
TEACHING MATHEMATICS	92.3
TEACHING SCIENCE	58.7
TEACHING OTHER SUBJECTS	106.2
ASSESSING WHILE TEACHING	49.2

Three points emerge here. First, as the 1989 DES report on The Implementation of the National Curriculum showed, the amount of time within which English, Mathematics and Science are being taught is considerable. The emphasis on the core subjects is a dominant one. Second, the amount of time for the six other foundation subjects and RE seems inadequate. The stress on the core curriculum raises questions about the possibility of delivering a broad and balanced whole curriculum. Third, we can see that teachers were making an attempt to implement TGAT-style Teacher Assessment (TA) whilst teaching. The data show considerable variation here, with one teacher carrying out assessment 31 times in the two week period, while a few were doing it not at all. On average, TA occurred 8.7 times for each teacher in the two week period, some evidence of its regularity. We cannot say from the data what form this took, of course, but the mean length of individual occurrences of TA was 52 minutes, so that a reasonable inference is that TA was being integrated into teaching, not being bolted-on in short bursts. Almost all TA occurred during the teaching of the core subjects of Mathematics, English and Science.

Teaching time and other variables

There was no significant statistical relationship between overall teaching time and any of th major positional variables on the questionnaire, for example salary status, age, coordination responsibility, or school size. We find this comforting, since in theory there ought not to be much variation in time spent overall on teaching amongst a group all of whom are class teachers in Key Stage 1. What is true for Teaching overall, is true for the sub-categories of subjects taught also.

Moreover, there is not even a relationship between the amounts of non-contact time that teachers were allocated per week and time spent teaching, presumably because the amounts of non-contact time per week are very small relatively, and do not show up on the overall analysis, and because they do not appear to be related to the positional variables generally.

There is a small tendency, just statistically significant at ($p<.05$) for teachers in Infant schools to teach for slightly less time (about 10 minutes a day) overall than those in other types of school. This may be an indicator that the length of school day, which is shorter for Infant children, is affected by whether or not there are children older than Infants in the school, as is the case in JMI, 5-12 and First schools.

D PREPARATION

Under the broad category of Preparation, we had three sub-categories. These were:

Preparing and planning for children's learning, writing lesson plans, forecasts, schemes of work, organising the classroom and resources in it, briefing classroom assistants, parent helpers, etc. (PR)

Marking children's work, writing comments on it, recording results (PM)

Organising or collecting resources, organising visits/trips (PO)

The relative amounts of time recorded under each sub-category were as follows, expressed as a daily mean in minutes over 14 days.

Mean time on Preparation (per day)

Activity	Mean time (minutes)
Preparation (PR)	97.7
Marking (PM)	44.8
Organising resources (PO)	24.7
Overall mean	132.1

We have also re-calculated the figures in order to give a breakdown of all Preparation according to whether it was actually carried out at weekends or during the week. This shows that the teachers typically spent 82 minutes per day at the weekends and 152 minutes per day during the week on all kinds of Preparation (i.e. PR, PM, and PO).

Findings related to Preparation

Conscientiousness and Preparation

The first, and most important finding in our view, is the highly significant correlations between two of three sub-categories of Preparation and what we have called the "conscientiousness" factor, the item on the questionnaire showing how much time the teachers thought it was reasonable for them to be expected to work in "non-directed time", that is, in their 'own' time. The figures are:

PR	p<.01	differences between groups
	p<.01	linear trend
PM	p<.01	differences between groups
	p<.01	linear trend

Overall for PREPARATION, the differences between groups are significant (p<.05) and the more "conscientious" teachers actually do more preparation (linear trend p<.01).

Furthermore, if we look at the overall time spent on all Preparation at the weekends only, the same differences appear (between groups, p<.01; linear trend, p<.001).

Put simply this means that there is a very significant positive statistical association between the length of time teachers think it is reasonable for them to be expected to work in non-directed time ("conscientiousness") and the actual time they spent on Preparation overall in their own time. While we cannot attribute a causal connection to this statistical relationship, our interpretation is that teachers who do more preparation do so because they believe it is expected of them, because of their "conscientiousness". This interpretation is strengthened by the fact that the differences are statistically significant in the two sub-categories (PR, PM) that are mainly done in teachers' own time, while activities called PO are mostly carried out in school premises.

We should add to this finding, three others, which relate to our "conscientiousness" thesis. There were no statistically significant differences in the amount of time spent on Preparation (overall or in sub-categories, during the week or at weekends) either by teachers on different salary statuses, or by teachers with permanent or temporary Incentive Allowances, or by whether or not teachers were responsible for coordinating a curriculum area. That is to say, *positional* influences on the amount of preparation a teacher does were minimal or absent: *personal* influences were very great and all in the same direction.

Age, experience and Preparation

Older teachers spent significantly less time on Preparation overall, and during weekdays, than did younger teachers; and the 6 teachers with three years or less experience of teaching infants spent more time on preparation overall than other teachers.

Mixed age groups and Preparation

Teachers with classes composed of 2 age groups spend longer on Preparation/Planning (PR) and on Organising Resources (PO) than other teachers.

These two latter findings might be expected, although the findings for mixed age groups are not linear, the relatively few teachers with more than 2 age groups spending less time than those with only two age groups.

E ADMINISTRATION

The broad category of Administration included a range of activities which contribute to the smooth running of the school and its curriculum. There were seven sub-categories, viz.,
Discussion and consultation with parents (AP)
Mounting display (AD)
Superivising children before and after sessions (AS)
Liaison meetings/activities (AL)
Attending/participating in assembly/act of worship (AW)
Lunch, coffee/tea-break (AB)
Registration, collecting dinner money, moving children from one place to another, tidying up etc. (AR, though recorded as ///)

On all these activities combined the teachers spent on average 174 minutes (working weekday equivalent) or 124 minutes (over 14 days) per day. The distribution of this time across the various sub-categories of activity is given below.

Mean time on Administration (working weekday equivalent)

Activity	Mean time (minutes)
AP	12.6
AD	27.0
AS	20.5
AL	10.7
AW	14.8
AB	55.0
AR	40.6

A number of points of interest arise from this table.

First, 55 minutes per day for AB is well below the time expected as reasonable breaks for lunch and in the morning or afternoon combined. At the very least we would expect an hour and a quarter per day. And the 55 minutes is the time given over to breaks whether or not teachers are engaged in work during the break. The figure for breaks free of work is 40 minutes.

Second, the figure for AR, which includes registration, and moving children around the school (eg from class to assembly, into class from lunch time break and tidying up), is a substantial part of the teacher's working day. This time has been referred to as "evaporated" time in that, apart from registration time, it tends to be lost in any accounting of the teacher's day. Yet for these teachers it amounted to some 3 hours and 20 minutes per week. If we add to it, the time spent on AS, (viz., supervising children before school, during breaks and after school as their parents collect them) at 20 minutes per day, these two cognate aspects of teachers' time, most of it not formally accounted for, amount to just over 5 hours per week.

This may seem like a lot of time, but in addition to registration and dinner money collection, there is a great deal of time in Key Stage 1 given over to moving children around the school, helping them on and off with coats, supervising them and looking after their personal needs. Much significant personal, social and emotional development is influenced by time spent in this way, especially with children at Key Stage 1. We think that the amount of time involved and its purposes or consequences for teachers as well as for children might receive more recognition than currently is the case, where contractually only the registration and supervision element is acknowledged.

Findings related to Administration

The broad category of Administration includes a range of sub-categories which are not, as activities in teachers' work, cognate, in the same sense that the sub-categories of Teaching, Preparation or Inservice are. Participating in assembly (AW), for example, is different in kind to mounting a display (AD), or taking part in liaison meetings (AL). It is therefore not surprising perhaps that we found no relationship between overall Administration and other major variables on the questionnaire. There were however some interesting relationships between the sub-categories and such variables. They are presented and discussed below, and have been selected for reporting if there is a statistically significant association between them, or if the absence of such an association is of interest.

Salary Status, Permanent and Temporary Allowances, and Coordination responsibilities

The above three positional variables are not associated with any differences in time spent on any of the sub-categories, with one interesting exception. This may be expressed as, "Coordinators worship less", and probably means that we have tapped into the practice, increasingly widespread according to professional anecdote, that those charged with responsibility for coordination tasks, but having no time allocated for them within the school day, snatch time from assembly and the act of worship, in order carry out such tasks. An alternative interpretation is that non-coordinators spend longer in assembly because they are praying to remain free of coordination tasks, but we are not convinced by this.

Class composition

Teachers with 2 or more age groups in their class had significantly more time on supervision (AS) and less time on breaks (AB), as well as more time on registration, moving children about and tidying up (AR). All of this makes sense, and when the analysis is of breaks free of work, rather than all breaks, there is a highly significant linear trend for more Administration where the class is of mixed age composition ($p<.001$).

Time with a paid assistant

Teachers who spend more time per week than others with a paid assistant in the class, spend significantly more time on display (AD), supervision (AS) and seeing parents (AP). This is a slightly odd finding in respect of the first two of these activities, since at least one view of the role of the paid assistant is that amongst other things she could free up the teacher from relatively routine activities, such as helping children on with their coats. What may have been happening with these teachers, however, is that they have joined in on the routine activities, as well as spending more time with parents.

Conscientiousness, parents and breaks

Those teachers who saw it as reasonable for them to have more hours in non-directed time, tended to spend more time with parents (AP) and less time in breaks, (though the latter finding was not quite significant). This would follow from our conscientiousness thesis.

Breaks free of work

Teachers spent approximately 55 minutes per weekday in breaks. But when we computed the time spent on breaks in which there was no work going on, this figure was reduced to 40 minutes. It is a moot point whether this figure, which includes morning and, rarely, afternoon breaks as well as lunch times, is regarded as providing a 'break of reasonable length' in terms of the Pay and Conditions Document 1989.

More time was spent on breaks overall by teachers who had more non-contact time, but such teachers spent less time in breaks free of work. They appear to have more time on breaks, but are busier in them, than do teachers with less non-contact time. The trend is statistically significant ($p<.05$) and may be explained by teachers with non-contact time having more flexibility in their use of time. They can treat non-contact time as a break, and breaks as time to work, especially if such work involves consulting colleagues.

There was a tendency for teachers in Infant and First schools to have more time in breaks free of work, but this was not significant. But the main finding significant has already been reported, viz., that teachers with mixed age groups had significantly fewer breaks free of work than their colleagues with single age groups.

F IN-SERVICE TRAINING

There were four sub-categories under this heading, which were as follows:

Organised courses, conference and training days (IN)
Travel to organised courses, conference etc. (IT)
Staff meetings, informal consultation with colleagues, advisers, advisory teachers (IS)
Reading of professional magazines, journals, national curriculum documentation and other sources of information (IR)

The mean time per day over 14 days spent on all Inservice activities was 77 minutes, equivalent to almost 9 hours per week. It is perhaps worth noting that 9 hours is more than half the time that the teachers spent teaching pupils.

For each of the sub-categories the mean time in minutes per day over 14 days is given below:

Mean time on Inservice Training (per day)

Activity	Mean time (minutes)
IN	19.4
IT	5.5
IS	32.0
IR	22.7
Overall mean	77

Findings related to Inservice Training

Salary status and Inservice training

The main and consistent finding is that for all but the IR code of the sub-categories of Inservice, and for the overall category, the higher the position on the salary status, the more time is spent. This is particularly clear when the figures are analysed in 3 groups, viz Main Scale, Incentive Allowance (A,B,C) and Deputy Head. These show that the higher the salary status, the more time is spent on organised courses, and training days (IN), (linear trend, $p<.01$); on travel to courses (IT), (linear trend $p<.05$); on staff meetings, meetings with advisers, informal consultations etc. (IS), (linear trend $p<.01$). The overall trend for all time spent on Inservice is significant ($p<.01$).

No other statistically significant findings emerged.

G OTHER ACTIVITIES

This broad category was a catch-all term for any work or work-related activity not included in the broad categories of Teaching, Preparation, Administration and Inservice. On the instructions to teachers for completing the Record of Teacher Time we had said, "Activities that you cannot easily allocate to one of the other codes, e.g. filling in this record, dealing with lengthy interruptions, and other things". They were not asked to identify what the other activities were. Overall, teachers spent 26 minutes a day on time in this category. Since it was likely to contain a haphazard and unrelated set of activities, we did not expect it to be related to any of the variables on the questionnaire and in this expectation we were correct.

Some teachers included brief descriptions in the time spent space however, where this space was big enough to do so. Among those things mentioned in OA category were "Teachers' Rep. at Governors' Meeting", "Writing a Curriculum Policy", "School Concert", "Moving out of Classroom for Painting and Decoration", and "Attendance at Union Meeting (AMMA rep)".

6. DISCUSSION: SOME POSSIBLE IMPLICATIONS FOR EDUCATION POLICY

This pilot study was designed to examine the use of teacher time in Key Stage 1 in relation to education policy, and particularly those aspects of policy that have been reinforced by, or embodied in, the provisions of the 1988 Education Reform Act. In introducing our conclusions we would want to express two general cautions.

First, it was a pilot study, working with untried instruments, a specially written program, and a group of teachers whose involvement had not followed from conventional sampling procedures. We have tested our data as far as we can in order to take account of these factors (see Appendices 3, 4, and 9), but we must stress that our findings are preliminary. They need to be tested through further research, in which conventional sampling, together with complementary evidence of a qualitative kind, might build upon the baseline data in this study.

Second, the interpretation of the time teachers spend on work is difficult. This is for two reasons. Spending a long time on work does not inevitably or necessarily imply moral or professional superiority. It could equally be read as a measure of inefficiency. If one teacher can do her job by spending 35 hours a week on work, why should it take another one 70 hours? In addition, we have absolutely no evidence from this, a quantitative study, about the quality of teachers' work in relation to the amount of time spent on it. Thus the policy issues we have identified in the research findings are much more like an agenda for further examination, than a set of finalised conclusions.

We think our study has put 12 such items onto the agenda. They are grouped as follows:

Conditions of Work and Activity-led staffing	(1 - 3)
The delivery of the national curriculum	(4 - 5)
The use of teachers' time	(6 -10)
Conceptualising teacher time at work	(11-12)

1. In-school time, and activity-led staffing

We have shown that the 95 teachers had on average 22 minutes per week free of teaching, despite having responsibilities that included coordinating various aspects of the schools' work, and holding incentive allowances and deputy headships. Only 8 teachers had responsibilities limited to class teaching only. For the exercise of aspects of these responsibilities, some time within the school day, free of direct contact with pupils is recognised as being necessary. And yet 70% of our teachers had the equivalent on average of 1 minute a day non-contact time. Furthermore, incentive allowance holders and deputy heads, who presumably have more substantial in-school responsibilities than main scale teachers, did not have more non-contact time than them. Although some teachers had time working alongside another colleague, the majority, 66% did not.

In our interim report we drew attention to this mismatch between the policy, adumbrated in the White Paper Better Schools, and made explicit in the House of Commons ESAC 3rd Report Achievement in Primary Schools, for improvements in staffing to create time for such work, and the practice in the schools, where generally speaking the staffing levels have not enabled it to happen. If it is true that the arguments for activity-led staffing in primary

schools have been accepted as the basis for policy, in practice the necessary time is not being delivered in schools, according to our evidence.

2. Class size, curriculum coordination, and activity-led staffing

Part of the proposals for activity-led staffing implies that increased class sizes for registration groups might need to be tolerated or welcomed, in order to free teacher time for coordination tasks, curriculum development, parental consultations and other essential activities that need to be carried out by schools in addition to class teaching. This is logical, but has the problem about where the limits on class size might be set in any staffing formula. Our evidence may contribute to the debate on this matter, insofar as we believe we have identified a threshold of class size in teachers' perceptions. Our evidence shows that the main perceived obstacle to implementing the national curriculum and assessment is lack of time. But, and this relationship is significant statistically ($p<.05$), as actual class size increases, so class size becomes more frequently perceived as the major problem to implementing the national curriculum. Where this starts to happen - the threshold - is when the class contains more than 25 pupils. When the analysis is carried out for classes grouped into 2 size categories only, over 25 and under 25, the statistical significance is increased ($p<.001$).

It might be argued that teachers' perceptions of what constitutes a class large enough to create problems in implementing the national curriculum are not the only factors to be taken into account in staffing schools. Some teaching time will have to be bought, within limits, by increasing class size if activity-led staffing policies are to be implemented. And the dominant problem in teachers' perceptions is lack of time within the school day, as we have shown (pp. 12-13). But as we argued on Page 16, if actual class size is increased beyond the level at which teachers begin to see class size as the main obstacle, the problem of teacher time is solved by creating another one, large class size, in teachers' perceptions. This would not mean neccessarily accepting the teachers' perceptions as the determinant of class size in formulae, but it would imply that teachers will have to be helped to see the advantages that activity-led staffing policies might have for the quality of their work.

3. Class composition: the position of teachers with mixed age groups

We do not know whether teachers with mixed age groups are working with such a class composition for reasons of school policy, or because there are not enough children of a single age group to form a class. However our evidence is that teachers with mixed age groups had a different profile of time spent on work from those with single age groups. First, mixed age groups spent significantly ($p<.01$) more time on aspects of Administration, mainly supervising children, and registration and moving them round the school. They also had more time seeing parents, and had less time in breaks free of work.

Furthermore, teachers of mixed age groups spent significantly ($p<.01$) more time on Preparation overall, mainly preparation and planning, and organising resources and materials, than other teachers, especially during the week. They also have more time doing two different activities simultaneously.

What this picture suggests is that the patterning of the workloads of teachers with mixed age groups is different from others. Their working weekdays are probably busier than other teachers, they deal with more routine administration and they have to spend more time on preparation. They seem to us to be the

teachers under greatest pressure within the school day in Key Stage 1. Large class size, for example, despite being perceived as a problem in the way discussed above, is not associated with more administration or preparation. Indeed, mixed age classes were relatively small.

4. The broad and balanced curriculum

We have shown that the concentration upon the core subjects of mathematics, science and English is considerable. This is perhaps predictable given the phasing in of statutory orders in these subjects before others. However, the national curriculum is more than the core subjects, comprising 9 (or 10 in parts of Wales) subjects, all of which are expected to be given reasonable amounts of curriculum time in order that a broad and balanced curriculum can be delivered. We do not wish here to enter the debate about the difference between the timetable and the curriculum. However, our instrument for recording time meant that teachers would record the maximum amount of time spent on subjects, not the minimum or a forced percentage. It is therefore worrying that on average each weekday, teachers were teaching the 6 non-core foundation subjects and RE (and any non-foundation subjects) for 106 minutes, the equivalent of about 15 minutes per subject per day, at the most. The worry is increased since we were able to analyse the focus of teachers' assessment while teaching (Teacher Assessment). The vast majority of assessment time, 45 out of 49 minutes, and 90% of the times it occurred, was taken up with assessment time in three core subjects. Taken together the evidence illustrates the pressure towards the delivery and assessment of the core of the curriculum in Key Stage 1, at the expense of a broad and balanced curriculum. This pressure has been intensified perhaps by the decision taken recently by the Secretary of State, to remove the non-core subjects from statutory external assessment at the end of Key Stage 1.

5. Problems in the delivery of the national curriculum and assessment

The perceptions of the teachers who are in the process of trying to deliver the national curriculum and assessment are important in their own right, and also as factors to be taken into account at DES, LEA and school levels. It looks as though our teachers are trying to deliver the core (the relative amount of time spent on Science, though lowest of the three core subjects is still impressive at nearly an hour a day) and to assess it whilst teaching. In this broad sense, our findings are similar to those of HM Inspectorate's two recent surveys on the implementation of the national curriculum.

But lack of time is seen as the major obstacle to its effective implementation. This needs elaboration. It is not as though teachers do not have a lot of time overall which they spend at work. Clearly many of them do, given the figures in Appendix 7. It is lack of time within the school day that is the problem. And this can be provided only by the acceptance of activity-led staffing and the improved staffing levels it implies. There is no doubt about how the teachers would use extra time, as our findings on Pages 12 and 13 show. Given a choice of extra teacher time within their classrooms (to teach small groups and/or assess and record) or outside their classrooms (non-contact time or working alongside colleagues) 87% would use it within their classrooms, on activities designed directly to improve the quality of teaching and assessment.

6. The use of teachers' time: overall time

There are two aspects of the use of teachers' time in Key Stage 1 that we think are a cause for concern. The first of these is the amount of time overall that the teachers spent on work.

We have shown that overall time spent was considerable (Appendix 6) and that the range across the 94 teachers was very great, with teachers at the top of the range spending over 70 hours a week, almost twice the figure for the teacher at the bottom of the range, Half the teachers were working more than 50 hours a week. There are four points to make about this situation.

First, it raises an issue about the public perceptions of teaching as an occupation, in Key Stage 1, where the job is frequently identified with short hours per day, no examination or other marking, and long holidays. The public perception depends heavily upon the 'visible' time element (p.2 above). The issue is problematic since a public relations exercise stressing the long hours worked by teachers would not necessarily contribute to alleviating the problems in teacher supply and recruitment. However there needs to be a more widespread recognition of the hours spent on work by these teachers.

Second, the hours overall are considerably above what we can infer the teachers on average regarded as reasonable for them to spend on work overall. The teachers thought that about 9 hours on average was a reasonable expectation for non-directed time. To this should be added directed time at 32 and a half hours. Anyone working substantially more than these totals combined (say 44 hours) would be working longer hours than they considered reasonable. Appendix 6 shows that all but 7 teachers were in this position. An alternative calculation, which allows for breaks free of work (3 hours 20 minutes) but uses a stricter threshold of 41 and a half hours, would show all but 10 teachers working longer hours than what was considered reasonable, on average. The annual extrapolation of these figures is in Appendix 7. Either way about 9 out of 10 teaches were working beyond what was considered reasonable hours by the teachers overall. We do not know for how long this state of affairs has existed; it may be chronic or it may be created by the implementation of the national curriculum. However, if the situation is allowed to persist in which teachers, in order to discharge their duties in school, have to work for what they perceive to be unreasonably long hours outside the school day, they are likely to grow increasingly resentful and truculent. It does not augur well either for teacher commitment in the long run, or for improvement in teacher supply.

Third, the daily means in Appendix 6 calculated over 14 days are misleading about the pattern of working time, since there is an uneveness about the teachers' working week, with most time on work being spent in the ten working weekdays, and relatively little, though not inconsiderable amounts, being spent in the two weekends. All Teaching, nearly all Administration, and much Preparation, Inservice and other Activities was done in the weekdays period. (On page 23, as an example, it can be seen that we have recalculated the mean time for Preparation over 14 days (132 minutes), to show that 152 minutes per day were spent on it during weekdays, and 82 minutes per day at weekends). The mean for the 14 days thus understates the actual time spent on work during weekdays. In order to capture something of this, we resorted to a calculation which we have called the "working weekday equivalent" which is based on the (wrong) assumption that teachers do no work at weekends, or that they are entitled to do all their work during weekdays. We have provided this calculation on Table 5a, Page 21 for each of the main categories of teachers' work. But we want to make the point very sharply, because we think it

captures something of the time pressures of the teachers' working weekdays. The working weekday equivalents of the three teachers at the top of the range in Appendix 6 are 14 hours 32 minutes, 14 hours 29 minutes, and 14 hours 11 minutes, respectively. The 10 teachers at the top of the range are all working at least a 12 hour working weekday equivalent. Although the working weekday equivalent is a statistical artefact, we think it is a useful one to illustrate the intensity of teachers' work. We were not investigating stress, but it is possible that the pressure on time within the working weekday contributes to teacher stress.

The fourth point about overall time is perhaps obvious from the other three. We think that there is something unhealthy about the amount of time more than half of our teachers were giving over to work. By unhealthy, we mean that it cannot be good for the individual teachers as persons, nor for their families, nor, perhaps most importantly, for their pupils, if teachers are working such long hours outside school that they have little time or energy for leisure, recreational and other non-work related activities. There are meanings to life beyond work, and certainly beyond the national curriculum, and innovations that depend upon the restriction of much of teachers' personal and social life, may find difficulty in retaining teachers' commitment to them over the long term.

7. <u>The use of teacher time: the balance of time distribution</u>

Direct comparisons between the various work activities that teachers engaged in are difficult, partly because the appropriate mean for one activity (eg. Teaching, carried out over 10 days) is not the same for another (eg. Preparation carried out over 14 days), and because different activities were sometimes carried out simultaneously. This latter fact makes analysis by percentage for each activity out of a total of 100%, impractical. Table 5a (p. 21) gives the relative amounts of time for each main activity, each of which can be compared with the mean time overall spent on work per day over 14 days. This was 7 hours 05 minutes, or 425 minutes. As a percentage of this total, the different activities were:

Teaching	35%
Preparation	31%
Administration	29%
In-service	18%
Other Activities	6%

Four comments about the balance of time across these activities are worth making. First, all Teaching and nearly all Administration are fixed in the sense that they simply have to be done, at the direction of the headteacher. The questions arise about the relative amounts of time in Preparation and In-service. Second, the fact that Preparation is almost equivalent to the time spent on Teaching is rather surprising. These are, as we have shown on Pages 6 - 7, in the main mature teachers with substantial experience at Key Stage 1, who would not normally be expected to spend as long preparing as teaching. The 6 teachers in the first 3 years of experience <u>did</u> spend significantly longer than the others overall, (as we discuss later at 9 below), but the high levels of time on Preparation overall could not be put down to inexperience. We have shown already that amounts of time on Preparation were not related to salary status. The only interpretation we offer is that the high levels of time on Preparation are a consequence of changes in the curriculum planning of teachers for implementing the national curriculum and assessment.

Thirdly, the amount of time on Inservice, at 18% of the overall time, is also high in relation to Teaching time, since it is equivalent to rather more than half of such time. The biggest sub-category is the one that includes staff meetings and informal consultations with colleagues, advisory teachers etc. (IS) which accounts for nearly 45 minutes per weekday equivalent. This is followed by Reading of professional magazines and national curriculum documents (IR) which accounts for nearly 32 minutes per weekday equivalent. Organised courses and conferences, and travel to them (IN + IT) amount together some 35 minutes per weekday equivalent. We cannot say with any degree of precision how much of this inservice time overall was concerned with the national curriculum and assessment, but it is highly likely that in Spring term 1990 for Key Stage 1 teachers most of it was. The fact that the higher the salary status the more time was spent in IS, IN and IT but not on IR (see page 27), almost certainly reflects the adoption of some version of the cascade model of training in most LEAs, so that deputy heads and Incentive Allowance holders go on courses, consult informally with colleagues and advisers, but do not necessarily read Child Education or Statutory Orders any more than main scale teachers.

The final point follows from the above three and the argument in 6 above. On of the face of it the distribution of teachers' time seems to be in imbalance; too much of their time, in relation to time spent Teaching certainly, and even in relation to time spent on Teaching and all Administration, seems to have been spent on Preparation and Inservice. We would not wish this to be read as implying that Preparation and Inservice training are intrinsically undesirable, of course, but rather that the balance of time use is wrong. From the policy point of view, the phasing in of training in other Key Stages might need to take account of such training and preparation demands for the balance of teacher time. At the very least, our research shows, even though direct comparison is difficult, the balance of activities directly involving the teaching of children has shifted considerably since Hilsum and Cane's 1971 study, which gave 58% time on teaching, as opposed to 42% on non-teaching. For our teachers it was 43.9% teaching to 56.1% non-teaching (see Page 22). This represents a considerable change in the pattern of teachers' work, a change which is likely to be resented in Key Stage 1, where work with children, and the significance of the time spent with them for the child-teacher relationships, have traditionally been imbued with highest salience in the occupational culture. For individual teachers the shift, unless managed carefully, is likely to increase stress and disaffection from the job.

8. The opportunity costs of Inservice training

In our Interim Report we argued that teacher productivity was being reduced by the demands consequent upon the Education Reform Act, particularly the release of teachers from teaching in order to attend training days. In using the term "productivity" we had naively hoped that it would have neutral connotations, since we simply wanted a term to reflect the extent to which teaching time had been "lost" to Inservice training. Colleagues at Warwick University were quick to point out the naivete not only of hoping for neutrality from a highly charged term, but also of regarding investment in training as not contributing to productivity in the longer term. We accept all this, but wish to make the same point, differently, and we hope more effectively.

We have shown (Table 5b, p.22) that the mean for Teaching as a working weekday equivalent (ie. Total time spent teaching divided by 10 days) was 208 minutes. We were able to compute the mean ignoring those weekdays on which no teaching occurred because teachers were engaged on Inservice training. We called this "weekday teaching", the mean for which was 218 minutes. The 10 minute per day difference is 4.8% of the working weekday equivalent, roughly

1 day's teaching lost out of every 20. (This is very similar to the 4.7% identified in the Interim Report by inspecting the teachers' records).

We would make two simple, and possibly still naive, points about this "loss" of teaching time. First, much of it had to be replaced by supply cover, which is difficult to find in some areas, and because it replaced experienced teachers who knew their class well, might not have provided as good quality teaching. Every 1 day in twenty thus cost considerably more in teachers' salaries, and probably reduced teaching quality, than if the regular teacher had not been away on Inservice training.

Secondly, 1 day in 20 of teaching time is half way towards the 10% increase in staffing that would be required to implement activity-led staffing policies. In this case, it is an opportunity cost of Inservice training carried out within the school day. As the training needs increase with the implementation of national curriculum more fully in Key Stage 2, and the need for schools to control teacher absence from schools at all stages to protect high quality teaching, it might become in the interests of governing bodies and LEAs to seek agreements to obtain the provision of some training outside school hours, with payment to teachers.

9. The early years of teaching

We found that 6 teachers, all with less than four years experience of teaching infants had different patterns of working from other teachers. We acknowledge this to be a small number of teachers, but the differences were generally highly statistically significant ($p<.01$). They spent more time on preparation and planning, and on marking than other teachers, more time overall on all aspects of Preparation ($p<.01$). They also spent more time on Display than other teachers ($p<.05$).

We may have picked up some of that cohort of new entrants to the profession whose initial training, because of the time it occurred, did not deal with the national curriculum and assessment. Thus these teachers would have the heavy work load associated with developing professional skills as a new teacher, and simultaneously have to come to terms with the national curriculum. In the medium term this dual problem should be reduced for new teachers, but for the next 2 or 3 years some extra support might need to be provided in relation to such teachers, if they are to be retained in teaching.

10. Non-directed time and teacher conscientiousness

We have drawn attention throughout this report to the importance of teachers' perceptions of "non-directed time". This is an unspecified amount of time, defined as we have indicated on Page 2 as the time needed outside directed time for the effective discharge of duties within it. Although some teachers refer to it as a bottomless pit, we have conceptualised it in another metaphor as having no ceiling, or upper limit. In our questionnaire teachers were asked the following question, the phrasing of which indicates something of the difficulty we had in defining it simply:

"It has been assumed that, in order to perform their professional duties during the school day (ie. teaching, supervision, assembly, registration, staff-meetings, and other 'directed' time), teachers will need to spend an unspecified amount of time for such duties in their own "non-directed" time. As a general rule, and excluding holidays, how many hours a week do you think it is reasonable for you to be expected to spend in non-directed time (ie. mainly

planning, record-keeping, report writing, organising resources, keeping up-to-date and all Inset)?"

The responses, which are reported on Pages 14-15, showed lack of overall agreement about what reasonable expectations were, and (apart from class size) no variable in the teachers' conditions of work or professional biography, was associated with the pattern of response. Most importantly there was no relationship between whether the teachers held coordination responsibilities or not, and whether teachers held Incentive Allowances and Deputy Headships, or were on Main Scale. We interpreted this evidence (p.15 and p.23) as indicating that teachers defined non-directed time not by reference to *positional* characteristics, such as their position in the structure of the school or location on the salary ladder, but according to *personal* qualities, for example, "conscientiousness". We have to stress that this is an inference from the evidence, and is not contained explicitly within it. We have used "conscientious" in inverted commas to indicate this.

However, when we began to analyse variables in relation to the time spent working, our inference was supported. Of the five broad categories of activities on which teachers spent time working, Preparation is the one most likely to be affected by conscientiousness, insofar as the time spent is concerned. The time spent on Teaching and Administration is largely set by the legal framework, and Other Activities probably includes a random collection related to nothing else in a systematic way.

Some Inservice activity (for example staff meetings) is directed, and some inservice training is by invitation to staff above main scale, following cascade models. This leaves Preparation as the area where the degree of "conscientiousness" might influence the amount of time. This is what we found, with very high statistical significances, and it is reported in some detail on Pages 23-24. There was also a tendency for the more "conscientious" teachers to spend more time with parents and less time in breaks, the two sub-categories of Administration susceptible to the influence of "conscience".

We had assumed that salary status would have some considerable effect upon how teachers defined non-directed time, and upon the amount of time spent on Preparation. So we tried to force statistical significance by collapsing the salary status groups from 5 to 3, but to no avail. The main general discriminator of length of time on preparation was the "conscientiousness" factor, according to our analysis.

We would draw three brief and possible contentious conclusions in relation to policy. First, the amount of time the teacher spent on Preparation was relatively unaffected either by their in-school responsibilities or their salary status. As we have said above their motivation was personal not positional, and presumably derived from their sense of obligation to their pupils. There must be a limit on the extent to which the educational system can freeload off teachers' goodwill and sense of conscientiousness before they collapse. Appendix 7 reveals just how far that freeloading had gone for these 94 teachers, who on an extrapolated annual average would put in nearly 14 hours of non-directed time every week of their working year. Put another way, these teachers were working a 54 week year of directed time without any holidays.

Secondly, given the potential, and for most of these teachers, the actual, exploitation through the non-directed time clause, it might be sensible to consider alternatives to the current arrangements, so that a teacher's salary and responsibilities in school have some better relationship to the amount of time she spends on work.

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Thirdly, as we suggested in our Interim Report, a polarisation in attitudes to work may be developing, between the "conscientious", whose motivation is the traditional one in teaching, where an attempt is made to meet all expectations to the best of one's ability. The alternative, perhaps newly emerging position would be much more "instrumental", - to limit time spent on work, in the light of perceived poor pay or of interests and responsibilities unconnected with work, or of perceptions that to fulfil all expectations is an absurd demand. This may help explain the great range in time spent on work as shown in Appendix 6. The current reforms seem to depend very much on retaining the conscientiousness factor. If the conscientious teachers become smaller in number, or become disillusioned, the reforms are likely to fail.

11. "Evaporated" time in Key Stage 1

One aspect of teachers time which we have labelled AR (or //) in our coding system, refers to time spent in registration, collecting dinner money, moving children from one location to another, tidying up, etc. These are often very short time spaces, even though they occur frequently in the course of the day. In addition we had a code AS, which referred to time spent supervising children before the school day, at break/lunch, end of the school day etc. This kind of time has been referred to as evaporated time in an ILEA Inset document precisely because much of it tends not to be accounted for in conventional analyses of the school day. The Pay and Conditions Document for example acknowledged only registration and some supervision. The DES draft circular of May 1989 on the Length and Control of School sessions, refers in Table 1 to "Assembly, breaks and supervision" as one of its two categories of time, the other being, "Taught lessons".

We would make three points about this. First, as we have shown on Page 25, excluding breaks and assembly, AR and AS together amount to a considerable amount of time, about 5 hours per week. Secondly, it is a very important activity, both for children's personal development (their sense of security, their relationship as individuals to the teacher) and their social development, (their learning how to behave in a relatively large organisation; learning to be pupils). That it is not acknowledged in formal analyses of the teachers' work is unfortunate, and may reflect an underlying model of secondary school teachers' work. In any case it tends to lead to wrong assumptions about how much time is available for Teaching as conventionally conceptualised, in Key Stage 1.

12. Conceptualising and investigating teacher time

As we have carried out this study, we have become aware of a range of research issues some of which are connected at the least indirectly to policy matters. The first is that the way teachers' time on work has been conceptualised is unhelpful in analysing time at Key Stage 1. This is for three reasons. First, teaching subjects has been conceptualised in a uni-dimensional way, yet it is not uni-dimensional in practice. Our teachers taught a number of subjects simultaneously. Second, different work activities tended to overlap, so that Teaching and Administration occurred simultaneously, or, within broad categories, break (AB) and consultation with a colleague (IS), occurred simultaneously. Third, although different activities occurred simultaneously, they did not necessarily occur for the same length of time. The consequence was that whenever we tried to compare our Time Data with other studies, we found that we were using different category systems, or the same categories with less certainty, than other researchers. However, we believe our Record of

Teacher Time, together with the program written for us by Keith Halstead of Warwick's Computing Services Unit, provides potentially a more appropriate way, for Key Stage 1 at least, of conceptualising, measuring, recording and analysing teacher time, and would wish to refine it by further testing.

Appendix 1: Record of Teacher Time

UNIVERSITY OF WARWICK - DEPARTMENT OF EDUCATION

POLICY ANALYSIS UNIT

Record of Teacher Time (ROTT)

	COLUMN A	COLUMN B
0700		
0715		
0730		
0745		
0800		
0815		
0830		
0845		
0900		
0915		
0930		
0945		
1000		
1015		
1030		
1045		
1100		
1115		
1130		
1145		
1200		
1215		
1230		

	COLUMN A	COLUMN B
1230		
1245		
1300		
1315		
1330		
1345		
1400		
1415		
1430		
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1745		
1800		

	COLUMN A	COLUMN B
1800		
1815		
1830		
1845		
1900		
1915		
1930		
1945		
2000		
2015		
2030		
2045		
2100		
2115		
2130		
2145		
2200		
2215		
2230		
2245		
2300		
2315		
2330		
2345		
0000		

DATE TO WHICH THIS SHEET REFERS .....

THE USE OF TEACHER TIME IN KEY STAGE 1

TEACHER QUESTIONNAIRE

Please complete this questionnaire at the end of the two week recording period.

The questionnaire is in two sections. Section 1 asks for factual information, while Section 2 asks for your opinion or perceptions.

SECTION 1 Please put a (circle) round the answer that applies to you or your work.

1.1 Sex: MALE FEMALE

1.2 Age: 21-30 31-40 41-50 51-60 over 60

1.3 Including the current year as one full year, how many years experience of teaching infants have you had?

1 2 3 4 5 6 7 8 9 10 more than 10

1.4 Salary Status: MAIN SCALE

INCENTIVE ALLOWANCE A

INCENTIVE ALLOWANCE B

INCENTIVE ALLOWANCE C

INCENTIVE ALLOWANCE D

DEPUTY HEADSHIP

1.4a If you have an incentive allowance is it:

TEMPORARY PERMANENT ?

1.5 School Type: INFANT FIRST JMI COMBINED 5-12 OTHER

1.6 Number of pupils on roll in your school:

Below 51 51 - 100 101 -150 151 - 200

201 - 250 251 - 300 above 300

1.7 How many pupils are registered in your class?

Below 17 17 - 20 21 - 24

25 - 28 28 - 31 31-34 Over 34

1.8 What is the age composition of your class?

mainly single age group two age groups more than two age groups

1.9 How much non-contact time per week is officially allocated to you (whether or not you normally have it)?

NONE 1 - 30 mins 31 - 60 mins 61 - 90 mins

91 - 120 mins OVER 120 mins

1.10 How much time per week do you spend working alongside a colleague, so that there are two teachers to one class group?

NONE 1 - 30 mins 31 - 60 mins 61 - 90.mins

91 - 120 mins OVER 120 mins

1.11 How much time per week, to the nearest hour, do you spend working with at least one paid assistant (ie, not a teacher) in your class group?

NONE 1 - 5 hours 6 - 10 hours 11 - 15 hours

16 - 21 hours OVER 21 hours

1.12 Are you responsible for co-ordinating an area, or areas, of the curriculum (whether or not you have an incentive allowance for it)?

YES NO

If YES, please indicate which area or areas you co-ordinate, by circling the most appropriate name(s) in the following list of subjects. (Eg, if you are responsible for Language or Reading, circle English).

ENGLISH MATHEMATICS SCIENCE TECHNOLOGY ART

HISTORY GEOGRAPHY MUSIC TOPIC PE ESL

SPECIAL NEEDS HOME-SCHOOL LINKS OTHER (please specify)

.....

SECTION 2 In this section, please underline the answer that most nearly reflects your opinion. Answer for yourself, not for how you think other teachers would answer.

2.1 The following list identifies six problems in teachers' working conditions. Which one do you consider is the most serious obstacle for you in implementing the national curriculum and assessment? Underline ONE only please.

POOR PAY

POORLY MAINTAINED BUILDINGS

LOW LEVEL OF LEARNING RESOURCES, MATERIALS OR EQUIPMENT

LACK OF TIME

LACK OF KNOWLEDGE/INFORMATION

LARGE CLASS SIZE

2.2 Think of the overall (ie, in both columns) entry you have made in the Record of Teacher Time concerning the total amount of time spent by you on work in two weeks. Do you think that the time spent by you in other weeks this term would be:

RATHER SIMILAR

CONSIDERABLY LESS

CONSIDERABLY MORE

CAN'T SAY/DON'T KNOW?

2.3 Think of the overall time you have entered as spent on Inset activities, (in Column B only) in the Record of Teacher Time, using the codes IN, IT, IS and IR. For the term as a whole, do you think that the time spent in these Inset activities by you in other weeks this term would be:

RATHER SIMILAR

CONSIDERABLY LESS

CONSIDERABLY MORE

CAN'T SAY/DON'T KNOW?

2.4 If you had had an extra teacher for the equivalent of one morning per week for the current year (1989-1990) allocated to you to help you implement the national curriculum and its assessment. for what purpose would you mainly use her/him? Underline ONE only.

TO HELP WITH ASSESSMENT AND RECORDING IN YOUR CLASS

TO TEACH SMALLER GROUPS IN YOUR CLASS MORE INTENSIVELY

TO GIVE YOURSELF NON-CONTACT TIME FOR PREPARATION

TO FREE YOU TO WORK ALONGSIDE COLLEAGUES

OTHER (please specify one only)

.....

2.5 It has been assumed that. in order to perform their professional duties during the school day (ie. teaching. supervision. assembly, registration. staff meetings and other 'directed' time). teachers will need to spend an unspecified amount of time preparing for such duties in their own 'non-directed' time. As a general rule. and excluding holidays. how many hours a week do you think it is reasonable for you to be expected to spend in non-directed time (ie, mainly planning, record-keeping, report writing, organising resources, keeping up-to-date. and all Inset)?

none 1 - 5 hours 6 - 10 hours 11 - 15 hours

16 - 20 hours 21 - 25 hours 26 - 30 hours

31 - 35 hours 35 - 40 hours over 40 hours

2.6 Finally, thank you very much for completing this questionnaire. which is. of course. answered anonymously. You will not be able to be identified (either by AMMA or the LEA) as a result of completing it. It would help the analysis if the LEA for whom you work could known. Please use this space to fill in the name of your LEA .....

* *

Please return this questionnaire and 14 completed sheets in the envelope provided to Mr R J Campbell, (Teacher Time Survey), Department of Education, University of Warwick, Coventry, CV4 7AL.

Appendix 3: DISTRIBUTION OF 95 RETURNS BY LEA AND REGION

NORTH	
Cleveland	5
Cumbria	1
Durham	1
Northumberland	2
Tyne and Wear met	3
Total	12
NORTH WEST	
Lancashire	2
Greater Manchester met	4
Merseyside met	2
Total	8
WEST MIDLANDS	
Hereford and Worcester	3
West Midlands met	4
Warwickshire	4
Total	11
SOUTH EAST (GREATER LONDON)	
London Boroughs and ILEA	7
SOUTH EAST (Other)	
Berkshire	3
Buckinghamshire	1
East Sussex	2
Essex	2
Hampshire	3
Hertfordshire	1
Isle of Wight	1
Kent	2
Oxfordshire	2
Surrey	3
West Sussex	2
Total	22

YORKS AND HUMBERSIDE	
Humberside	1
South Yorkshire met	2
West Yorkshire met	7
Total	10
EAST MIDLANDS	
Derbyshire	1
Nottinghamshire	2
Total	3
EAST ANGLIA	
Cambridgeshire	2
Total	2
SOUTH WEST	
Cornwall	2
Dorset	2
Gloucestershire	1
Somerset	5
Wiltshire	2
Total	12
WALES	
Gwent	2
Mid-Glamorgan	1
Total	3
Not known	5
TOTAL	95

Appendix 4: SOME INTERNAL INDICATORS OF VALIDITY

1. More experienced teachers have permanent allowances (based on 46 teachers, $p<.05$)

2. More experienced teachers have more non-contact time ($p<.05$)

3. More mixed age classes in smaller schools ($p<.01$)

4. Only larger schools have teachers free of coordination responsibilities ($p<.01$)

5. Small classes where there are 3 age groups ($p<.001$)

6. More time spent working alongside a colleague where the class is large ($p<.01$)

7. Mixed age groups have paid assistants working in them for more time ($p<.05$)

8. Coordinators define lack of time as a problem more than non-coordinators ($p<.05$)

9. Non-coordinators spend more time in assembly ($p<.05$)

10. Teachers who said that they spent more time, or similar amounts of time, on Inset for the two recorded weeks, spent more time on Inset than other teachers ($p<.01$).

Appendix 5: Tables of Time Survey Questionnaire Data

N.B. Where the total is less than 95, it implies that some respondents did not answer the item. The percentage refers to those answering.

Table 1 Sex

	n. teachers	%
Male	4	4.3
Female	89	95.7
Total	93	100

Table 2 Age

	n. teachers	%
21-30	11	11.6
31-40	22	23.2
41-50	49	51.6
51-60	13	13.7
61+	0	0.0
Total	95	100

Table 3 Infant teaching experience

Years	n.teachers	%
1 - 5	13	14.3
6 -10	14	15.4
over 10	64	70.3
	91	100

Table 4 Salary status

	n. teachers	%
Main Scale	41	43.2
Incentive A	21	22.1
Incentive B	17	17.9
Incentive C	1	1.1
Incentive D	0	0.0
Deputy Head	15	15.8
Total	95	100

Table 5 School Type

	n. teachers	%
Infant	28	29.5
First	24	25.3
JMI	33	34.7
Combined 5-12	8	8.4
other	2	2.1
Total	95	100

Table 6 Pupils on Roll

	n. teachers	%
below 51	0	0.0
51 - 100	4	4.2
101 - 150	14	14.7
151 - 200	18	18.9
201 - 250	22	23.2
251 - 300	20	21.1
301+	17	17.9
Total	95	100

Table 7 Non-contact time per week

Amount (minutes)	n. teachers	%
none	43	45.7
1 - 30	24	25.5
31 - 60	17	18.1
61 - 90	3	3.2
91 - 120	5	5.3
121+	2	2.1
Total	94	100

Table 8 Time per week working alongside a colleague

amount (minutes)	n. teachers	%
none	62	66.0
1 - 30	8	8.5
31 - 60	6	6.4
61 - 90	5	5.3
91 - 120	4	4.3
121+	9	9.6
Total	94	100

Table 9 Time per week working with a paid assistant

Amount (hours)	n. teachers	%
none	28	29.5
1 - 5	43	45.3
6 - 10	13	13.7
11 - 15	9	9.5
16 - 21	1	1.1
22+	1	1.1
Total	95	100

Table 10 Coordination responsibilities held

number	n. teachers	%
none	8	8.4
1	45	47.4
2	30	31.6
3	10	10.5
4	2	2.1
Total	95	100

Table 11 Class Size

n. pupils	n. teachers	%
17 - 20	7	7.4
21 - 24	27	28.4
25 - 28	23	24.2
28 - 31	19	20.0
31 - 34	15	15.8
35+	4	4.2
Total	95	100

Table 12 Age composition of classes

	n. teachers	%
1 age group	53	55.8
2 age group	33	34.7
3 or more age groups	9	9.5
Total	95	100

Table 13 Most serious obstacle to implementation of the national curriculum

Obstacle	n. teachers	%
Lack of time	69	72.6
Large classes	16	16.8
Poor Resources etc.	7	7.4
Lack of Information	2	2.1
Poor Pay	1	1.1
Poorly maintained buildings	0	0.0
Total	95	100

Table 14 Priority use for extra teacher time

	n. teachers	%
To teach smaller groups intensively	46	48.4
To help with assessment/recording in class	37	38.9
To work alongside colleagues	8	8.4
For non-contact time for preparation	4	4.2
Total	95	100

Table 15 Reasonable time expectations for non-directed time

Amount (hrs per week)	n. teachers	%
none	0	0.0
1 - 5	21	22.8
6 - 10	46	50.0
11 - 15	14	15.2
16 - 20	10	10.9
21+	1	1.1
Total	92	100

Table 16 Overall time spent on work in the sampled 14 days compared to rest of term

Perception	n. teachers	%
rather similar	79	83.2
considerably less	1	1.1
considerably more	13	13.7
can't say/don't know	2	2.1
Total	95	100

Table 17 Time spent on Inset in the sampled 14 days compared to rest of term

Perception	n. teachers	%
rather similar	54	56.8
considerably less	7	7.4
considerably more	27	28.4
can't say/don't know	7	7.4
Total	95	100

Appendix 6: **Summary Table of Time Spent Working** (hrs: mins) per day

(Multiply by 7 to obtain weekly figure)

	10:24
*	10:20
	10:08
	9:24
	9:18
*	9:02
	8:50
	8:48
	8:39
	8:38
*	8:30
	8:27
	8:26
	8:22
	8:16
	8:16
	8:15
	8:03
	8:06
	8:04
	7:55
	7:54
	7:54
	7:51
*	7:51
	7:47
	7:45
	7:42
	7:38
	7:35
	7:33
	7:32
	7:31
	7:30
	7:29
	7:27
	7:25
	7:24
	7:23
*	7:20
	7:20
	7:18
	7:17
	7:17
	7:16
	7:14
	7:11
	7:10
	7:07
	7:06
	7:06
	7:06
	7:05
	7:05
	7:04
*	7:03
	6:58
	6:57
	6:57
	6:56
	6:56
	6:54
	6:52
	6:52
	6:50
*	6:49
	6:48
	6:48
	6:48
	6:47
	6:46
	6:46
	6:45
	6:44
	6:43
	6:42
	6:41
	6:41
	6:29
	6:28
	6:27
	6:26
	6:20
	6:20
	6:19
	6:17
	6:09
	6:08
	6:07
	6:02
	5:50
	5:31

* = non-AMMA member. See Appendix 8

Appendix 7: **Hours spent on work extrapolated to give an annual figure expressed as decimals**

			Hours	
a.	Mean hours per week (Appendix 6)		49.5	
	x 38 weeks	=	1881.0	
	less breaks without work (38 x 3.3 hours)		125.4	
			1755.6	
	add on 30 hours training days	+	30.0	
			1785.6	
	less directed time (1265 hours)		1265.0	
	therefore non-directed time equals		520.6	hrs per annum
b.	Weekly mean hours non-directed (38 week year)	=	13.7	per week
c.	Daily mean hours non-directed (190 days)	=	2.7	per day
d.	520.6 hours divided 32.5 (1 week directed time)	=	16 weeks' working time	
e.	Teachers in Key Stage 1 were working the equivalent of a (39 + 16) 54 week year without any holiday at all.			
f.	520.6 hours is 41% of 1265 hours			

Appendix 8:

AMMA members and the non-AMMA members: a brief comparison, by inspection of total time spent working

It might be argued that members of a teachers' association would as a group, systematically overstate the amount of time they spent on work, either because they perceived that it would suit the association's purposes, or because they had their own political reasons for doing so. In order to test this a small number (10) of non-AMMA members was approached and paid a token amount to participate. 7 of these replied and completed returns. The number is rather small for statistical comparison between the two groups, but the 7 non-AMMA members returns can be inspected directly to see if the AMMA members were clearly reporting more time on work than the others. Appendix 6 enables this simple inspection to be carried out, since the non-AMMA members are asterisked. It will be seen immediately that if anything the non-AMMA members report longer hours than the AMMA members. 3 non-AMMA members are in the 'top' 11 and there are 4 in the top 1/3 of the table. 5 of the 7 report more time spent working than the mean time for all 94 teachers. Only one of the 7 is in the bottom 1/3 of the table. So, although there is a spread amongst non-AMMA members, overall they record more time than AMMA members.

The non-AMMA members on average spent 8 hours 08 minutes per day over the 14 days on work, considerably more than the 7 hours 05 minutes average for the whole group of 94 teachers.

Given the above findings, and the fact that there is a very great range of recorded time across the 94 teachers overall, we think there is no evidence that AMMA-members have been systematically overstating the time they spend on work.

Appendix 9: A note on statistical treatments

The data on the Record of Teacher Time were analysed by means of a program specially written by Keith Halstead, Deputy Director, Computing Services Unit, Warwick University.

The descriptive data on the survey of Teacher Time questionnaire were cross tabulated using the SPSSx package. The significance of relationships between variables on the questionnaire was analysed by the Chi-squared test.

Relationships between the variables on the questionnaire and the Record of Teacher Time were analysed by the BREAKDOWN procedure in SPSSx, which incorporates an analysis of variance.

A split-half analysis of the questionnaire data, using every alternate subject, showed high levels of agreement. The time data for the first 51 returns was analsyed separately, and showed very close agreement with the total sample. Differences might have been expected because these teachers were recording slightly earlier in the data collection period: they may also have been more motivated participants.