CAN THE RATIONALE OF A HIGHLY RELIABLE ORGANISATION AID THE IMPROVEMENT OF AN INNER-CITY COMPREHENSIVE SCHOOL?

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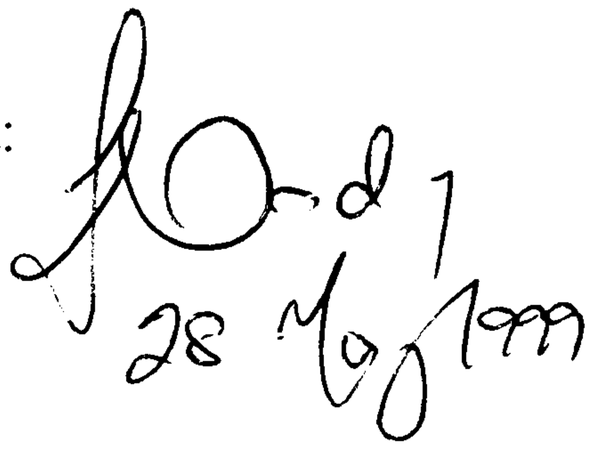
I certify that all material in this Submitted Work which is not my own work has been identified and that no material is included which has been submitted for any other award or qualification.

Signed: 

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ABSTRACT

The thesis investigates the proposition of Professor Sam Stringfield of Johns Hopkins University, Baltimore, Maryland, U.S.A. and of Professor David Reynolds of the University of Newcastle upon Tyne that some of the practices adopted by Highly Reliable Organisations can aid effectiveness and improvement in schools.

The proposition is based on three fundamental components. Two of the components are supported by research evidence and the third is the component which, deriving from belief rather than knowledge, gives the project its distinctive features. The first component deriving from knowledge is that schools can make a difference. The second component deriving from knowledge is that there is considerable departmental variation in most schools. The third component, the one that derives from belief, is that schools can improve significantly if they adopt the strategies of highly reliable organisations and have very few targets and only have targets that are statistically measurable.

The thesis examines the features of high reliability theory, which is well defined as a theory in engineering and as a branch of statistics, and its use in organisations that are described as Highly Reliable Organisations. High reliability theory provides the structure for the third component of the proposition. The thesis suggests that whilst schools do not have all the essential characteristics to be described as Highly Reliable Organisations, nevertheless, some of the procedures for ensuring reliability might be capable of aiding school improvement.

The thesis examines the impact of adopting the two compulsory project targets of value-added examination performance and attendance together with two further measurable targets of reading ages and homework on the improvement of an inner-city comprehensive school. The thesis describes the steps taken at the school in the introduction of the project so that the project could be replicated.

It concludes that improvement in examination performance had already started before the adoption of the project at the school, but possibly because the main elements of the targets proposed by Reynolds had already previously been adopted by the school. It concludes that the Highly Reliable Schools project had a significant influence on optimism for further improvement and that the initial statistical evidence supports this optimism.

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CHAPTER ONE

THE CONTEXT OF THE STUDY

1.1 Introduction

This chapter describes the origin of the proposition of the Highly Reliable School, abbreviated to HRS in this thesis. It describes its evolution to a school improvement project in 1999 involving a university department of education, twenty secondary schools, one thousand five hundred teachers and twenty thousand school students in England and Wales.

It describes how school effectiveness research and school improvement research have begun to merge and have been able to provide a knowledge base and vehicle for the proposition that strategies used to avoid catastrophic failure in highly reliable organisations might influence school improvement. It considers some of the earlier work of Reynolds, in particular, which provided a foundation for his acceptance of the HRS proposition.

It describes how target-setting, benchmarking requirements and other government initiatives have influenced the need for school improvement strategies. It describes how the LEA which serves a city in the north of England, and the author, the headmaster of a comprehensive school in the city, became involved in the project.

It considers some of the criticisms that have been made about the proposition, and some of the controversies and limitations that need to be resolved. The next section describes the origin of the highly reliable schools proposition.

1.2 The origin of the Highly Reliable Schools proposition

The proposition that the characteristics of a highly reliable organisation might be applicable to school improvement has a quasi-academic origin. The proposal originates from a casual and random encounter between two adjacent passengers on a flight in 1990. The adjacent passengers were Professor Sam Stringfield, a Principal Research Scientist at the Johns Hopkins University Center for the Social Organizations of Schools, in Baltimore, Maryland, U.S.A., and a safety officer of unknown name from a nuclear power plant.

Stringfield took sufficient interest in his fellow passenger's description of his profession to read about the characteristics of highly reliable organisations and to compare those characteristics with the characteristics of high schools in the U.S.A. He concluded that American schools had only two of the thirteen significant characteristics of highly reliable organisations present in schools that were the most effective and the remaining eleven characteristics were either not a feature of schools, needed more research or were a distant dream.

Despite his unfavourable comparisons with U.S.A. high schools, Stringfield presented a paper on the comparisons to The International Congress for School Effectiveness and School Improvement (ICSEI) in Vancouver, Canada, in 1992. The paper made the proposition that schools might improve if they adopted some

of the strategies that highly reliable organisations use in order to avoid failure in their key tasks.

David Reynolds, who at that time was a Lecturer in Education at the University of Wales, College of Cardiff, became interested in Stringfield's proposition. He invited some schools in the south west of England and in Wales to be involved in a 'highly reliable schools' project that was intended to influence school improvement. The project requires schools to adopt a small number of measurable targets and then attempt to meet the targets by using some of the strategies that highly reliable organisations use to reduce the risk of catastrophic failure.

On Reynolds' appointment as Professor of Education at the University of Newcastle upon Tyne he invited schools in the north of England to join the project, twelve months after the first-phase schools had joined. The project is a practical proposition with a pragmatic basis rather than a philosophical basis.

The quasi-academic nature of the proposition arises therefore from the academic posts of Stringfield and Reynolds rather than from a theoretical proposition, and indeed the hypothesis is not supported by Stringfield's initial comparisons with the characteristics of schools in the U.S.A. The hypothesis has neither been supported by any firm evidence of its influence nor by any theoretical justification, other than by evolved school improvement knowledge which supports the principles of the proposition. Stringfield has not involved any schools in the U.S.A. in the hypothesis. In spite of this, there are now twenty schools,

approximately 1,500 teachers and approximately 20,000 students in England and Wales involved in a school improvement project based on the hypothesis.

The soundness of the high reliability school proposition arises from its similarities with existing propositions of school improvement, though its differences give it some unique characteristics. The absence of a theoretical origin is compensated by evidence from school improvement research that the project has identified strategies that will influence school improvement. The next section describes the basic characteristics of highly reliable organisations.

1.3 The characteristics of highly reliable organisations

The most quoted examples of highly reliable organisations, in addition to nuclear power, are air traffic control and the operation of aircraft carriers [Roberts, 1990b, p.103; Weick, 1987, p, 119]. The examples tend to have the potential for obvious catastrophic failure, though Weick proposes [p.119] that 'most situations that have constant outcomes – such as a marriage, or social drinking, or an alcohol rehabilitation program – collapse when people stop doing whatever produced the stable outcome. And often what produced the stable outcome was continuous change, not continuous repetition'.

The Highly Reliable School proposition develops the argument that some of the strategies that are used to reduce the risk of failure in operations where failure can be catastrophic, might also reduce the risk of failure in education. It also builds on the proposition [Reynolds and Packer, 1992, p. 173] 'that early beliefs that effective or ineffective schools stayed so over quite considerable time periods of

five to seven years were invalid, since it now appears that school performance can vary quite rapidly, over two or three years'.

Stringfield [1995, pp. 7-13] identified thirteen characteristics of HROs (Highly Reliable Organisations) and these are considered in chapter 3. It is only the second and fifth characteristics that Stringfield concluded are present in more effective schools in the U.S.A. and Stringfield even concluded that clarity of goals, the first characteristic, is a novel idea for schools. The thirteen characteristics are:

1 HROs require clarity regarding goals.

2 HROs extend formal, logical decision analysis, based on standard operating procedures (SOPs).

3 HROs recruit and train extensively in order to compel adherence to SOPs.

4 HROs have initiatives that identify flaws in SOPs.

5 HROs are sensitive to the areas in which judgement-based, incremental strategies are required. They, therefore, pay considerable attention to performance, evaluation, and analysis to improve the processes of the organisations.

6 Monitoring is mutual (administrators and line staff) without counterproductive loss of overall autonomy and confidence.

7 HROs are alert to surprises or lapses. The experience of HROs is that small failures can cascade into major system failures, and are hence monitored carefully.

8 HROs are highly hierarchically structured, but during times of peak loads, HROs emphasise a second layer of behaviour that emphasises collegial decision-making regardless of rank.

9 High Reliability Organisations regularly respond to potentially disastrous situations as being far too important to trust to rules alone.

10 Especially during times of peak performance, staff are able to assume a close interdependence.

11 Equipment is maintained and kept in the highest working order.

12 HROs are invariably valued by their supervising organisations.

13 Short-term efficiency takes a back seat to very high reliability.

The next section describes how school effectiveness research has provided a knowledge base to support the highly reliable schools proposition.

1.4 The school effectiveness knowledge base as a foundation for the concept of the Highly Reliable School

School effectiveness research, and in particular the work of Reynolds over the last two decades, has provided a knowledge base for the HRS proposition. It provides the knowledge that it is possible for a school to be more effective than other schools that serve similar areas with a similar intake of students.

At a basic level, school effectiveness research has compared schools with other schools at that moment in time, whereas school improvement research has compared schools with their own previous positions. The validity of the proposition that schools can make a significant difference has strengthened in recent years through greater access to data and there is now evidence for the difference that can be achieved. The HRS proposition strives to provide a reliable strategy for improving effectiveness.

Reynolds drew attention to the capacity of schools to influence student performance as early as 1979. In an article about the core beliefs of society he wrote [Reynolds, 1979, p.46, 47]: that 'he wished to acknowledge...the substantial independence which individual schools and teachers have in their choice of the precise organisational forms that are to be employed'.

At a 1983 conference Reynolds [Reynolds, 1985, p.1] said that 'a decade ago there were very few people engaged in the study of schools as institutions for learning'. He added that 'school effectiveness research has arisen in part as a

reaction and a challenge to the allegations that schools are not important determinants of pupil characteristics'.

The evidence base from research that schools can make a difference to the progress of their students has grown significantly in the last decade. Hargreaves and Hopkins [1991, p.109] wrote that 'certain internal conditions are typical in schools that achieve higher levels of outcomes for their students'. They concluded that the characteristics of 'effective schools' in the Rutter [1979] study were similar to those reported in the HMI survey reported in *Ten Good Schools.* HMI proposed that an effective school has 'quality in its aims, in oversight of pupils, in curriculum design, in standards of teaching and academic achievements and in its links with the local community. What they all have in common is effective leadership and a "climate" that is conducive to growth' [DES, 1977, p.36].

Hopkins et al [1994, p.45] quoted the findings of Reynolds [1992, p.3] and Gray [1981] that the difference in achievement of students between the most effective top 20% of state secondary schools and the least effective 20% was 'equivalent to one and a half of the old O-level public examinations per child'.

Reynolds [1992, p. 11] lists Mortimore's findings of the characteristics of schools that are 'effective in both academic and social areas' [Mortimore et al., 1988]. The twelve factors they identify are:

1. Purposeful leadership of the staff by the head.
2. Involvement of the deputy Head.
3. Involvement of teachers.

4. Consistency among teachers.
5. A structured day.
6. Intellectually challenging teaching.
7. A work-centred environment.
8. A limited focus within sessions.
9. Maximum communication between teachers and pupils.
10. Thorough record-keeping
11. Parental involvement
12. A positive climate.

The HRS project focuses on the third, fourth, fifth and sixth of these characteristics. Support for the eighth characteristic is implied in that the LEA meets the expense of the project. There is nothing in the HRS project to contradict that the above eight are the key characteristics of effective schools, but it does make the unique proposition that a means of achieving these characteristics is by adopting some of the strategies of highly reliable organisations.

School effectiveness research has tended to focus on demonstrating that schools can make a difference without demonstrating how to achieve that difference. The HRS project does not make any challenges to the school effectiveness knowledge base. The next section describes how the project, as a 'vehicle' for school improvement, is supported by recent research evidence in school improvement knowledge.

1.5 The school improvement knowledge base as the vehicle for the concept of the Highly Reliable School

School improvement research has provided a 'vehicle' for the HRS proposition. It provides the evidence that it is possible for a school to improve from its previous position. It provides evidence that a significant difference can be made at the institutional level, more at the departmental level and the greatest difference at the classroom level.

It might be a reasonable proposition that improvement would be an aim of an effective school. It might therefore be a reasonable assumption that school improvement studies would be a branch of school effectiveness studies. However, this is not how the two studies have developed. The exploration of the effectiveness of intervention in schools has developed as an independent study under the title of 'school improvement' rather than as a study of the strategies for increasing the effectiveness of schools.

The International Congress for School Effectiveness and School Improvement (ICSEI), in which Reynolds has a significant role, has attempted to initiate collaboration between researchers in the two fields of effectiveness and improvement studies. It was at an ICSEI conference that the HRS project was conceived.

School improvement, as a discipline of educational study, has only emerged since the mid-1980s. As such, school improvement research has two dimensions. The first dimension investigates historical improvement - how has the school

improved? The second dimension looks at intended improvement - what policies and strategies might move the school from its present position to a future desired and improved position? The HRS project provides policies and strategies for 'second dimension' school improvement.

Recent research studies on school improvement have tended to focus on the potential difference that can be made at the institutional level. Pennycuick [1992, p.2] observed that 'quality is important'. Referring to work by Creemers, Peters & Reynolds [1989] and by Raudenbush & Willms [1991], Lockheed & Verspoor [1991, p.19] state that 'recent research on the effect of schools on learning provides clear evidence that variations in the characteristics of schools are associated with variations in student outcomes'.

The emerging evidence in the potential difference that can be made at the institutional level has resulted in a considerable number of initiatives to raise school improvement in recent years. Barber et al [1996] listed sixty urban educational initiatives [p.59]. The list was produced before the introduction of Reynolds's Highly Reliable Schools Project and of Brighouse's 'Success for Everyone' project in Birmingham.

Barber was still arguing in the late 1990s (1998, p.18) that 'the knowledge that schools make a difference is a liberation'. He argued that accepting this would aid the 'argument for teaching to become a profession of ambition and status' and that the 'shift towards school improvement' is 'perhaps irreversible'

Hopkins et al (1994) suggest that there are two ways in which the term 'school improvement' is used (p3). 'The first is the common-sense meaning which relates to general efforts to make schools better places for pupils and students to learn in'. The second meaning is 'a distinct approach to educational change that enhances student outcomes as well as strengthening the school's capacity for managing change'. The HRS project is a school improvement project in the sense of Hopkins' second meaning of school improvement.

OFSTED (1994, p.6), with its use of bold type, uses the word 'improvement' to 'describe the ways in which schools:

- Raise **standards**;
- Enhance **quality**;
- Increase **efficiency**;
- Achieve greater success in promoting pupils' spiritual, moral social and cultural development; in a word, the **ethos** of the school.'

The HRS project targets the first of these four OFSTED characteristics of school improvement. It builds on the proposition [Reynolds and Packer, 1992, p. 183] that school improvement strategies should draw from the best of the 'top down' earlier strategies for improvement and the later 'bottom up' strategies. It combines two project-wide targets with two school-chosen targets.

Hopkins et al go on (p.3) to quote Barth's (1990, p.38) proposition that 'schools do not have the capacity or the will to improve themselves; improvements must therefore come from sources outside the school'. However, it could be argued that there is no school that does not have the intention to improve. The wish to improve would normally be present even if the capability and knowledge to move

from a wish to a proposed action is not there. The HRS project uses sources from outside the school to impart the most up-to-date knowledge of school improvement and school and departmental effectiveness. It also provides comparative and value added performance data to aid the setting of challenging targets.

The HRS project is founded on the following basic principles that are firmly supported by the evolution of the knowledge base of school improvement in the last two decades:

1 Schools can make a difference.

2 Making schools 'data-rich' will enable them to make better decisions.

3 Improvement is more likely to take place if the focus is at the classroom level and at the departmental level, rather than at the institutional level. The project therefore seeks to impart the most up-to-date school effectiveness and improvement knowledge to all the teachers at the school and departmental effectiveness knowledge to all the departments in the school.

4 The schools will modify their practices to avoid a 'trailing edge' of achievement.

5 The schools will be willing to compare their practices with the best practices within the school and between the schools in the project.

6 The schools will be willing to take part in evaluation of the effectiveness of the project so that it can be improved.

The project has the characteristics of 'second wave' school improvement projects identified by Stoll et al (1996, p.140) which have:

- Focused more closely on classrooms and have been more prepared to utilise teacher effectiveness literature;
- Been concerned to 'pull all relevant levers' by operating with outside-school, school and classroom levels simultaneously;
- Been concerned to address 'reliability' issues, as well as issues of validity, by ensuring that innovations are reliably spread throughout the project schools, to ensure cohesion and consistency;
- Been concerned to relate programmes very closely to the findings of the existing research base, both in being conceptually rigorous in their use of that material and being sure that there is 'fidelity' in the implementation of the programmes and the research literature.

This section has demonstrated that the HRS project does not in any way contradict recent findings of leading researchers in school improvement. The HRS project does, however, have some unique characteristics including its use of theoretical propositions from another academic discipline. The willingness of schools to be involved in the project has been influenced by government legislation. The next section considers some of the ways in which government legislation has influenced school improvement.

1.6 Government influence on school improvement

Government influence on school improvement has developed in the last decade through a variety of strategies. These include the publishing of examination results, and particularly the publishing in a league table form in newspapers with the highest percentage obtaining five or more GCSE passes at Grade C or above at the top of the table regardless of any measure of the starting point for the students in the institution. It includes the published inspection reports of schools. It includes the September 1997 'naming and shaming' policy of the Labour Government. It includes national target setting.

Section 9 of the Education (Schools) Act 1992 requires inspectors to report on:

- the quality of the education provided by the school;
- the educational standards achieved in the school;
- whether the financial resources made available to the school are managed efficiently; and
- the spiritual, moral, social and cultural development of pupils at the school.

The inspectors' report must:

- evaluate the school according to the 'Framework',
- identify the strengths and weaknesses of the school; and
- give the appropriate authority (normally the Governors) for the school a clear agenda for the action required to improve it.

Since every school is given targets from the inspection, some targets are viewed by headteachers as 'acceptable' and not in themselves critical in either sense of

the word. An example would be a target to ensure that the law is followed with collective acts of worship. Other targets, however, might be seen to imply public criticism. Examples might be targets to raise examination performance or attendance or behaviour or the quality of teaching. It would be naive to imagine that OFSTED inspections have not had a very significant impact on school improvement, and on the willingness of schools to be involved in school improvement projects such as the HRS project.

Woodhead keeps the pressure up with his annual reports. His 1997 report said that 'there is too much variation in the performance of schools with broadly similar intakes of pupils. This is true both of inner-city schools serving disadvantaged communities and schools in leafy suburbs that draw their pupils from affluent homes. The problem in each case is the same: expectations are too low, complacency and/or defensiveness is rife.' [OFSTED, 1998, p.12].

Woodhead's 1998 report [OFSTED, 1999, p.16] said that 'the gap in achievement between schools serving similar communities continues to be too wide' and that 'there is still substantial underachievement in about one in ten secondary schools'.

The inspections have had a direct influence on LEA support for effective schooling. LEAs quickly realised that one failing school might be considered to be an accident, but two or more quickly moved into the bounds of carelessness. The Education Bill published in December 1997 gave the Secretary of State for Education and Employment considerable powers to take action with LEAs that he deems to be failing.

OFSTED itself has a very clear image of its influence on improvement. It says [OFSTED, 1995, p.16] that 'the process of inspection and action planning had helped a significant number of schools to begin to make immediate improvement in teaching methods'. Others are less convinced. Fitz-Gibbon [1996c, p.6] says that 'some kinds of inspection and some kinds of management ... are quite possibly not just useless but actually damaging; practices which not only take resources out of education but also mislead and hinder efforts to promote quality, thus providing negative value for money'. Fitz-Gibbon is particularly critical of OFSTED but finds a possibly positive feature in that [p.205] 'perhaps inspections have good effects, encouraging a new collegiality in the face of an external threat or encouraging people to look at data'.

A response to a Commons question [Barnard, 1998] that 'GCSE results in inspected schools improved no faster than in non-inspected schools' resulted in the suggestion that OFSTED 'does not help schools improve'. However, it could be suggested that schools have greater incentive to make improvements before the OFSTED inspection and that a lack of further increase following the inspection is not evidence that the inspection process has not had a significant impact on improvement.

Schools often had a long period between notification of inspection and the actual inspection in the first round of OFSTED inspections. At the case study school, the school was made aware in the summer of 1995 that the date of inspection would be November 1996. At the stage of notification the previous GCSE examination results in 1994 had been 9% of students with five or more passes at

grade C or above. The school was well aware that this level of performance would put it into a potentially difficult position in the inspection. The results improved to 13% in August 1995 and to 17% in August 1996 just before the inspection. Although the results were still below 20%, the increase in the results was sufficient to avoid this being an issue at inspection.

The results increased by a further 4% to 21% in the year of the inspection. There is no evidence to suggest that this was due to the OFSTED inspection process, but there is no more reason why the post-inspection period should have a greater impact on improvement than the pre-inspection period if the school had already correctly identified targets which would most likely lead to improvement.

However, Maden and Hillman [1996, p. 351] say that OFSTED's mission statement 'Improvement through Inspection' does not 'appear to feature strongly in the development' of any of the National Commission of Education study of effective schools in disadvantaged areas.

The answer to the Commons question said that 'comparing the results of the 800 schools inspected in the first year, 1993/94, it found point scores went up by 2.1 points between 1993 and 1995, while those that had not been inspected improved by 2.6 points' [Barnard, 1998]. These statistics would have to be considered alongside some explanation of what improvement in average points scores might mean in a norm-referenced examination system. If the intention is to imply that there would still have been improvement if the examinations had been criteria-referenced then this proposition needs to be tested. Improvement due to a change

of criteria would not have the same meaning as improvement over time with the same criteria.

The notion of continually keeping the school under review is not new. The Inner London Education Authority, where Mortimore did much of his early research work as director of their research and statistics branch, published criteria for keeping a school under review over twenty years ago. This included [ILEA, 1977, p.10] a 'comparison from year to year' of the 'attendance rates for pupils' and the 'results in public examinations, related to the intake at 11+ if possible'. Note the reference to value-added examination performance and that we have still not reached agreement twenty years later about how this might be measured and published.

Jesson [1996], in a study for the DfEE on two thousand Year 11 students from twelve schools, investigated how Key Stage 3 Assessments might be used to predict performance two years later in GCSE examinations. He concluded [p.12] that 'Key Stage Assessments form one possible basis for evaluating differences in performances by pupils and their schools in GCSE outcomes some two years later'. Jesson, however, concluded that this did not provide a reliable measure of value-added performance since 'we do not have *independent*' (his italics) ' measures of pupils' ability or achievements other than those provided by the Key Stage 3 Assessments. What is clear, however, is that GCSE performance appears highly correlated with the assessments made of pupils two years earlier, and to that extent, use of the Key Stage 3 Assessments represents a considerable opportunity for comparative evaluation of institutional performance using a common 'starting point'.'

The case-study school was concerned to demonstrate that it was ruthlessly identifying strategies for improvement before its first OFSTED inspection and this clearly had some influence on the willingness of the staff at the school to accept the proposals of the HRS project.

The change of government in May 1997 has not produced any significant change in direction on target-setting from the previous government. In March 1996, under Gillian Shepherd as Secretary of State, the DfEE wrote [DfEE, 1996, p.5] that 'target-setting is effective in schools which have taken a firm hold on school improvement matters generally while giving high priority in particular to *action* designed to raise pupils' expectations of themselves and hence their attainment'. Fifteen months later, and only four weeks after the change of government SCAA [SCAA, 1997a, p.2] was 'consulting' schools on the use of value-added indicators following a report which Gillian Shepherd had requested, and how this might be used to 'provide measures of value added in due course'. It concluded [p.14, para.63] that the Secretary of State 'has indicated that he expects to announce decisions on the proposals soon after Christmas'.

From September 1998 there has been a legal requirement for all governing bodies 'to set and publish targets each year for pupil performance in the core subjects (English, mathematics and science) at the end of each Key Stage. Regulations for this will be published in spring 1998, and will specify a common content and layout for publication' [DfEE, 1997a, pp.3, 4].

In July 1997 the Government produced a White Paper, 'Excellence in Schools', seeking 'the full involvement of everyone in education and the wider community, working in an effective partnership to stimulate constant improvement and tackle underperformance'. Selective responses to this, such as [DfEE, 1997b, p.4] 'You emphasised that everyone concerned with education is committed to doing better. I welcome that. Many of you also supported our view that, first and foremost, schools must take responsibility for raising standards', were used to justify extensive legislative proposals.

The proposed legislation included:

- maximum class sizes of 30 for six and seven year old students,
- Education Action Zones which 'will normally cover two or three secondary schools and their feeder primaries, and will be set up for 3-5 years in the first instance' [p.7],
- duties on LEAs in raising standards in their schools,
- duties for LEAs with schools causing concern,
- the setting up of a General Teaching Council,
- a new framework of Community, Foundation and Voluntary schools,
- increased parental representation on governing bodies,
- a simpler arrangement for LMS funding in which the Funding Agency for Schools will cease to operate,
- admission appeals which are more independent of LEAs and governing bodies,
- a requirement for LEAs to set up a School Organisation Committee,

- a requirement for schools to have written home-school agreements,
- a requirement for LEAs to publish an Early Years Development Plan.

This section has outlined some of the recent legislation that has influenced school improvement. Some recent legislation requiring schools and LEAs to agree on future examination performance targets has had a particular influence on the willingness of schools to adopt strategies form improvement and for LEAs to support school improvement strategies. The next section describes some of the proposals for target setting and benchmarking.

1.7 Target setting and benchmark proposals at the case study school

In September 1997 SCAA produced its last publication before becoming the new Qualifications and Curriculum Authority (QCA) on 1 October 1997 following its merger with NCVQ. This last publication, another 'consultation' paper, sought views on [SCAA, 1997b, p.1] 'target setting proposals, and on the nature of the benchmark information which will be provided to support this process.' Just a few weeks later, on 4 December 1997, the Government produced its new Education Bill.

On 13 January 1998 the Secretary of State announced his intention 'to introduce new, more flexible arrangements for the curriculum in primary schools from September 1998' [letter from QCA dated 13 January 1998 to all Headteachers of

Key Stage 3 and Key Stage 4 schools in England]. A separate letter from the Secretary of State on the same day outlined proposals to remove 'the statutory requirement for primary schools to follow the Key Stages 1 and 2 programmes of study in the non-core national curriculum subjects of design and technology, history, geography, art, music and physical education for two years from September 1998'.

In January 1998 the QCA [QCA, 1998] published 1997 'benchmark information' taking up the HRS philosophy of low tolerance of failure. It said [p.3] that 'there are many high-performing schools which secure good results in areas of relative disadvantage. These high-performing schools tend to have a very low tolerance of failure'.

For schools with more than 35 per cent eligible for free school meals, which is the position for the case study school, it produced the following statistics:

	95 Percentile	Upper Quartile	Median	Lower Quartile
5 or more GCSE A*-C	39	27	20	14
5 or more GCSE A*-G	91	83	76	68
1 or more GCSE A*-G	98	93	88	82

GCSE results for schools with more than 35% entitled to free meals

TABLE 1

The corresponding data for the case study school for 1997 was:

5 or more GCSE A*-C	21.4 %
5 or more GCSE A*-G	73.0 %
1 or more GCSE A*-G	81.1 %

1997 GCSE results for the case-study school

TABLE 2

Although the percentage with five or more GCSE passes at grades A*-C is above the median, the percentage with five or more GCSE passes at grades A*-G is only half way between the lower quartile and median. The percentage with one or more GCSE passes is just below the lower quartile, probably a reflection of some students exercising the final opportunity in 1997 of Easter leaving in Year 11, but appearing on the examination statistics having been on the DfEE Form 7 school statistics on the third Thursday in January 1997.

This statistical exposure and a requirement to set targets based on the benchmark information is likely to influence and to produce a focus for improvement. In February 1998 the LEA wrote to all its secondary school headteachers proposing 'negotiable targets' for 1998 – 2002. The proposed targets were:

Case Study School Key Stage 3 performance at Level 5 and above from 1995 to 1997 (and note that this figure of 51%* is correct):

	English	Maths	Science
1995	51*	33	29
1996	24	42	25
1997	15	48	23
Three year average	30	41	26

Negotiable future Key Stage 3 targets for the Case Study School proposed by the LEA:

	EnglishMaths		Science
1998	37	50	37
1999	42	55	42
2000	47	60	47
2001	52	65	52
2002	57	70	57

Case Study School GCSE performance from 1994 to 1997:

	% 5+ A*-C	% 5+ A*-G	% 1+ A*-G
1994	9	59	70
1995	13	70	82
1996	17	69	83
1997	21	73	81
1998	14	78	85

Negotiable future GCSE targets for the Case Study School proposed by the L.E.A:

	% 5+ A*-C	% 5+ A*-G	% 1+ A*-G
1998	24	76	83
1999	27	79	85
2000	30	82	87
2001	33	85	89
2002	36	88	91

Negotiable targets for 1998 – 2002

TABLE 3

The case-study school failed, by a wide margin, to meet the 1998 target of 24% with five or more GCSE passes at grade C or above and achieved only 14%. The school had anticipated a small drop but was very dismayed that the drop was so large. However, the target of 76% with five or more passes at grades A* to G was exceeded by 2% and the target of 83% with one or more passes at grades A* to G was also exceeded by 2%.

The school declined an offer from the LEA to renegotiate a lower target for the percentage with five or more passes at grade C or above in 1999 and has retained the target of 27%. The school is more optimistic that it will get much nearer to the 1999 target than it was about the 1998 target, and is even more optimistic about the 2000 target of 30%.

The year 2000 target of 30% of the students with five or more GCSE passes at grade C or above contrasts with the school's HRS target for the year 2000 of 50%. The LEA target is, however, more realistic though the HRS target adopts the strategy of setting very demanding goals so that 'tinkering with the margins' is quite insufficient to meet the targets.

The LEA felt that it was very exposed to being inspected in the next round of LEA inspections whilst many of its schools are performing below the level of equivalent schools in other areas of the country. It is being inspected in the spring and summer terms of 1999 and some schools, including – as a volunteer – the case-study school, will be visited by the OFSTED inspection team in the summer term of 1999.

One of the city's schools in the HRS project, described as School 3 in chapter 6, has compared the predicted GCSE performance from the cognitive ability test results on intake into the school with actual results for the last three years and with the LEA proposed targets for the next five years. The comparison is shown in the following table:

	Predicted GCSE Performance	Actual GCSE Performance
1990 Intake 1995 Examinations	17.4%	25.2%
1991 Intake 1996 Examinations	19.8%	27.1%
1992 Intake 1997 Examinations	23.0%	28.1%
	Predicted GCSE Performance	L.E.A. Proposed Target
1993 Intake 1998 Examinations	17.5%	27.0%
1994 Intake 1999 Examinations	15.5%	30%
1995 Intake 2000 Examinations	12.7%	34.0%
1996 Intake 2001 Examinations	18.7%	38.0%
1997 Intake 2002 Examinations	20.9%	43.0%

GCSE Predictions for School 3

TABLE 4

There is a clear conflict between the LEA proposed targets and the historical differences between the actual percentage of students obtaining five or more GCSE passes at grade C or above and the predictions from NFER cognitive ability testing on intake to the school. The average increase in the actual percentage over the predicted percentage during the last three years has been 6.7%. The LEA proposed a difference of 9.5% for 1998 and a difference of

21.3% for the year 2000. Whilst an increase of 9.5% might seem to be an ambitious but realistic target, an increase of 21.3% seems to be unrealistic and probably unachievable. There is also a difference in the way in which the school is calculating its results compared to the LEA statistics. The percentages in the table above are the percentages based on its examination entries and not a percentage of its January Form 7 roll numbers in Year 11. Its percentage of students with five or more GCSE passes at grade C or above for 1997 was 26%, so the LEA target for 1998 was even more challenging for the school to meet.

The school actually achieved 23%, which was a 3% fall rather than a 1% rise. The 1999 target therefore now looks even more challenging, and perhaps unrealistic.

In a letter dated 30 March 1998 the DfEE wrote to 400 schools, including the case study school, inviting them to be involved in the pilot publication of value added performance tables for the 1998 GCSE results. The letter said that 'we are writing to around 400 schools, from which we will select 200 schools which have available the necessary Key Stage 3 data and are willing to commit themselves to this exciting pilot project'. The case study school agreed to be involved in the pilot publication since this is clearly the direction in which the publication of examination performance is going to proceed in the future. In agreeing to take part, the school agreed to:

- check each pupil's Key Stage 3 results and make corrections where necessary;
- provide KS3 results for pupils who joined the school since 1996; and
- provide exact details as entered on each pupil's GCSE entry and/or GNVQ registration.

Although the value-added information was available to the pilot schools it was removed from the published statistics due to very wide concerns about the soundness of the conclusions derived from the data. The DfEE used its own interpretation of the meaning of success and wrote to the pilot schools on 2 December 1998 to thank them 'for agreeing to take part in the pilot and for helping to make it a success'.

The value-added information was published as a supplement to the Secondary School Performance Tables 1998 and the DfEE claimed (DfEE, 1998b) that 'the measures are statistically robust'. These 'robust' statistics suggested that a school with 100% of its students obtaining five or more GCSE passes at grades A* to C had a value added indicator of E – with E representing the 5% of schools furthest below the median. Understandably, this school, and others in a similar position, were not convinced of the robustness of the conclusion. In contrast, a school with 2% of students obtaining five or more GCSE passes at grades A* to C did rather better with a value added indicator of D.

Some schools managed to achieve both indicators of A and E with, for example, one school having an indicator of A for students with an average KS3 level of 4 and below, but an indicator of E for students with an average KS3 level of between 4 and 5.5.

In February 1998 Panda (Performance and Assessment) profiles were produced [OFSTED, 1998b, 1998c] giving information to schools about their background levels of deprivation and comparative performance with schools of similar levels

of deprivation. Pandas were issued to all 24,000 schools in England although there is no requirement at present for schools to publish the information in them. Some of the information in the PANDA REPORT for 1997 for the case study school is given in Chapter 5 as part of the background information to the school.

In March 1998 OFSTED (1998d) published guidance on school evaluation giving examples of how individual staff in a school have been able to initiate evaluation and improvement.

The target-setting and benchmarking requirements have added to the pressure for school improvement initiatives in order to meet the targets. It is a further factor in the willingness of the case-study school to be involved in the highly reliable schools project. The HRS project is consistent with, and ahead of, the government vision [DfEE, 1998c, p.12, para.3] that the school should take 'responsibility for improving itself' and that the school should 'seek continuous improvement, expect change and promote innovation'.

The next section describes how the case-study school became involved in the project.

1.8 How the case-study school became involved in the HRS project

The introduction of the project at the case study school is described in full in chapter six. The writer became award of the pilot project in the south of England through following Professor Reynolds' course on Management of School Effectiveness and School Improvement in the Spring Term of 1996. Reynolds

had moved to Newcastle University from the University of Cardiff after starting the pilot project and it was therefore a natural progression to invite schools in the north to be involved.

The case study school had moved from a position of 1.5% (two students) obtaining five or more GCSE passes at grade C or above in 1990 via an uneven path to 9% in 1994 and 13% in 1995. The school was aware from the summer of 1995, before it had the 1995 results, that it would have its first OFSTED inspection in November of 1996. It was already using a variety of strategies to raise achievement and was well aware, from the 9% statistic, of the need for improvement and of the capacity for improvement. Most of the strategies being used were similar to the strategies proposed for the HRS project but lacked the project's clarity of purpose. It was therefore a relatively easy transition to enter the project and the school entered as enthusiastic volunteers, keen to make improvement happen at the school and keen to have a successful OFSTED inspection.

David Reynolds approached the LEA to ask if he could speak to the secondary headteachers about the project. The LEA agreed to the request and agreed to fund the project for those schools that volunteered to take part. All the city's secondary headteachers were told about the project at a conference held in May 1996 and were invited to volunteer to join the project with all the costs, £3,500 per annum per school, being met by the LEA. Seven of the twelve comprehensive schools agreed to join from January 1997, but the case study school had its targets in place and had rewritten its development plan using the

project targets for September 1996 before its first OFSTED inspection which took place in November 1996.

The targets and the input to the school from the university are described in chapter 6. Although at the time of writing the project was at a very early stage, it nevertheless had some criticism. The next section describes the criticisms that have been made and some of the controversies that need to be resolved.

1.9 Criticisms of the Highly Reliable Schools proposition and controversies to be resolved

This chapter has argued that the strategies used in the Highly Reliable Schools Project were not conceived from Stringfield's proposition, but from the evolution of school improvement knowledge. Stringfield's proposition, however, is original in its suggestion that effective strategies for achieving demanding targets in education might be emulated from the strategies for achieving demanding targets in another academic discipline – and in a discipline that studies activities where failure is perceived to have the potential for catastrophic consequences.

Doubters do exist however, and concerns were expressed at a lecture to Fellows of the Royal Society of Arts in March 1996 that was subsequently published in the RSA journal. Professor Tim Brighouse criticised the idea of HRS (Highly Reliable Schools) in the lecture to the RSA. Brighouse [1996] extravagantly claimed that the Highly Reliable School, described in terms of failure-free schooling is 'one of two tendencies towards *failure* that we need to guard against, the first tendency being the exaggeration of the existence of failure'.

Brighouse described the HRO concept [p.63] as a 'recent fad drawn quite falsely from the air traffic control world - namely that we can build failure-free schools and eliminate failure once and for all. Even it that were wise, we cannot. Nor, incidentally, do air traffic controllers, as anyone in that particular line of business will tell you'.

If Brighouse can not be convinced that there is something of relevance in the idea then it could be even harder to convince teachers. The criticism seems to derive from the comparison with air traffic control and with the use of the term 'failure-free'. It may well be preferable to use air traffic control as an example of a process, which has a clearly defined aim, but not as an example of a process that is comparable in function to teaching. Neither Stringfield nor Reynolds have suggested that the HRS project will result in failure-free schooling or that failure can be eliminated once and for all. It could, of course, be suggested that there was some element of failure on Brighouse's part in not finding out rather more about the proposition before making a public criticism, especially since what he then proposed had a significant amount in common with the HRS proposition.

Brighouse's alternative proposals for school improvement do not contradict the highly reliable schools proposals. Brighouse [1996] proposed a strategy of an analysis of 'built-in' failure that has a very simplistic analogy with computer virus detection. Brighouse [1996b] distinguishes

> between on the one hand the *lists* of characteristics rehearsed in school effectiveness research, in OFSTED/HMI and other writings and on the other a clearly defined set of *processes* which schools necessarily engage in on a daily basis and which when coupled with certain *interventions* cause a school community to improve.

In spite of his implied criticism of the HRO concept at his RSA lecture, Brighouse's proposals for 'Success for Everyone' do not in any way negate Reynolds' proposals and complement the HRO proposals rather than contradict them. Fundamental to Brighouse's concept is the belief that schools can make a difference. He also proposes target setting as a means of achieving improvement although his proposal does not require a limit of a maximum of four targets which is a requirement of the HRS project.

Brighouse continued with his scepticism of 100% reliability in a TES article [1998, p.15] in suggesting 'the need to examine whether OFSTED is the first fault-free "100 percent reliability" organisation'. The use of the word 'reliability' in education has, however, been used with less scepticism by Barber [1998, p.19], who used Reynolds' frequently-used example of air traffic control as a highly reliable organisation in the fourth TES/Greenwich lecture in May 1995. Barber said 'we would after all be appalled if an air traffic controller attempted to reassure us by telling us that the other nine planes landed safely. We ought to be aiming to emulate as far as possible the levels of reliability achieved in other types of service'.

Stringfield [1998] introduced another interpretation of reliability in suggesting that ineffective schools have often failed to achieve the targets of school improvement programmes because the 'reform has not yet put reliable implementation supports in place' [p.217]. Stringfield then goes on to list the characteristics of highly reliable organisations 'with implications for overcoming school ineffectiveness'. Stringfield says [p.219] that we know 'enough seriously

to take on the historically unimaginable tasks of eradicating functional illiteracy and inadequate mathematical skills from virtually all school children, regardless of background. We can do this in our lifetimes.'

Eradicating functional illiteracy and inadequate mathematical skills is not the same as eradicating failure once and for all. Stringfield does not claim that high reliability is a state that can be sustained without continuous strategies for effectiveness.

Stringfield seems to believe that the strategies used by highly reliable organisations could be effective in improving all schools. This is regardless of whether they are what Stoll and Fink [1998, p.192] describe as moving (improving and effective), cruising (effective but declining), struggling (improving but ineffective), sinking (declining and ineffective) or merely strolling (neither improving nor declining, and neither effective nor ineffective). This seems to contradict the views of other researchers on the context specificity of strategies for improvement. Stringfield is supported by Reynolds in that the Highly Reliable Schools project has been offered to schools as a strategy for improvement regardless of which of the above might describe them.

A further concern, not unique to the HRS project, is that strategies that are successful in one situation and time may not be successful in another situation or at another time. Gray et al [1996, p. 173] wrote that 'we should be cautious in recommending simple treatments for whole ranges of schools'. Gray's view that context specificity is a fundamental element of school improvement is supported by other researchers. Louise Stoll et al [1996, p. 141] says that 'it is highly

unlikely that there will ever be a knowledge base produced outside schools that will be absolutely appropriate for each individual school' and that 'knowledge obtained from schools under one set of educational arrangements may be invalid under another"

1.10 Conclusion

The school improvement journey during the last three decades, since comprehensive reorganisation became a key feature of secondary education, has led to the present position of a strong belief that schools can make a difference. There is a significant 'knowledge base' to support the hypothesis that schools can make a difference and that outcomes, whilst clearly influenced by the home background and the innate ability of each student, are also influenced by the school. There are strategies for intervention by schools that can raise student performance.

Target setting of future examination performance is clearly going to be a significant feature of government strategies for encouraging school improvement at the start of the new millennium. The apparent absurdity of every school setting increasing targets for performance in normative evaluated examinations will need to be resolved. A school can only achieve better results through a norm-referenced examination by improving its performance relative to students in other schools. A corollary to this must be that the performance of some schools will go down or that there will be deliberate slippage in GCSE grade boundaries.

The LEA of the case study school has found itself in the position of having improved, but that the improvement is less than the rate of improvement of comparable LEAs and therefore its relative position has become lower. This makes the LEA even more anxious to adopt proven strategies for school improvement. There is likely to be an increasing interest in a school's performance relative to that of other schools in the same group of schools determined by the percentage of students with free meals.

Hopkins [1994, p.191] argues 'that the only way that schools can survive and enhance quality in an era of change is through school improvement. School improvement as a strategy for change focuses not only on the implementation of centralised policies or chosen innovations, but also on creating the conditions within schools that can sustain the teaching-learning process'.

The suggestion [Hoven, 1996, p.vii] that effectiveness researchers viewed school improvement as eclectic would be sustained by the eclectic origin of the Highly Reliable Schools hypothesis, which conveniently, if not simplistically, borrows theories from an engineering discipline. Paradoxically, Reynolds and Stoll [1996, p.95] have argued that 'school improvement scholars have reacted against the simplistic nature of past North American school effectiveness literature'.

Both Stringfield and Reynolds have used the word 'serendipity' to describe the chance encounter with the safety officer. The notion that professors might discover significant theories by accident whilst travelling around the world on aeroplanes is perhaps not a suggestion that would influence the conversion of doubters to the hypothesis that schools might improve by adopting some of the

strategies of highly reliable organisations. The proposition needs to be justified through its association with the latest school effectiveness and school improvement knowledge.

This account of the Highly Reliable Schools project is inevitably an interim account providing a reflective view from the position of one worker within the project. Its justification is summarised by Hopkins et al [1994, p.190] who say that 'reflective stories from the field are, in our opinion, as useful to fellow travellers as a polished account of an expedition accomplished'.

The next chapters describe how the case study school has created the conditions to adopt a strategy for school improvement that focuses on the core policy of target setting for improvement in examination performance. It describes how the staff have collaborated to set targets for performance which will match the highest value-added departmental performance. It describes how differentiation has been tackled and how expectation has been raised. It describes how all the staff have become involved in the project and how it has given a sense of common purpose to the school. It describes how the school development plan has been used to define school and departmental priorities supported by action plans and how strategies have been developed in order to achieve the targets in the development plan.

It also describes how the key features of the Highly Reliable Schools Project have been adopted by the feeder primary schools. The project has provided a framework for school development planning in the primary schools as well as in the case study secondary school. This involvement of the feeder primary schools

illustrates the dimension of the length of the school improvement journey. The strategies being used by the primary schools with their intake classes this year are intended to lead to improvement in examination performance in ten years time.

The case study school may therefore not arrive at a plateau in its performance for at least ten years even though its journey during that time may have troughs as well as peaks. The following chapters do not attempt to describe a speedy solution to the problems of under-performance in inner-city schools. It does attempt to describe one way in which change has been implemented and managed with a long-term vision in an inner-city secondary school.

CHAPTER TWO

RELIABILITY THEORY IN A SCHOOL CONTEXT

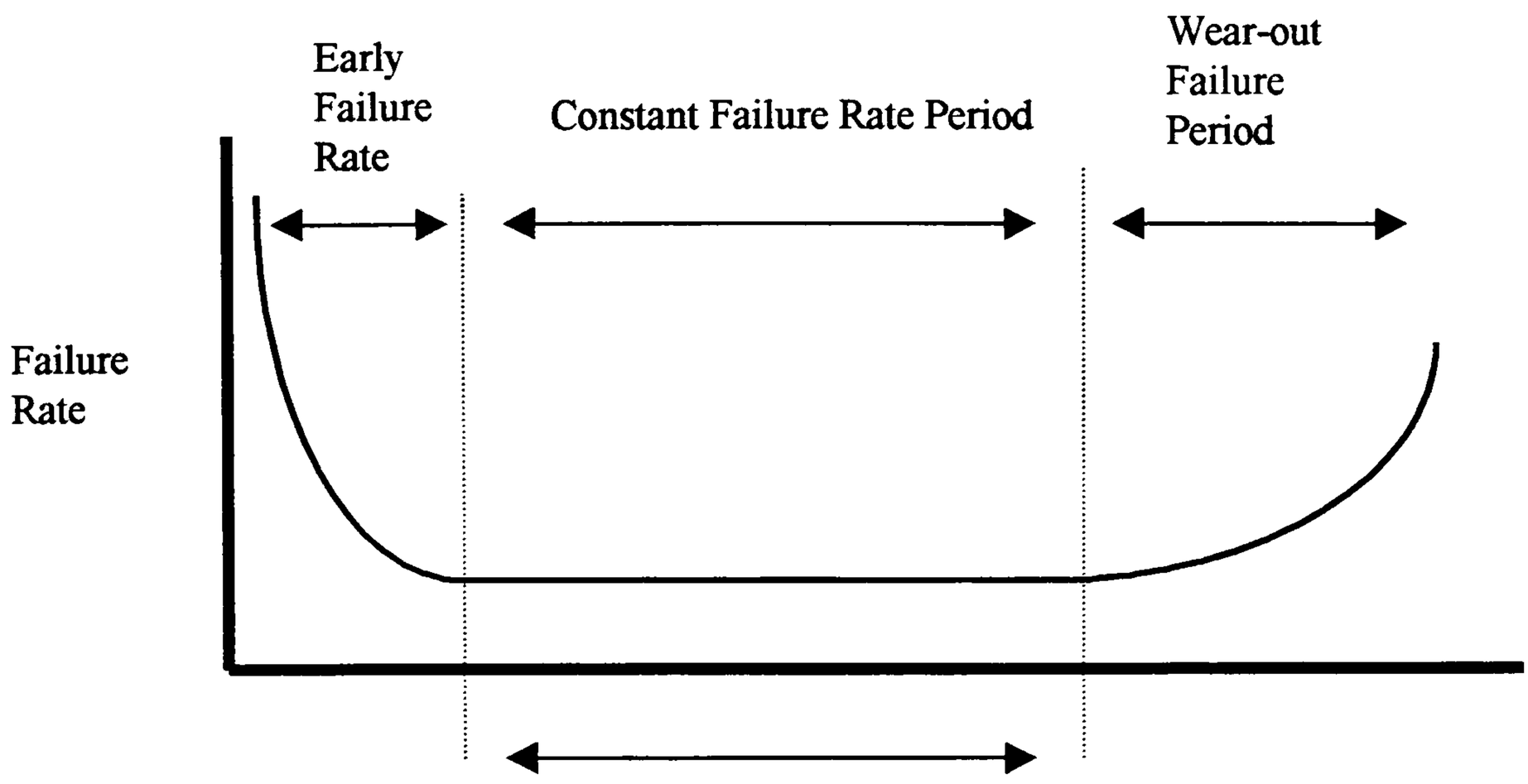
2.1 A definition of reliability

A widely accepted definition of "reliability" can not be found in educational textbooks. It does however have what Ben-Haim [1996, p.vii] refers to as 'a plain lexical meaning. Lexically, that which is reliable can be depended upon confidently'. The Concise Oxford Dictionary says that 'reliable' means 'that which may be relied upon, of sound and consistent character or quality', and that 'rely' means 'put one's trust, depend with confidence, upon person or thing'.

Most engineering textbooks have a 'bath tub' graphical depiction of reliability. A typical definition [Green and Bourne, 1972, p.25] is:

> Reliability is defined as that characteristic of an item expressed by the probability that it will perform its required function in the desired manner under all the relevant conditions and on the occasions or during the time intervals when it is required so to perform.

The 'bath tub' curve from this definition [Dummer and Winton, 1990, p.7] is:



Bath Tub Curve

FIGURE 1

Their analogy of life expectancy in developed countries compared with developing countries [Dummer and Winton, 1990, p.7] is illustrated by considering a human life as a part which eventually wears out:

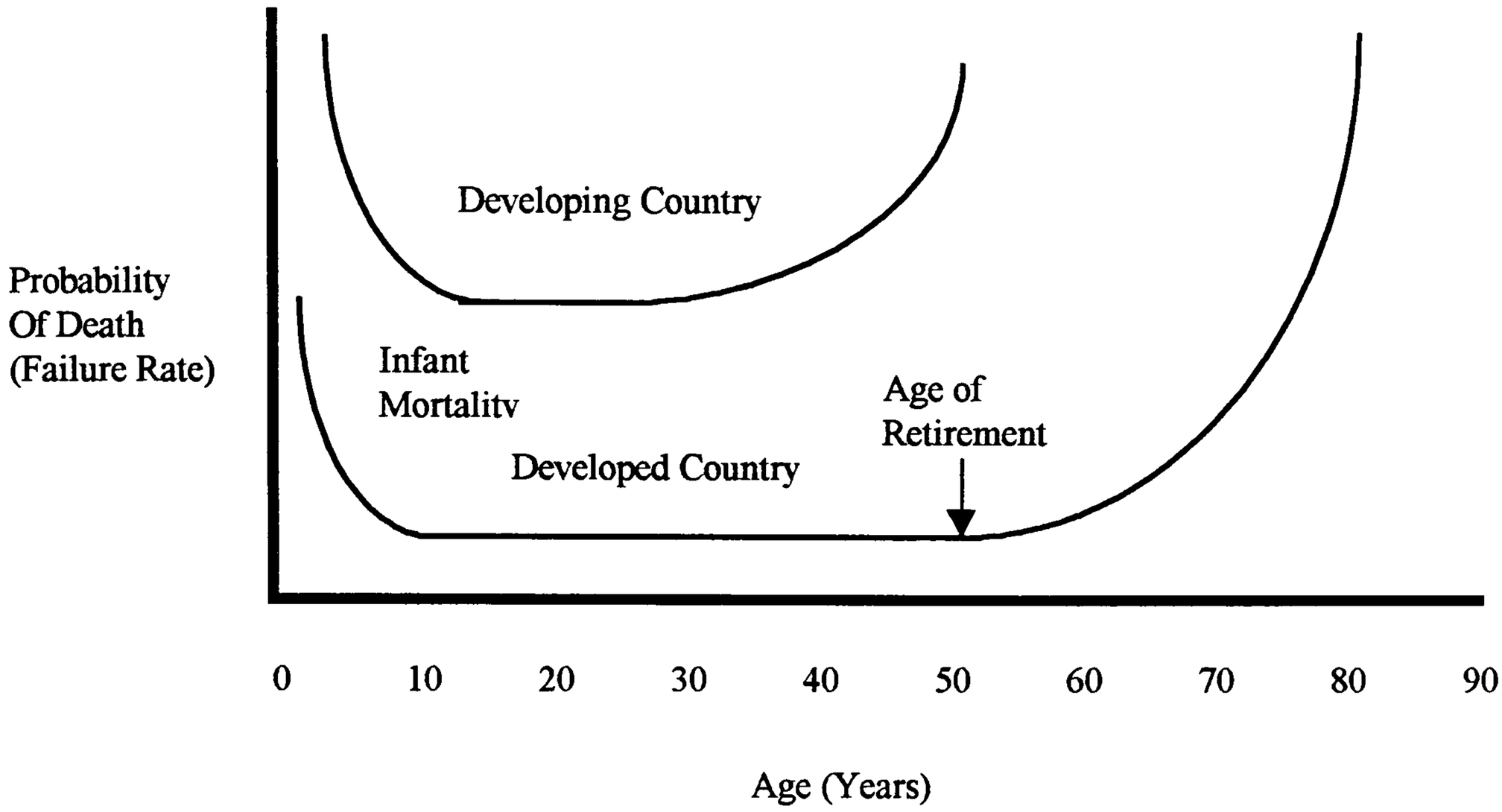


FIGURE 2

Shooman [1968, p. 13] says that 'reliability is essentially a birth-to-death problem, involving such areas as raw material and parts quality, conceptual design, detailed engineering design, production, test and quality control, product shipment, warehouse storage, operator skill and technique, maintenance and product use'. Shooman was using the words birth and death in terms of product life, but a belief that education is a birth to death experience makes the consideration of secondary school reliability into a very small subset of the total reliability of education.

2.2 The origin of reliability theory

Most engineering texts on reliability suggest that the origin of reliability theory is from the development of military complexity between the two world wars or from developments in the aircraft industry. Shooman [1968, p.1] says that 'the problems of maintenance, repair, and field failures became severe for the military equipment used in World War II. In the late 1940s and early 1950s reliability engineering appeared on the scene.' Ramakumar [1993, p.2] puts the origin slightly earlier claiming that 'during its expansion after World War I the aircraft industry was the first industry to use reliability concepts'.

Ben-Haim [1996, p.215], however, says that 'the reliability of technological constructions is one of the oldest concerns of civilization. Forty centuries ago Hammurabi decreed the following severe penalties for structural failure:

> If a mason has built a house for a man, but he has not consolidated his work and the house falls down causing the death of the owner of the house, this mason shall be killed. If he causes the death of the child of the owner of this house, the mason's child shall be killed. (Articles 229-230).'

Ben-Haim goes on to say [p.215] that 'cognizance of social expectations can profoundly influence his (the engineer's) professional decisions. Just ask any mason from Hammurabi's time.' It could be argued that social expectations of education are profoundly influencing developments in school improvement at present. The responsibility for perceived educational failure is normally expected to be accepted by the headteacher, although resignation, rather than death, is the normal consequence.

2.3 Characteristics of reliability theory

Reliability theory is usually seen as a science in its own right. Polovko [1968, p.xvii] says that 'reliability theory is an independent science and not a separate branch of probability theory. It is a technical - not mathematical - discipline and the range of problems it can solve is not limited to the problems of probability theory.' Polovko was not, however, suggesting any link with a discipline such as education. He does however say that [p.xviii] 'failure is usually preceded by complicated internal variations in a system, just as the death of a living organism is preceded by its sickness.'

Engineers distinguish between early failures, chance failures and wear-out failures. It would be possible to translate these divisions into educational divisions. Early failure in the sense of engineering production defects might be seen in the sense of failure of an institution to provide appropriate education for some students on transfer from a previous phase of education. Chance failure as the exclusion of a student or the withdrawal by the parents of a student. Wear-out failure might be considered in terms of an inadequate value-added education at the exit point of a student, but this does not translate easily into an educational definition since wear-out failure is something which an engineer expects, for example when a car tyre is expected to wear out.

Sage [1995, p.3] defines a relationship between risk and reliability. He defines risk as 'the probability or likelihood of injury, damage, or loss in some specific environment and over some stated period of time.' He defines reliability as 'the probability that a product or system will perform some specified end user function

under specified operation conditions for a stated period of time.' In an educational context risk analysis might measure failure, whereas reliability analysis might measure success.

Polovko [1968, p.xix] says that 'reliability theory is a new, still unformulated science' and that amongst the areas it studies are 'the methods of increasing reliability, the methods of testing equipment for reliability and the scientific methods of operating equipment with its reliability taken into account.' Reliability theory extended into the field of education is very new and considerations of how a school might become increasingly reliable, how it might be tested for reliability and how it might be operated with its reliability taken into account, are yet to be defined and investigated by researchers in the field of school improvement.

A further widening of the concept comes from the military origin of reliability being one part of a group of assurance sciences in the sense in which physics might be seen as one branch of the study of science. Halpurn [1978, pp. 4-11] sees the assurance sciences as consisting of the branches of quality control, reliability, maintainability and integrated logistic support. Halpurn [p.7] keeps to the accepted definition of reliability as 'the probability that a device will perform its intended function for a specified period of time under stated conditions'.

Leitch [1988, p.13] illustrates the problem of defining a specified task. He says that 'for a simple item, such as a light bulb, the definitions of function and failure are easy to define'. He then uses examples of a tin opener which is old and worn but will still open a tin if used with care, and a car with a broken headlight which

can still be driven to illustrate that even for a simple piece of equipment it may not be easy to define reliability.

The term 'intended function' defined in a school context is not as easy to define as the function of a tin opener, a tyre on a car or a chain on a bicycle. A school might have many intended functions and might therefore be very reliable in some but less reliable in others. It might be necessary to consider the value of improving the examination performance of all students by 1%, compared with improving the examination performance of 10% of the students by 10% and compared with improving the examination performance of 1% of the students by 100%. All of these improvements would have the same impact on a school's average performance but, at the same time, have very significant differences.

Needleman [1982, p.91] illustrates this same difficulty with valuing life. He says that 'the value society puts on saving one individual from certain death, will be different from the value put on reducing the probability of any of ten people dying by 10%, and that again will be different from the value put on reducing the probability of any one of one million people dying by 0.0001%'.

High reliability theory is of particular concern to industries where there is low probability but high-consequence of failure. Examples of such industries would be nuclear power plants, chemical plants and air traffic control. The study of high reliability includes the study of human failure. Swain [1984, p. 293] defines Human Reliability Analysis, HRA, as 'the general term to describe the quantification of human error and its effects on system reliability and safety' and

notes that 'uncertainties about human behavior are usually greater than those of many other system components.'

For all school students there is a high individual consequence of failure but the probability of failure can vary considerably with the student. Students who, for example, have any of the characteristics of challenging behaviour, poor attendance or low reading age on transfer to secondary school may have a much higher probability of failure. That is, students who already exhibit signs of failure on transfer are probably at much greater risk of further failure and their failure may impact considerably on other students with whom they are taught. In some cases they are capable of having a catastrophic impact on other students.

Wahlström [1995, p.61] says that 'at present there is no model, by which accurate predictions of the performance of a socio-technical system can be given.' Although Wahlström was particularly considering human behaviour in the context of safety, his proposals about the modelling of human-machine systems translate more readily into an educational context than do other traditional systems within reliability theory. Wahlström says [p.61] that 'the accident at the TMI-2 plant near Harrisburg in 1979, was the triggering event for much more activities in the human factors field.' The accident commission identified deficiencies of 'control room design, operating procedures, and operator training'.

Roberts [1990a] introduced another fundamental characteristic of the most often quoted example of a highly reliable organisation. The reliability of an aircraft carrier [p.162] 'is defined in terms of peacetime training activities, not her ability to perform in wartime'. Roberts distinguishes between the two major functions

of an aircraft carrier: 'to project power abroad and to engage in war at sea'. She suggests that whilst the USA has considerable recent experience of the former function there is very limited experience of the second function since 'there have been very few wars at sea'.

It might equally be argued that schools have concentrated on preparing students for work and have failed to prepare students for a role of not working or of having to change the nature of their work many times during their working lives. It could also be argued that the reliability of an educational institute only becomes examined when it is seen as failing and not when it is seen as succeeding. Education might therefore be seen to have limited experience of a concept of a theory of reliability for improvement.

Roberts [1990b, p.102] says that in a highly reliable organization 'performance reliability rivals productivity as a dominant goal' and that to be a highly reliable organization it is necessary for there to have been the possibility of failure 'with dramatic consequences'. She quotes Pacific Gas and Electric Company, The Federal Aviation Administration's Air Traffic Control Centers and U.S. Navy aircraft carriers as examples of studied organizations which meet this definition.

2.4 The presence of reliability characteristics in education

Roberts and Rousseau [1989, pp.132, 133] proposed eight 'properties that distinguish high-reliability organizations from other kinds of organizations'. These 'primary characteristics' are: hypercomplexity, tight coupling, extreme hierarchical differentiation, large numbers of decision makers in complex

communication networks, a high degree of accountability, high frequency of immediate feedback about decisions, compressed time factors and more than one critical outcome that must happen simultaneously. It would be possible to put these eight 'primary characteristics' into a school context, but not without making some significant adjustments to the definitions of some of the characteristics. Roberts and Rousseau, however, would be unlikely to consider schools as being highly reliable organizations since they say [p.133] that 'hospital emergency rooms, for instance, are characterized by several of the above dimensions, including hierarchical structuring of physician-nurse teams, immediate feedback and tight coupling; yet other dimensions (e.g. hypercomplexity and large number of decision makers) are largely irrelevant. Emergency rooms also seldom self-destruct.' They would therefore presumably also see some of their eight primary characteristics as being largely irrelevant in an educational context.

The view that hospitals do not have all the characteristics of high-reliability organisations is supported by Meyer [1982, p.45] who says that the administrator of the hospital being studied claims that 'about 60 per cent of the work they do in other hospitals is nonessential. He singles out memos, meetings and conferences as frivolous activities'.

LaPorte and Consolini [1991], however, do not support this restricted definition of High-Reliability Organizations. They say [p.20] that the 'high-reliability goal has been part of organizational life for some time, for example, in hospital operating rooms, the delivery of water supplies, preventing accidents in the workplace, care in financial accounts, and other activities within organizations'. They give further examples of 'electrical generation and distribution systems,

large-scale telecommunication and computer networks, express air freight, and maintenance of the purity of blood supplies used for transfusions'. They say that 'little is known systematically about the social or management aspects of such activities or the consequences for the operating organizations of attempting to attain nearly failure-free performance'.

LaPorte and Consolini's examples, for instance those of express air freight and the maintenance of the purity of blood supplies, seem much more relevant and transferable to an educational context than examples which are derived from organizations which seek to avoid catastrophic disaster.

2.5 Human reliability

Weick [1987, pp.116, 117] proposes two characteristics of high reliability which are possibly additional to the eight 'primary characteristics' proposed by Roberts and Rousseau. These two characteristics are delegation and trust. He says that 'the issue of effective delegation of responsibility is crucial in high reliability systems. The most effective means for airline pilots to handle crisis, for example, is for the captain to delegate the task of flying the plane and then make decisions about how to handle the crisis without worrying about the details of flying.' The willingness of a headteacher to delegate as a normal feature of management could be seen as an essential criterion for a school to cope in crisis.

Weick's second proposition is trust and he argues that in order to be able to trust someone in a crisis it is necessary not to trust them during practice and that 'building trust in high reliability systems is difficult because so much is at stake'.

Although the word 'not' seems to be surprising at first reading, it makes particular sense when put into the educational setting of an OFSTED inspection. If Weick's second proposition is worded that in order to trust the staff during an OFSTED inspection it is necessary not to trust them during the preparation for an inspection, then the proposition seems to be very sound.

During an inspection [OFSTED, 1995b, p.28, section 44] the 'individual inspectors should allocate time to collect the range of core evidence on which the judgements of the team must be based'. The 'scrutiny of schemes of work and teachers' plans, records of National Curriculum tests and teachers' assessments, and results in GCSE, A-level, GNVQ and other courses, and details of any assessment undertaken on entry, and other measures or indicators of attainment and progress used by the school' would be part of the extensive list of areas where trust during the inspection might be more confidently anticipated if it has not been assumed during the preparation stage for the inspection.

Turner [1976, pp. 378-397], however, concluded from a study of the 1996 Aberfan colliery tip disaster in Wales, the 1968 British Rail Hixon Level Crossing accident and the 1974 Summerland fire in Douglas, Isle of Man, that it is rare for one person to be able to create a disaster in a highly reliable organisation. He concluded [p.395] that 'it is rare that an individual, by virtue of a single error, can create a disastrous outcome in an area formerly believed to be relatively secure. To achieve such a transformation, he or she needs the unwitting assistance offered by access to the resources and resource flows of large organizations, and time'. He contrasts [p.395] the analysis of 405 accidents in gold mines [Lawrence, 1974] which showed a mean of 1.96 human errors per accident, with those at

Aberfan, Hixon and Summerland which were associated with 36, 61 and 50 human errors per disaster, respectively.

Turner's hypothesis [1976, p.395] that 'small-scale failures can be produced very rapidly, but large-scale failures can only be produced if time and resources are devoted to them' would be interesting to investigate in the context of schools which have failed an OFSTED inspection. It would also be interesting to investigate in a failing school context Shrivastava's [1992, p.5] proposition, in a study of the Union Carbide Bhopal disaster in India in December 1984, that the accident 'need not necessarily have become a crisis. Accidents become crises when subsequent events and the actions of people and organizations with a stake in the outcome combine in unpredictable ways to threaten the social structures involved.'

In a study of the savings and loan industry in California, Haveman [1992, p.50] says that 'achieving high reliability and accountability requires that organizational structures be highly reproducible over time and cross-sectionally (highly inert)'. She argues that 'organizational forms that are stable will be selected over organizational forms that are changeable; moreover, stable organizational forms will exhibit lower failure rates'. This does not, however, contradict Meyer since Haveman does not make any attempt to demonstrate that the savings and loan industry exhibit all the characteristics of highly reliable organisations even though she uses some of the language of high reliability.

Haveman's propositions for high reliability and accountability would be interesting to investigate in a study of schools which have closed since

comprehensive reorganisation, compared with those schools which have been able to resist the pressures of surplus place reviews, mergers and falling rolls. Are there some characteristics of schools that make them more inert and therefore more stable?

Weick, however, [1976, p.1] supports the view of Roberts and Rousseau that educational organisations do not have the primary characteristic of tight coupling and he suggests that parts of educational organisations 'prove intractable to analysis through rational assumptions'. Weick proposed [p.16] that research should be conducted 'examining the possibility that educational organizations are most usefully viewed as loosely coupled systems'.

2.6 The cost of reliability

A definition of 'reliability' for use in reliability theory, or for reliability modelling in high technological systems such as electric power systems, or for quality control within the assurance sciences, or within risk analysis or for mathematical study of reliability theory always leads to the consideration of value for money. Enrick [1972, p.219] says that 'the most nerve-wracking part of any space flight is the fact that your life depends on thousands of critical parts, each produced by the lowest bidder.'

Reliability overlaps with cost-effectiveness theory. In particular, it overlaps with analyses of the cause of the failure of systems as much as with considerations for the success of systems. The nuclear industry has particularly invested in the study of common-cause failure. Parry [1995, p.185] defines common-cause failure

basic events as 'basic events that represent multiple failures of components from shared root causes'. Translated into educational terms Parry's CCF analysis of examination performance might see the possibility of multiple failure of components such as parental support, attendance, homework and coursework.

Khatib [1978] introduces the notion of the *value* of reliability and [p.13] said that 'by value we mean the estimation, in monetary terms if possible, of the benefits and utility derived from achieving extra reliability'. Khatib also says that cost-benefit analysis can be done without monetary valuation, and that within electrical power system distribution it can be possible [p.16] 'to evaluate the cost of different schemes and the probable amount of interruption' and uses three methods of protection of rural single feeders as an example to consider the benefits of additional expenditure in terms of a reduction in consumer-hours lost.

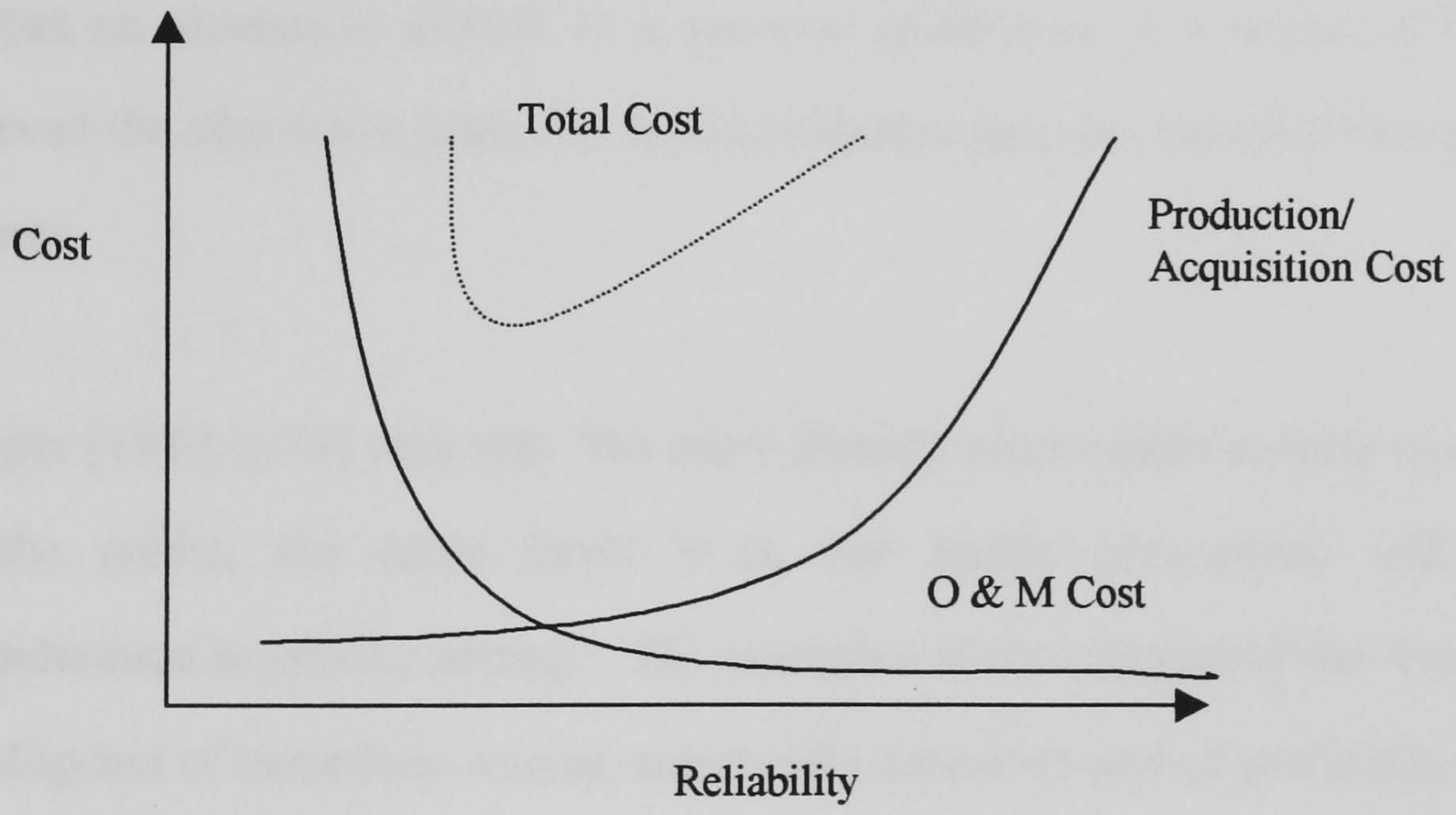
This produces a paradox within this study since improvement in examination results at the school has been associated with a period of considerable reduction in funding. The more the funding has been squeezed, the more has been the improvement. A considerable worsening of the P.T.R. (Pupil: Teacher Ratio) has taken place alongside an improvement in examination results. The table shows the P.T.R. and percentage of students obtaining five or more passes at Grade C or above at GCSE between 1993/94 and 1997/98:

Year	Roll	FTE Teachers	P.T.R.	% 5+ GCSEs at C+
1993/94	1058	64.8	16.3	9
1994/95	1075	64.8	16.6	13
1995/96	1111	66.0	16.6	17
1996/97	1118	68.8	16.3	21
1997/98	1199	68.2	17.6	14

The PTR and percentage of students obtaining five or more passes at Grade C or above at GCSE between 1993/94 and 1997/98

TABLE 5

The cost of reliability leads to the question of 'is it reliable enough?' Ramakumar [1993, p.2] shows how cost can be at a minimum for a particular value of reliability when considering the 'relationship between reliability, failure rate, operation and maintenance cost, production and/or acquisition cost and total cost:



The Cost of Reliability

FIGURE 3

The questions 'is it reliable enough?' and 'have we spent as much as is reasonable?' translate fairly readily into educational questions. There is a considerable cost in reducing class sizes and a perceived educational advantage in doing so. However, there comes a point where further increased cost may not lead to any further advantage. There is a point where there may be educational disadvantages in teaching a very small class, for example if there is a reduction in the number of able students in a class to produce a challenge to other able students.

Alongside cost considerations are a number of ethical considerations of reliability. Howard [1990, p.103] introduces the notion of 'risk imposition' which he says 'can be addressed in terms of the legal procedures used when one person claims that another is imposing an unacceptable risk on him'. This question translates into an educational question in asking how reasonable it might be for a LEA to impose an alternative school to a parental preference of a school if the LEA believed the alternative school to be less effective than the school preferred by the parents.

Kasper [1980, p.79] says that 'the more directly accountable a decision-maker is to the public, the more likely it is that public perceptions will receive consideration in priority setting'. His examples of the collapse of the Teton Dam, the disposal of hazardous wastes, automobile emissions and of pesticides could be extended into education with the increasing accountability of education in this country.

Roberts [1990, p.173] argues that 'it does not make sense for organizations to adopt expensive ways to manage themselves if they do not need to. For example, redundancy is tremendously expensive and one cannot see any reason for an organization to have large amounts of it unless it is needed'. In apparent contradiction to this hypothesis, the city in which this research is conducted has invested heavily in early retirement terms without any evidence that this might increase effectiveness in its schools. The two senses of the word 'redundancy' are not completely different. Redundancy in a reliability context is used to describe duplication to provide an alternative for system failure and has a calculated cost. Redundancy in an employment context also has a calculated cost and also often provides duplication, but not duplication that is available for system replacement. For example, there is no requirement for teachers who have had extremely generous early retirement terms to cover for the illnesses of the teachers left in work nor to support the education of students in any way whatsoever.

Rochlin [1989, p.166] suggests a conflict in reliability costs. He suggests that the need to provide 'supply redundancy', that is available parts to replace critical components when necessary, can add to the likelihood of failure. As an example he says that on an aircraft carrier the need to carry spare parts adds to 'the dangers and tensions involved in scheduling and moving aircraft'.

Roberts [1989, p.112] suggested another dimension in the cost of reliability in highly reliable organisations. She suggested that 'it is possible that financial institutions are moving into high risk status because failure in them could spark failures in entire economies, which in and of themselves are life-threatening and

which can also lead to world-wide conflict'. The concern of the World Bank to find solutions to the economic difficulties of South Korea, Malaysia, Indonesia and Thailand in 1998 illustrates that this possibility of catastrophic failure is taken very seriously. Lack of confidence in the ability of South Korea to meet repayment commitments made the currency, the won, plunge steeply against other currencies. This had the potential to produce a recession that could impact on prospects in the West and produced a potentially crippling challenge to worldwide financial markets.

2.7 Reliability theory in terms of school improvement

Enrick says [1972, p.219] that 'while reliability as such is not new, the concept of assessing it in quantitative terms with a conscious engineering effort toward reliability improvement has been with us for only a short span of years.' An attempt to merge school improvement knowledge with high reliability knowledge is therefore attempting to merge two evolving fields of study. The first problem with the merger of these two areas of study comes from the definition of reliability. Enrick [p.219] keeps to the accepted definition of reliability 'as the probability that a product, device, or equipment will give failure-free performance of its intended functions for the required duration of time.'

The term 'failure-free' does not readily convert into an educational context since a school performs a wide variety of complex roles and the term then needs to be seen in the context of each of the individual functions of the school. The engineers do not, however, speak in terms of a product being 'failure-free'. They speak of the *probability* of the product giving 'failure-free- service. They do not

define reliability in terms of total lack of failure. Therefore the description of the Highly Reliable School as 'an attempt to move beyond the goal of the relatively successful schools towards the creation of schools which are absolutely successful and which *have eradicated failure*' [Neil Stewart Associates, 1997] is very misleading and does nothing for the credibility of the project.

The first difficulty in adapting a definition of reliability into a school context is that a school does not produce items to be sold. Any measure of reliability is in terms of people not in terms of equipment. Enrick [1972, p.219] defines 'reliability as the probability that *a product, device, or equipment will give failure-free performance of its intended functions for the required duration of time'*. An equivalent definition in a school context might distinguish between the reliability of the partners within the operation. This would at least include the reliability of the teachers, of the student and of the parent but might also be extended to include the reliability of the Local Education Authority. School reliability might therefore be defined in terms of the reliability of each of the partners. A person, however, is far more complex than a machine and defining the intended function of a teacher is far more difficult than defining the intended function of a piece of machinery.

Dummer and Winton [1990, p.48] separate reliability costs into three components: 'the cost of design (including development), the cost of production, and the cost of repair and maintenance'. They say that 'as the reliability of an equipment increases, so will the cost of design and production increase, whereas the cost of repair and maintenance will go down'. This could be considered to be true in a school context. The nature of the school environment is usually seen to

be an important factor in school effectiveness, for example in Rutter in Reynolds and Cuttance [1992, p.8]. Providing the best possible environment has a cost. This could be seen as a design cost which must increase if the aim is to push effectiveness higher.

Dummer and Winton [p.48] say that increase in expenditure in making equipment more reliable 'can, however, be more, sometimes very much more, than offset by economies in maintenance and repair costs.' This needs to be tested in a school context. A production cost could be seen as the cost of compensatory intervention in the early years of schooling. It might be a reasonable hypothesis that an increase in this 'production cost' might produce a lower 'repair and maintenance' cost in the sense of less compensatory intervention being necessary in later years of schooling.

Khatib's [1978, pp.16, 17]] notion of cost-benefit analysis translates into educational terms in a consideration of the cost to society of increased educational expenditure compared with a reduction in state dependency through unemployability in later years. Khatib's example of rural network protection costs exposes [p.17] 'how the marginal cost per every consumer-hour saved increases considerably after making the first step' and 'the dominant feature is the accelerating cost of higher reliability'. A cost-benefit analysis of an increase in the reliability of education with increased expenditure needs to be undertaken to examine the hypothesis that Khatib's conclusion might also be true for education.

Endrenyi [1978, p.1] says that 'the types of expectations to judge reliability by have all been related to the performance of some function or duty. ... Past

experience has helped to form advance estimates as to the degree of trust that one could place in success, or the extent that one had to fear failure. In technical applications such a vague notion of reliability is of little use.' Endrenyi then goes on to give the classical definition of reliability that 'reliability is the probability of a device or system performing its function adequately, for the period of time intended, under the operating conditions intended.'

It is a reasonable proposition that a vague notion of reliability is also of little use within educational improvement theory. It is a further reasonable proposition that a definition will involve measurable quantities of starting points and at points on an appropriate time scale. It will also include a clear indication of the function or duty of the school that is to be measured for its reliability. Preparation of students for external examinations is one function of a school that lends itself to measurement, to statistical measures of improvement and to agreement by the main partners of teachers, students and parents of the key nature of the function. The fundamental requirement of reliability theory that the definition should involve a direct relationship with statistical probability holds for this function.

Gnedenko, Belyayev and Solovyev [1969, p.72] see the concept of reliability as a 'set of three concepts: failure-free operation, life, and maintainability.' This concept translates into health care fairly readily with failure-free operation being healthy during the life span, life as being an extended period of life and maintainability being related to the cost of health care. Education does not readily fit into this set of three concepts and it is possibly not productive to try and adapt the tripartite concept to make it fit. Maintainability in education might be seen as a unit cost concept, but low unit cost is not normally seen as a measure

of an effective school. Engineers, however, would consider that reliability and efficiency are both desirable in their own right.

A passenger on an aircraft would be likely to be far more interested in the probability of the failure-free operation of the aircraft than in its life expectancy or maintainability, and might have taken out insurance to cover the risks of a flight not being failure-free. The same passenger might be more interested in the life expectancy of his own home than in its failure-free operation or maintainability and might have borrowed money to buy the house based on an expectation of its reliability over a long span of time. The same passenger might be more interested in the maintainability of his home central heating system than in its failure-free operation or life expectancy and might take out insurance to cover its maintenance. Which form of reliability insurance might the passenger wish to take out for his child's education?

One challenge for a merger of reliability theory with school improvement knowledge is to ensure that no fundamental requirements for effectiveness are abandoned because they do not readily fall into a classical definition of reliability. An example might be consideration of the functions of a school in ensuring that students are happy and that there is an effective policy on bullying. Parents might see these as being very important functions and might judge the reliability of the school by its previous performance with older children from the same family. This illustrates the problem of measuring school effectiveness in putting 'hard' values on 'soft' data.

Billinton [1970, p.280] concluded that for electrical power systems 'a single all-purpose reliability formula or technique which can be applied in all cases does not exist. The approach used and the resulting formula if it exists, will depend upon the problem and the assumptions that can be tolerated.' The absence of a recognised all-purpose technique for evaluating reliability in a discipline which is well researched and which has embraced reliability theory must suggest a degree of caution in seeking all-purpose techniques for measurement of educational reliability.

2.8 Conclusion

Although reliability theory has developed to provide a theoretical framework to some engineering concepts, there are many features of the theory that can form a basis for a study of school improvement. These features include the use of reliability theory to provide an explanation for the relationship between risk and reliability, cost effectiveness, accountability, an aim for failure-free performance and the stability of organisations.

Some aspects of reliability theory do not however readily translate into an educational context. Some caution is therefore needed in making assumptions about the possible impact of reliability theory on school improvement.

CHAPTER THREE

THE MERGER OF RELIABILITY THEORY WITH SCHOOL EFFECTIVENESS THEORY

3.1 Concerns about the merged theory

A number of concerns arise about the merged theories of reliability and effectiveness. The first concern arises from their basic definitions. Reliability is always defined in terms of a probability of failure whereas effectiveness is always defined in terms of a probability of success. An attempt to produce an inverted 'bath tub' definition of reliability would not convey the same sense of purpose. An airline pilot is not concerned with how many parts are working reliably; the concern is with any part that has failed.

The sum of percentage failure and percentage non-failure does not add up to 100% effectiveness since the non-failure of an item is only part of a definition of its reliability. For example, attendance is measured by the percentage of students arriving at school rather than the percentage staying away. The percentage arriving at school is however not a total measure of the reliability of the attendance of the students. 90% of the students arriving for school could, at one extreme, be a statistic that describes the 100% reliability of 90% of the students and the 0% reliability of 10% of the students. It could also, at the other extreme, be a statistic that describes the 90% reliability of 100% of the students. The sum of the reliabilities of the individual students may be a poor descriptive measure of the reliability of the individual students.

An equivalent concern, arising from opposite starting positions, is discussed by Roberts [1990] who says that [p.160] 'existing research literature assumes that high reliability organizations and other kinds of organizations are not different from one another' but that this hypothesis does not follow from the way in which organizational theory has developed. Roberts suggests that organizational theory has developed from the opposite point of the spectrum with theories that are concerned 'about trial and error, failure tolerant, low reliability organizations'.

The second concern with merging reliability and effectiveness theory arises from the conception of the merged theories. It was not conceived from a theoretical origin but from a chance encounter on an aeroplane between Professor Sam Stringfield of Johns Hopkins University, Baltimore, Maryland, (a researcher in school effectiveness) and a safety officer of unknown name responsible for nuclear power plants. In addition to considering the possibility that the engineer might have preferred to sleep through the flight so that the merged theories would never have been conceived, it is tempting to consider how Sam Stringfield's theories would have developed if he had sat next to the manager of a highly reliable corner shop or a whole host of possibilities of other professionals. Is the link between the theories of school effectiveness and high reliability so fundamental that it would have emerged anyway and Stringfield just happened, by a random allocation of travelling companion, to be the first one to encounter it or is it merely a random and impulsive five-mile high conception without any theoretical justification?

A travelling companion who was the manager of a chain of shops could have told Stringfield that having been evicted from Uganda in 1971 without a single shilling, he had become successful by working eighteen hours every day of the year. He had involved all the members of the family in striving for success. He had been willing to take risks and to borrow money to invest in the business. He had a clear vision of the need to create an attractive environment within the shops and a clear vision of the need to stock the items which customers wished to purchase rather than the items that he felt they ought to buy. He had appreciated that ease of access to the home was just as important as the economies that came from large-scale operations. All of these statements could have led to a proposal for school improvement just as well as any statements about the safety management of a nuclear power plant.

Rochlin's [1989, pp170, 171] claim that 'although naval flight operations now cope well...*there is little evidence that the adopted strategies are generalizable even to other military systems*' (my italics) illustrates the concern in attempting to expand the strategies used by highly reliable organizations to avoid failure into an educational context. Tagging on the title of 'high reliability' to a list of school improvement characteristics does not in itself add academic respectability to school improvement studies.

The third concern with merging reliability and effectiveness theory arises from the specialisation of Professor Stringfield's fellow airline passenger. Because his companion was involved in a particular branch of reliability theory, that of catastrophe theory, the merged proposition has developed a language which many involved nearer to the chalk face of education than to the university face find to

be unhelpful. Failure-free schooling described in terms of air traffic control is unlikely to attract converts to the theory from the common rooms of inner-city schools. Reliability of school education needs to be defined in a way that practitioners in school effectiveness find to be acceptable.

The fourth concern is that Stringfield has not really developed a theory that merges high reliability theory with school effectiveness theory. Disciplines that use high reliability theory have a small number of clear focused priority targets that can be measured and evaluated. The first is usually the lowest possible rate of system failure. Other targets are usually a long life expectancy, low maintenance costs and low production costs. Profitability is also a target since this establishes a cushion during manufacturing loss periods and ensures continuity in the provision of long term product replacements.

3.2 HRS as a project rather than a theory

Neither Reynolds nor Stringfield have produced a theoretical model for the merged theories. It may well be that the behaviour of students can not be explained through theoretical mathematical modelling. Clark [1997, p.185] says that the 'demands of governments and defence ministries for quantitative answers' has led to 'a preposterously enhanced value to any analysis which includes mathematics. Such analysis has a seductive tangibility, but it may be that mad behaviour,' (he was speaking about the behaviour of Stalin and others) 'for example, defies all mathematical modelling.' Clark's observation with 'defence' replaced with 'education' and 'mad' replaced with 'student' suggest caution in

making conclusions arising from a statistical analysis of data which is a function of human behaviour.

Stringfield [1994, p.179] says that

> the first line of action available to principals...is to make their schools into High Reliability Organizations'. 'HROs possess several unifying characteristics. These include clear assignments of tasks, multiple checks on all people's work (redundancy of critical components), high levels of training, and, during times of stress, all staff members have equal voices in decisions. LaPorte and colleagues concluded that in the cases of organizations where failure is terribly costly or ethically unacceptable (e.g., air traffic control), HRO patterns emerge. LaPorte (1991) notes that HRO patterns are often substantially different from those most 'efficiency experts' would recommend.
>
> My experience in studies of positive outlier schools and programs has been that precisely these patterns existed in many of the schools: work was demanding, but all proven professionals had a voice, the failure of a teacher to educate a class was simply not permitted, and a resulting sense of 'we're all in this together for the betterment of our students' was clearly expressed. The underlying shared characteristic between the HROs and those unusually effective schools was a profound belief shared by the working professionals in the schools that *even one system failure is unacceptable*.

Stringfield seems to be proposing a partial dimension of high reliability theory focusing on the child as a 'component'. He says [p.180] that 'all teachers need to be able to flag a particular child as having problems, and to assume that such flagging will result in the provision of immediate diagnostic and programming assistance to that child. Today, that kind of system responsiveness is the exception, at some point it must become the rule'. He goes on to say that a higher reliability school is 'a school in which very few students can 'fall through

the cracks'.' There needs to be a clearer definition of a 'higher reliability school' in order to develop a statistical analysis of the theory.

Neither Stringfield nor Reynolds uses the word *theory* to describe Highly Reliable Schools. Stringfield uses the word *program* and says [p.180] that 'Slavin et al.'s (1992) 'Success for All" program...is one example of a school restructuring program which contains many of the components necessary to create a higher reliability school'.

Reynolds uses *project* rather than *program* to describe the proposition of Highly Reliable Schools. He says [Stoll, Reynolds et al, 1996, p.136] that 'the Highly Reliable School Project in the United Kingdom' is a 'recent project ... born from Stringfield's (1995) suggestion that educational systems had much to learn from the organisational processes of those firms and utilities that were not permitted to fail. These are known in the jargon of the trade as HROs or High Reliability Organisations. They are usually taken to be air traffic controllers, nuclear power plant operatives, electricity supply operatives, and all those other organisations and their employees who have to generate 100 per cent reliable functioning'.

The choice of the word 'jargon' is surprising since it suggests, even if unintentionally, a lack of depth of theoretical validity. High Reliability is a well-defined theory, it is fundamental to the study of engineering and it is a distinct branch of statistics. Engineers do not see it as a 'program' or 'project'. Whilst a program or project might derive from a theory, the converse does not follow.

Reynolds does not use the word 'theory' to describe his propositions defining school effectiveness. He tends to describe school effectiveness research as leading to a 'complex body of knowledge' [Reynolds, 1994, p.1] or 'knowledge base' [Reynolds et al, 1994, p.25], in terms of a 'state of the art of a discipline' arising from literature on school effectiveness research and as a 'field of school effectiveness'. 'Body', 'base', 'discipline' and 'field' do not convey the same meaning as 'theory' and suggest something which is illusive rather than a hypothesis which is being proposed from a theoretical origin.

LaPorte and Consolini [1991, p.40] support this illusiveness and say that 'the decision-behavior dynamics and structural patterns that support this extraordinary level of accomplishment (in carriers and air traffic control) defy simple or complicated description. In a sense, HROs *work in practice and not in theory*' (their italics).

3.3 Stringfield's propositions on HRS

Stringfield [1995, p.3] argues that the shift of societal rationale for schooling from its original religious purpose to 'economic, occasionally scientific, and frequently political' has led to schools now being 'held accountable for students' academic progress'. He argues that the 'economic landscape' has changed and that the result of this has been that 'the gap in incomes among college graduates, high school graduates, and high school drop-outs has widened dramatically since the 1970s [Murphy & Welch, 1989]'.

Stringfield [pp.6, 7] contends that the cost to society of educational failure has changed and become unacceptable. He says [p.6] that:

> It is no longer economically or politically acceptable for significant numbers of students to not learn "the basics", or for *most* students to learn them well. It is no longer acceptable for large numbers of students to drop out of school. The costs to individuals and to society, once low, have become too high. Schools are no longer afforded the luxury of blaming the students and their families for students' failures. Schools are now seen as accountable for the successes and failure of *virtually all* of their students. In order to respond to these new realities, schools will have to abandon industrial efficiency models and take on the operating characteristics of HROs.

Stringfield's message that educational failure is no longer economically affordable is comparable to the view quoted in the previous chapter of Roberts [1989, p.112] that 'it is possible that financial institutions are moving into high risk status because failure in them could spark failures in entire economies'. It may well be, however, that deciding to move into high-risk strategies, for example in 'borrowing short and lending long' has put some countries into catastrophic risk that should have been avoided.

Stelzer [1998] said that 'for decades Americans have been told that their Japanese and other Asian competitors work harder, educate their children better, behave in a more civil manner and otherwise set an example that Americans would do well to imitate'. It is now clear that high risk strategies in international borrowing has put South Korea, Malaysia, Indonesia and Thailand into positions which can have significant, if not disastrous, world-wide consequences. A specific educational message that 'Pacific Rim' countries, particularly Taiwan, perform better at

education has often been claimed [Schaffer et al., 1994, p.138; Reynolds et al., 1994, p.32; Makins, 1996, p.10]. Stelzer argued that because of the recent problems of the Pacific Rim countries, 'human nature being what it is, many Americans' feeling of well-being is heightened'.

Stringfield [pp.7-13] offers thirteen primary characteristics of HROs (adapted from Pfeiffer [1989], Roberts [1990], and LaPorte & Consolini [1991]) and on each of which he gives a comment on an educational dimension. These thirteen characteristics are:

1 HROs require clarity regarding goals. Staff in HROs have a strong sense of their primary mission.

2 HROs extend formal, logical decision analysis, based on standard operating procedures (SOPs), as far as extant knowledge allows.

3 HROs recruit and train extensively in order to compel adherence to SOPs.

4 HROs have initiatives that identify flaws in SOPs and nominate and validate changes in those that prove inadequate.

5 HROs are sensitive to the areas in which judgement-based, incremental strategies are required. They, therefore, pay considerable attention to performance, evaluation, and analysis to improve the processes of the organizations.

6 Monitoring is mutual (administrators and line staff) without counterproductive loss of overall autonomy and confidence.

7 HROs are alert to surprises or lapses. The experience of HROs is that small failures can cascade into major system failures, and are hence monitored carefully.

8 HROs are highly hierarchically structured, but during times of peak loads, HROs emphasize a second layer of behavior that emphasizes collegial decision making regardless of rank. This second mode is characterized by co-operation and co-ordination. At times of peak activity, line staff are expected to exercise considerable discretion.

9 High Reliability Organizations regularly respond to potentially disastrous situations as being far too important to trust to rules alone. Authority patterns shift from hierarchical to functional-skill based authority, as needs arise.

10 Especially during times of peak performance, staff are able to assume a close interdependence. Relationships are complex, coupled, and sometimes urgent.

11 Equipment is maintained and kept in the highest working order. Responsibility for checking the readiness of key equipment is shared equally by all who come in contact with it.

12 HROs are invariably valued by their supervising organizations.

13 Short-term efficiency takes a back seat to very high reliability.

Unlike Roberts and Rousseau [1989, p.133] and Weick [1976, p.1] Stringfield does not see crucial difficulties in translating all these characteristics into an educational setting. He sees them, however, as something to be aimed for or investigated rather than characteristics that are all already present.

3.4 Highly reliable characteristics in U.S.A. schools

Stringfield says of the first three characteristics that clarity of goals 'for *all* U.S. schools is a novel idea' [p.7], that 'high consistency on the part of teachers was clearly related to the behaviors of the principals' [p.8] and that 'research on the long term effects of various induction and staff development programs has yet to be conducted'. He again comments on the role of the principal and that 'principals in positive outlier schools were more likely to take an intense interest in staff recruitment'. Although he contrasts this with the view that 'principals in low outlier schools often reported that all personnel decisions were beyond their control' it is conceivable that this proposition is more relevant to the role of the U.S.A. principal than to secondary headteachers in the U.K. who have much more influence over staffing appointments.

Stringfield says of the fourth and fifth characteristics that he 'is unaware of large-scale research on school or district level systematic, organizational efforts to identity flaws with schools and correct them' and that 'the typical U.S. teacher does not view herself as having open access to process which could change significant school and district procedures' [p.9]. He again draws attention to the role of the principal and says [p.10], referring to Stringfield and Teddlie [1991],

'that principals in the more effective schools took teacher recruitment, development, and evaluation more seriously than did principals in the study's negative outlier schools'.

Monitoring, the sixth characteristic, is one significant feature of HROs that Stringfield believes to be absent from education. He says [p.10] that 'mutual monitoring is a distant dream'. The prevention of early failure cascading into major failure, the seventh characteristic, is another characteristic which, whilst Stringfield believes can be translated into an educational context, he considers to be largely ignored. He says that 'small instructional failures which were almost certainly preventable, or even reversible if addressed in primary grades, regularly cascade into students' choosing to drop out' [p.11].

It may be that education could be considered to demonstrate what Singh [1998, p.13] calls 'the boiling frog syndrome. A frog in boiling water will immediately take evasive action to save its life, but a frog in cool water that is gradually being heated will sit peacefully until it is cooked'. Some schools seem to display this characteristic with evasive action only being taken following a 'boiling OFSTED' report and are not alert to surprises to prevent cascade failure.

Stringfield seems to struggle with the eighth characteristic of collegial decision making at times of peak loads in spite of a highly hierarchical structure. He says that 'successful teacher rebellions against principals are very rare. A principal who repeatedly disagrees with his or her superintendent is typically surrendering any chance of advancement' [p.11]. These are not really educational examples of 'peak loads' but of lack of their own confidence by principals and

superintendents. A headteacher who is very confident in his mission for institutional effectiveness and improvement will not wish to be surrounded by colleagues who are unwilling to disagree, challenge, put forward suggestions and exhibit leadership abilities. Indeed, these may be very necessary team specifications for improvement to take place in schools.

Stringfield does not see a willingness to put a lack of trust in rules, the ninth characteristic, as a feature of U.S. education. He says that 'in some schools and districts, exceptions to rules are almost never tolerated' [p.12]. This probably contrasts with the position in Britain where mavericks are tolerated, if not encouraged, if the school is doing well. The leaders of failing schools are required to take most of the responsibility for the failure regardless of whether or not their leadership was conformist.

He says [p.12], of the tenth characteristic, that 'neither theoreticians nor researchers have made distinctions between regular and peak performance times' with whether or not the organisation of schools exhibit loose or tight coupling and he makes no proposition about this. He says that 'a high level of co-ordination between compensatory and regular classrooms was found to be a characteristic of more effective compensatory education programs in the U.S. [Griswold, Cotton, & Hansen, 1985; Allington & Johnston, 1989]'. This, however, is not what is meant in high reliability theory by the characteristic of close interdependence at times of peak performance.

Stringfield admits that keeping equipment maintained in the highest working order, the eleventh characteristic, 'is not true in most U.S. schools, where non-

functioning equipment often sits unrepaired for months or years' [p.12]. Stringfield does not suggest that schools can not become highly effective because of this, but since this is a fundamental property of high reliability organisations it should therefore imply that schools are not HROs and do not need to become HROs in order to be highly effective.

Stringfield says, of the thirteenth characteristic that 'U.S. education has spent much of the last 30 years attempting to become more efficient, and much public dialogue concerns ridding education of "wasteful management" '[p.13]. This clearly contrasts with the proposition of the characteristic for HROs that short-term efficiency should take a back seat to very high reliability. It has also been replicated in Britain with a mission to remove 'surplus places' even though this has been in complete contradiction to the aim of increasing parental preference - an aim intended to raise standards.

3.5 Summary of highly reliable characteristics in U.S.A. schools

This means that few of Stringfield's thirteen suggested characteristics of high reliability organisations are present in U.S.A. schools. A summary would be:

	Characteristics of High Reliability Organisations	Characteristic of Schools
1	Staff have a strong sense of their primary mission	Novel idea for all schools
2	Formal, logical decision analysis, is based on SOPs	Present in more effective schools
3	Extensive recruitment and training to compel adherence to SOPs	Research needed
4	Initiatives to identify flaws in SOPs	Research needed
5	Attention to performance evaluation and analysis	Present in more effective schools
6	Mutual monitoring	A distant dream
7	Alert to surprises or lapses to prevent cascade failure	Research needed
8	Discretion with decisions at peak activity	Not a feature of schools
9	Hierarchical and functional-skill based authority	Not a feature of schools
10	Close interdependence during peak performance	Research needed
11	Highest working order of equipment maintenance	Not a feature of schools
12	Valued by supervising organisations	Not a feature of schools
13	Short-term efficiency takes a back seat to very high reliability	Not a feature of schools

Characteristics of high reliability organisations that are present in U.S.A. schools

TABLE 6

Stringfield has suggested that reliability theory might also be used to avoid school ineffectiveness and that this 'will necessarily involve the hard work of creating much more reliable school organizational structures capable of serving all children' [Stringfield, 1998, p. 209]. Reynolds, however, has said that within ineffective schools 'choice of such targets as a litter-free environment or a graffiti-free school, or a focus upon the school attendance rate or suspension rate (where rapid improvements can be made by altering the behaviour of only a small number of pupils) will work much better than choice of medium or long-term goals such as the school's level of academic achievement, which may take two or three years to influence' [Reynolds, 1998a, p. 171].

3.6 Highly focused targets in HRS

Stringfield has proposed an association with school improvement theory of a requirement for a small number of clear focused priority targets that can be measured and evaluated. This does not mean, however, that he has adopted high reliability theory or that improving schools need to have all the characteristics of highly reliable organisations. The targets which he has proposed of value added examination performance, attendance and a maximum of two further targets which are 'data-rich', lend themselves to statistical evaluation but not by using high reliability theory. Disciplines that embrace high reliability theory do so because the discipline has a clear need for product reliability that is clearly defined. The definition of reliability leads to a theoretical model for testing the reliability. It leads to definitions of a general reliability function, of mean time to failure, of series and parallel systems, of Markov processes and of recursive techniques [Billinton, 1970, pp.39-92]. These techniques do not readily convert into models for the evaluation of school improvement.

Jesson [1996], in his research study for the DfEE on value-added measures of school GCSE performance, supports the proposition that becoming 'data-rich' will promote improvement in schools. He says [p.13] that it is 'evident from experience elsewhere that schools' 'ownership' of the means to take their own issues forward in a data-rich context has often been the key to significant improvements in their understanding and directing of consequent action to follow up the key questions that emerge'.

Stringfield's proposed HRS project develops from another project at Johns Hopkins University - the 'Success for All' project. 'Success for All' attempted to investigate 'whether, in schools and districts that make a commitment to the success of every child, we can successfully replicate an effective program' [Slavin et al, 1994, p.639]. The project differs from the HRS project in that it targets disadvantaged students, whereas HRS seeks to raise achievement of all students. Its target of supporting students' success in reading is however one of the two additional targets chosen at the school in this study.

In 'Success for All' it was found 'that the longer a school is in the program, the better the effects on the reading performance of students in all grades' [p.646]. Some schools have now been involved in the project for nine years and Slavin says [p.647] that 'demonstrating that an effective program can be replicated successfully removes one more excuse for the continuing low achievement of disadvantaged children'.

Stringfield's HRS project might better be described as a School Targets Project. Value-added examination analysis had already begun to emerge as a branch of statistics that can provide a framework for the evaluation of the project. The thrust for an improvement in value-added performance began a long time before Stringfield's flight with a safety officer, and therefore gives some confidence that there is more to the proposition than rash imagination arising from the chance encounter of two airline passengers.

The Curriculum, Evaluation & Management Centre at the University of Durham, and previously at the University of Newcastle upon Tyne, has been pioneering work on value added measures of examination performance led by Professor Carol Fitz-Gibbon since 1983. The A-Level Information System (ALIS) is not just a value added measure but also measures 'students' attitudes to subjects, to the school or college, their aspirations and the teaching and learning processes and conditions' [Fitz-Gibbon, 1996a, p.1]. The Centre also offers 'PIPS' - Performance Indicators in Primary Schools, 'ReVIS' - Retrospective Value Added Information System for Post-16 Courses, 'TAMIS' - Target Setting & Monitoring Information System, 'EMMIS' - Education MeasureMent Information System, 'SATIS' - Students' Attitudes Information System and 'YELLIS' - Year 11 Information System.

In February 1995 the CEM Centre was awarded the SCAA contract to design and to pilot national systems for Value Added measures. Fitz-Gibbon [1996b, p.18] says that 'Value Added is here to stay' and 'if you are looking for school improvement, Value Added is the index you will use to measure that improvement'.

Using data from ALIS and YELLIS is a fundamental part of the HRS project. It was a particular strength of the original HRS proposal that Fitz-Gibbon, who is working at the leading edge of value added research, and Reynolds, who is working at the leading edge of school improvement research, were working at the same university. It was a loss to the proposed project that Fitz-Gibbon moved to the University of Durham in April 1996.

3.7 Conclusion

There is an absence of literature on reliability theory in an educational context and very little indeed written about why schools might be considered as high reliability organisations. Stringfield has produced a very interesting proposition and has managed to pass the idea across the Atlantic without first testing it out in schools in the U.S.A. Stringfield concluded that only two of his thirteen proposed characteristics of highly reliable organisations are present in more effective schools in the U.S.A.

CHAPTER 4

METHODOLOGY OF THE STUDY

4.1 Introduction

This chapter describes the methodology used in the case study and considers its strengths and weaknesses. In particular, it considers the inherent possible flaws in the account being written by the headteacher who introduced the project at the school. It considers the potential weakness of some of the evidence such as that from governors, staff and parents meetings, where the author has produced the agenda and some of the minutes.

Cohen and Manion [1980, p.110] say that 'accounts that typically emerge from participant observations are often described as subjective, biased, impressionistic, idiosyncratic and lacking in the precise quantifiable measures that are the hallmark of survey research and experimentation.' Since all these concerns could be expressed about this study, this chapter considers these possible claims with the study together with possible advantages in the way in which the study has been conducted.

Cohen and Manion [1980, p.123] also give some significant possible advantages of a case study, adapted from Adelman et al [1980]:

> Case studies have a number of advantages that make them attractive to educational evaluators or researchers. Thus:

1 Case study data, paradoxically, is 'strong in reality' but difficult to organize. In contrast, other research data is often 'weak in reality' but susceptible to ready organization. This strength in reality is because case studies are down-to-earth and attention holding, in harmony with the reader's own experience, and thus provide a 'natural' basis for generalization.

2 Case studies allow generalization either about an instance or from an instance to a class. Their peculiar strength lies in their attention to the subtlety and complexity of the case in its own right.

3 Case studies recognize the complexity and 'embeddedness' of social truths. By carefully attending to social situations, case studies can represent something of the discrepancies or conflicts between the viewpoints held by participants. The best case studies are capable of offering some support to alternative interpretations.

4 Case studies, considered as products, may form an archive of descriptive material sufficiently rich to admit subsequent reinterpretation. Given the variety and complexity of educational purposes and environments, there is an obvious value in having a data source for researchers and users whose purposes may be different from our own.

5 Case studies are 'a step to action'. They begin in a world of action and contribute to it. Their insights may be directly interpreted and put to use; for staff or individual self-development, for within-institutional feedback; for formative evaluation; and in educational policy making.

6 Case studies present research or evaluation data in a more publicly accessible form than other kinds of research report, although this virtue is to some extent bought at the expense of their length. The language and the form of the presentation is hopefully less esoteric and less dependent on specialized interpretation than conventional reports. The case study is capable of serving multiple audiences. It reduces the dependence of the reader upon unstated implicit assumptions and makes the research process itself accessible. Case studies, therefore, may contribute towards the 'democratization' of decision-making (and knowledge itself). At its best, they allow readers to judge the implications of a study for themselves.

Some of these six advantages could be seen to be relevant to this study. In particular the study provides sufficient description of what was actually done in introducing the project at the case study school for it to be replicated. An example of this is the request from Bristol LEA for the author to talk to its officers and secondary headteachers about the project. The LEA was interested in the 'strong in reality' element of the research and in the possible generalization to other inner-city schools.

It provides a starting point for others who are involved in the project to evaluate the progress from a different perspective, and in particular a focus for Heads of Department in the school to evaluate departmental progress. It has provided opportunities for feedback within the school and has made a very significant impact on policy making both in the case study school and in its feeder primary schools.

It considers factors, other than the HRS project, which might have contributed to improvement at the school and provides evidence that the examination results were already on an improving path. It is capable of serving a number of audiences within the case study school, within the LEA and within the increasing number of schools becoming involved in the project.

The project will have, in addition, an ongoing quantitative evaluation, both from evaluation within the case study school and from a project-wide evaluation following the appointment of two research assistants who are collecting data from all the project schools. However, since some of the schools have only just begun to test their intake years using NFER cognitive ability tests, it will be some

years before there will be quantitative evidence about the effect of the project in all the first and second phase project schools.

4.2 Statement of hypothesis

The aim of this study is to provide an answer to the question 'can the rationale of a highly reliable organisation aid the improvement of an inner-city school?' The study had very little previous work to build on. There is very little written about the reliability of schools and it is necessary to study literature within engineering and mathematics to find a definition of reliability. The word 'reliable' is not a word that is used and defined in education. A word search in the university library for any book title using the word 'reliable' did not lead to any educational literature. A search of the indices of educational books did not provide any leads for a study of reliability in education. There is a lack of literature on Stringfield and Reynolds' proposition that school improvement might be influenced by high reliability theory.

Although Professor Sam Stringfield of Johns Hopkins University, Baltimore, Maryland, has made the proposition that the rationale of highly reliable organisations might influence school improvement, he has not tested this hypothesis in any U.S.A. schools. He also concludes that of the thirteen characteristics of highly reliable organisations only two are definitely present in more effective schools in the U.S.A., research is needed into four of the characteristics, one is a novel idea, one is a distant dream and five are not features of schools.

Schools in two areas in England entered the project a year ahead of the case study school. However, some of them were slow to establish their targets and none of them had well established measures at intake into the school in order to measure value added performance. There were therefore no other schools with which to make relative comparisons of progress with the case study school.

4.3 A rationale for the study

Cohen and Manion [1980, p.188] say that the 'purposes of action research in school and classroom fall broadly into five categories':

1 it is a means of remedying problems diagnosed in specific situations, or of improving in some way a given set of circumstances;
2 it is a means of in-service training, thereby equipping teachers with new skills and methods, sharpening their analytical powers and heightening their self-awareness;
3 it is a means of injecting additional or innovatory approaches to teaching and learning into an ongoing system which normally inhibits innovation and change;
4 it is a means of improving the normally poor communications between the practising teacher and the academic researcher, and of remedying the failure of traditional research to give clear prescriptions;
5 although lacking the rigour of true scientific research, it is a means of providing a preferable alternative to the more subjective, impressionistic approach to problem-solving in the classroom.

The introduction of the project at the case study school falls into more than one of these categories. It falls into the first category because it was seen as a means of further improving examination performance where there is ample evidence of underachievement at the school and of wide variation in departmental

achievement. It falls into the second category since a fundamental part of the project is the imparting of leading edge knowledge of school and departmental effectiveness and improvement to the teachers at the school. It falls into the fourth category since a fundamental part of the project is the link with a university, and in particular with Reynolds who has an international reputation for his school improvement research.

A particular justification, however, for this study derives from the amount of time that is being spent on the introduction of the HRS project at the school. Each school has started the project with a ninety-minute talk by Reynolds to all the staff, which consists of seventy teachers at the case study school. There are two residential retreats each year for two HRS representatives per school, and one of the representatives is normally the headteacher. There are two whole day INSET sessions each year or the equivalent twilight time, one on School Effectiveness and one on Teacher Effectiveness in the first year of the project. There are three half-day twilight sessions each year on emerging topics, problems and strategies. There is a Steering Committee that meets monthly for a whole morning. There are meetings of a HRS committee in each school. There is the collection of data and additional testing of students, if NFER and ALIS testing are not already taking place in the school.

A very conservative estimate of the cost of the approximately 275 teacher-days of time per school would be £40,000 of staff time at the case study school each year. In addition to this the LEA is paying the cost of £3,500 per school per year to the university. This cost is multiplied by seven, with seven schools in the LEA being involved in the project. It is intended to invite all twelve schools in the

LEA to be involved in the project from September 1998 which would give a conservative estimate of £500,000 of direct costs and staff time each year from one small LEA. This expenditure of money and time needs to be evaluated and monitored to ensure that it is giving good value. It is equivalent to the cost of providing an additional primary school in the city.

This cost represents a high level of commitment to an untested hypothesis deriving from a chance encounter between two foreign strangers and represents a high level of trust and confidence by an LEA and many of its secondary schools in the University Department of Education.

4.4 The population and the setting

The case study school is a growing comprehensive school of 1200 students aged from 11 to 18 years serving an area of very high unemployment in a city. The school roll has increased from 854 students in 1987 and is expected to reach a maximum of about 1400 students by the year 2001.

The percentage of students achieving five or more GCSE passes at grades C and above has increased from 1.5% (two students) in 1990 to 21.4% in 1997. However, there is still considerable underachievement and therefore the potential for further improvement is still high and the school has set a target of 50% with five or more GCSE passes at grade C or above by the Year 2000. Although this target is ambitious compared to previous performance, it is nevertheless achievable when compared with the best results in similar benchmark schools.

The ambitious target follows Stringfield's suggestions at the March 1997 conference in London on 'The High Reliability School: Theory and Practice' that 'goals should be higher than those with which you are remotely comfortable'. If the aim is achievable then people fiddle with the edges. If the aim seems unachievable then people ask how can we get there?'

There are schools serving a rural area in the south west of the country involved in the project but this study does not seek to make a comparative study of the impact of the project on other schools since there is insufficient data at this stage. It does however look at the extent to which the project schools have the characteristics of highly reliable organisations.

The nature of the area served by the school provides a distinct contrast with the areas served by the first-phase schools, which serve more rural areas. The second-phase schools do not have homogeneous catchment areas even though they serve the same city. The nature of the intake at the case study school has changed slightly in recent years and that is possibly contributing to some of the examination improvement both directly, and indirectly through the influence that a greater percentage of more able students has on other students.

4.5 Historical format of study

This study adopts what Elliott [1991, p.88] calls a 'historical format, telling the story as it has unfolded over time'. It sets out how the notion that high reliability theory might influence school improvement has evolved. It sets out how the author became aware of the hypothesis and the chronological steps that were

taken in the introduction of the project at the case study school. It sets out decisions that were made in a way that could enable them to be replicable by other practitioners or for them to be compared with decisions made in other institutions.

It describes decisions that were taken beyond the HRS proposals of Reynolds and Stringfield. These include a decision to involve the feeder primary schools in the HRS targets and a decision to motivate attempts in the core subjects of English, Mathematics and Science to achieve targets of 40% and 50% with grade C or above at GCSE through performance related pay of the Heads of Department and through additional funding for the department.

It does not attempt to provide a statistical analysis of the examination improvement of the school. Decisions have been made during the first two years of the project that should influence examination performance in the early years of the new millennium. These include decisions about setting by ability for core subjects on intake from September 1998 which will influence examination performance in 2003 and decisions about making alternative use of the time for core modern foreign language teaching at key stage 4 which will influence examination performance in 2000. It will therefore be many years before it will be possible to arrive at conclusions about the possible peak level of performance of the school. Decisions to set equivalent targets in the feeder primary schools may influence examination performance at GCSE level well beyond 2003.

4.6 Sources and their status

This case study provides evidence of how the HRS project was introduced, how it is influencing the case study school and other factors that are influencing improvement at the school. The evidence is from a range varying from 'soft' evidence such as that from the minutes of meetings to 'hard' evidence such as that from examination performance and from Suffolk Reading Test standard scores.

In Chapter six, the extract from the minutes of the governors' meeting on 25 June 1996 is included as part of the historical description of the introduction of the project and is not intended to imply any other significance. The PTA support at their meeting in September 1996 is not intended to imply any evidence, other than that there were no concerns expressed. However, a fundamental feature of the PTA meetings is that the agenda always has a report by the headmaster and is always followed by an agenda item inviting parents to raise any concerns whatsoever on behalf of themselves or on behalf of other parents. It is also a fundamental feature of the meeting that any concerns which can not be fully answered at the meeting will receive an answer as soon as possible and the answer will be also be given in full at the next meeting. This feature should stand up well to study by other observers.

The support by the parents and governors is not suggested as being vital to the introduction of the project since the project had already been introduced before the parents were told about it. However, it would clearly have been unwise for the headteacher to introduce something of such significance if he were not

confident of the support of the governors and of the parents, who include parent governors.

The support of the teaching staff at the full staff meeting on 10 June 1996, however, was necessary and not merely desirable. The author believes that an evaluation of the project as seen by another observer, for example by a head of department at the case study school, would still give a similar interpretation to that meeting of unqualified support from the teaching staff. The staff welcomed the suggestion that the school should concentrate its efforts on four basic aims.

The changes in the school development plan so that all departmental plans were rewritten in the format of the four HRS targets was a fundamental part of the introduction of the project although that was not a requirement suggested by Reynolds. The introduction of the project at the case study school had a number of modifications to the requirements of the project. These included:

- The school development plan was rewritten with all departmental targets being written under the headings of the four HRS targets.
- The feeder primary schools agreed in May 1997 to have the same four targets, and at a later date, in March 1998, they agreed to adopt the same tri-partite contract between school, parents and student as that used by the case study school.
- Performance-related pay incentives were introduced for the heads of department of Mathematics, English and Science to assist in motivation for improvement in the GCSE examination results to 40% or 50% of the year group obtaining grade C or better.

- There was a greater emphasis on teaching in ability sets and with some setting taking place in Year 7. This had even greater emphasis in 1998 with an agreement that Mathematics, English and Science would all be taught in ability sets from the first day of intake into Year 7.

These modifications to the project proposals are well documented and their influence needs to be considered alongside that of the influence of the basic requirements of the project set by Reynolds. Although the involvement of the primary schools was not a requirement of the project, it was nevertheless a clear proposal from Stringfield at the national conference held in London in March 1997. Their involvement arose from the requests of the primary heads to have the same four targets, rather than a request from the case study school.

It will not be possible to evaluate the influence of these modifications until further examination results are available. The heads of department considered it to be helpful to produce their departmental development plans under four clearly focused headings. It would be illuminating to consider the influence of the performance related pay proposals from the point of view of the heads of department together with the points of view of others in the departments. The view of the author on this is clearly open to suggestions of being 'subjective, biased, impressionistic and idiosyncratic' or even of being eccentric and foolhardy, although it might more kindly be seen to be courageous, imaginative and challenging. Opposition from the teachers' unions might have provided evidence for the former interpretation. 50% of the year group with grade C in mathematics in 1999 might provide evidence for the latter interpretation.

4.7 Generalizability

Although this is a case study of one school there are a further six schools in the same city involved in the project and schools serving more rural areas have been involved in the south west of the country for one further year. The project is therefore not one that is unique and specific to the school. However, the interest of Bristol LEA on the impact of the project at the case study school, in addition to its impact on neighbouring LEA rural schools, illustrates that there is a belief with practitioners that strategies which are applicable to rural schools are not necessarily transferable to inner-city schools. This case study therefore, as a study of an extension of the original pilot project to an urban school, contributes to the generalizability of the HRS proposition.

Schofield [1993] says that interest in generalizability of qualitative research in education has greatly increased in the past decade. He says [p.94] that 'in the area of education, qualitative research is not an approach used primarily to study exotic foreign or deviant local cultures. Rather it has become an approach used widely in both evaluation research and basic research on educational issues in our own society. The issue of generalizability assumes real importance in both kinds of work.'

The HRS project now has two full-time research assistants. One based in the university near to the case study school who is evaluating data from the seven city schools, and one based in Gloucestershire who is evaluating data from the initial pilot project schools. There will therefore be quantitative evidence available in the future to provide further evidence of the generalizability of the project.

Generalizability has been assumed to be a feature of the hypothesis by Reynolds in inviting city schools to become part of a project that initially involved mainly rural schools, before any evidence became available that it was having a positive impact on the first-phase schools.

There are some features that are very specific to the case study school and which would have to be considered in any interpretation of the future impact of the project at the case study school and with any propositions about its generalizability. These features include:

- The school was already improving in examination performance before it entered the project. It had 9% of its year group with five or more GCSE passes at grade C or above in 1994, 13% in 1995, 17% in 1996 and 21% in 1997.
- It may be easier to encourage improvement and to accept that a school is under-performing if the school is already improving. The message of under-performance translates into a message that the school intends to remain on an improving path. The message of under-performance in a declining situation might seem to be more threatening.
- There is some evidence that an increase in the school roll is producing a more 'comprehensive' intake and this is reflected in an analysis of the examination results sub-divided into feeder schools.
- The headmaster of the school was interested in the hypothesis before it was proposed as an LEA project. The school does not therefore feel that the university has imposed the project on it or that it is an 'LEA project'.
- The school had used NFER cognitive ability tests with its Year 7 students for fifteen years. It has also used ALIS and YELLIS testing. Therefore, it did

not feel that there were any additional demands in testing students on entering the project.

- The school already had very close links with its feeder primary schools. It was therefore relatively easy to adopt Stringfield's suggestion that primary schools need to have the same targets.
- The introduction of the project coincided with preparation for the first OFSTED inspection in November 1996. Many of the teaching staff were at the school during a highly critical LEA inspection of the school in 1983 and were well aware of the potential impact of a critical inspection. There was therefore a willingness to do anything that would aid a positive OFSTED inspection.
- The headmaster has used the project as the research element in the study for an Ed.D. degree. This clearly gives a particular interest to the headmaster in the development of the project at the case study school that would be lacking with headteachers in other introductions of the project in secondary schools.
- Twelve of the staff at the school are studying for Master's degrees at the university. There is therefore a possibility of a greater interest in recent research evidence on school improvement than might normally be found in secondary schools, and a possibility of a greater degree of belief that schools can make a difference.
- Generalizability was not an aim of the author when he introduced the project at the case study school; the aim was to improve examination performance at the school. The modifications made to Reynolds' proposals further assist improvement at the school but make replication more difficult. For example, some secondary schools might not find it as easy to get feeder primary schools involved as it was at the case study school.

4.8 Ethics

The study involves the effects of a theory of school improvement on youngsters. The changes made at the school influenced all the students with the prime aim of improving examination performance and the study did not therefore produce any ethical considerations with some students not being involved in the project. No methods of collecting data have been used which involve any moral or ethical issues.

Some researchers have suggested that setting by ability contributes to the perpetuation of social injustice (for example Holly [1965, p.157] and Ford [1969, pp.133, 134]). Although the case study school has introduced more setting as part of its attempt to improve examination results, this is not believed to reflect any form of social injustice. The intake of the school is very homogeneous with most of the students living in council housing. Setting the students by ability does not therefore produce setting that is correlated with home background.

Performance related pay could be seen to be entering the bounds of ethical issues with staff, though not with students, since it produced opportunities for some staff which were not available for all staff. It was not, however, a requirement of the project that this should be introduced. It could, however, be argued that the increasing emphasis on examination performance puts greater pressure on the teaching staff. Targets relating to examination performance have, however, been

introduced as a national requirement for all schools so the project itself does not create additional pressure.

Considerations of anonymity, privacy and confidentiality have not presented difficulties with this research. Indeed, it is a fundamental part of the project that schools involved in the project will share information and will share good practice.

4.9 Validity

The case study school was already on an improving path, but nevertheless was and is still significantly underachieving particularly in the core subject areas of English and science. It might therefore have continued to improve with or without any involvement in the H.R.S. project. There must therefore be some considerable degree of caution with the conclusion to the study at this stage of the project.

The student numbers have increased in recent years and a greater proportion of students from two feeder primary schools have been choosing the case study school. As an example of the impact of this, although the percentage of students obtaining five or more passes at grade C or above in the 1997 GCSE examinations was 21.4%, the percentage from one of the feeder schools was 48%, 10 out of 21 students, and from another it was 40%, 4 out of 10 students. The school that provided 21 students in 1992 provided 35 students for the 1998 intake and the school that provided 10 students in 1992 will provided 36 students in 1998.

The difference in the potential of these students is not measured mainly through cognitive ability tests but through the area served by the primary schools being far more comprehensive in nature. Any subsequent improvement in examination performance at the case study school through this shift in popularity by parents of the feeder primary schools has an implied negative effect on the neighbouring comprehensive school to which the students would have attended.

Some recent improvements in examination performance and the potential for future improvement may not therefore be due to the introduction neither of the HRS philosophy nor necessarily to any efforts of the case study school.

Walker [1986, p.166] says that 'the objection most often raised to case study is the generalisation problem. This is seen in terms of the limited reliability and validity of the case study and is often framed in terms of two questions:

- How can you justify studying only one instance?
- Even it is justifiable theoretically, what use can be made of the study by those who have to take action?'

An answer to these two questions is that the author's responsibility for improvement rests with the case study school and he is in a position to initiate action at the case study school. A further answer is that at the time of the study there was very little to investigate about the impact of the theory in other schools, but so much effort was being invested in the theory at the case study school that it needed investigation to justify the effort being continued.

Walker [p.167] suggests five potential difficulties with a case study. They are:

- 'problems of the researcher becoming involved in the issues, events or situations under study;
- problems over confidentiality of data;
- problems stemming from competition from different interest groups for access to, and control over, the data;
- problems concerning publication, such as the need to preserve anonymity of subjects;
- problems arising from the audience being unable to distinguish data from the researcher's interpretation of the data.'

The first and last of these five concerns produce the most potential for lack of validity with this study since the author is the headteacher of the case study school and is therefore highly involved in the issues being studied. However, alongside the case study there has been the appointment of two research statisticians to collect and analyse data from the project schools in each of the three LEAs. There will therefore be statistical evidence during the next few years of the impact that the project is making in a number of schools.

The involvement of the author in the project influences the study in two distinct ways. Firstly, performance at the school would have been influenced by the headteacher during the period of study even if the school had not been part of the project.

'There appears to be widespread agreement that the quality of leadership exercised by the head is crucial to the effectiveness of the school' [Southworth, 1994, p.56]. 'The head sets the tone for learning (by pupils and adults alike) by

the educational beliefs and values she or he holds' [p.56]. Stark [1998, p.39] says that 'the 1993 – 96 experience of special measures confirms the belief strongly supported by academic research: the leadership provided by the headteacher is crucial to the success of a school'. This supports earlier conclusions, for example the conclusions of Rutter et al [1979] that 'curriculum-focussed school leadership' and of Mortimore et al [1988, p.250] that 'purposeful leadership of the staff by the Head Teacher' are characteristics of effective schools.

Berman and McLauglin [1977, p.124] said that projects needed the active support of the principal to be effective. Teddlie et al [1989] demonstrated that the principal is crucial to effectiveness, confirming the conclusions of Hall et al [1980, p.26].

Reynolds and Cuttance [1992, p.15] said that 'we need to investigate *which* of the school organizational features are the most important and which factors' (like the headteacher, perhaps) 'may determine other factors. No existing British studies have attempted to do this'. The importance being stressed by all the researchers on the role of the headteacher implies that this study of the introduction of the Highly Reliable Schools project must be seen in the context that its introduction at the case study school was proposed by the headteacher.

Fullan [1984] contrasts this dearth of research into the impact of the headteacher in school improvement in this country with an account of detailed research on the role of the principal in Canada and concluded [p.101] that 'the principal in a positive or negative way is critical - in fact may be the most critical agent'.

Maden [1996, p.335] in a study of eleven effective schools in disadvantaged areas concluded that 'no evidence of effectiveness in a school with weak leadership has emerged from any of the reviews of research'. Woodhead [OFSTED, 1999, p.16] in his annual report wrote that 'the headteacher is the critical figure in the drive to raise educational standards. We have many committed, highly effective heads. We need more. It is upon these two imperatives that the policy agenda should focus'.

Secondly, the author has invested a significant amount of time in the introduction of the project at the school and therefore has an interest in the success of the project. However, an evaluation of the project was undertaken using focus groups involving all the staff, but not involving the author, and this evaluation is described in chapter seven.

This evaluation confirmed the influence of the headteacher but nevertheless showed that forty-one of the staff believed that the project had given a clear focus and aims to the school. Forty-four of the staff wrote that the project had improved the focus on homework and consistency of practice with homework, one of the four HRS targets. Thirty-three of the staff wrote that the project had improved reading and many of them said that this had an impact across the curriculum.

The evidence in this study may well show that the school is improving and that it is improving at a much faster rate than school improvement generally in this country. However, the study does not suggest that there is adequate or sufficient evidence to conclude that the improvement in the school is necessarily due to the

adoption of high reliability strategies at the school. The evidence does suggest that improvement at the school has taken place since the adoption of the HRS project and that this might well have contributed to the improvement.

The improvement at the school may well be partly due to a 'Hawthorne effect' with the school feeling that it is doing something to make an impact on school improvement. A further factor is that at the time of the introduction of the project at the school there was a considerable interest in educational theory with twelve of the teachers following a master's degree course at the university.

A further factor was that at the introduction of the HRS project at the school in September 1996, the school was already aware of the date if its first OFSTED inspection which commenced on 11 November 1996. There was awareness that the school development plan lacked a clear focus and this gave a further reason for the school's interest in the HRS project. There was also an awareness that whilst the examination results were improving they were nevertheless still causing concern. Therefore, giving examination performance a high profile was seen to be a sound strategy in preparation for the first OFSTED inspection.

Good [1972, p.377] says that '*internal validity* is the basic minimum without which any experiment is uninterpretable: did in fact the experimental treatments make a difference in this specific experimental instance?' The conclusion in this thesis is that the author believes it did make a difference, that he believes that it will continue to make a difference but that there are other factors contributing to the improvement.

Good also says that '*external validity* asks the question of *generalizability*: to what populations, settings, treatment variables, and measurement variables can this effect be generalized?' Although the question of the thesis relates to an inner-city secondary school, Stringfield's proposition is not restricted to an inner-city school and the proposition is also being tested in rural schools in the U.K. The project may well therefore have external validity as well as internal validity, though this study does not attempt to examine the external validity.

Ball [1993, p.44] contrasts the conclusions of Gartrell [1979] that the Nyiha people of southwestern Tanzania are 'friendly, vital, warm and welcoming' with those of Slater [1976] that the Nyiha people are 'hostile, withdrawn, apathetic, suspicious and exhibit little individuality'. Ball uses this as an example of how 'the nature of the interactions between the researchers and the researched' can influence conclusions. He says that 'two sets of data, rather than one, always are more likely to generate insights'. This research has a very particular relationship between the researcher as headteacher of the school and the researched. The conclusions would therefore be greatly enhanced with a study by different observers.

The study has neither what Phillips [1993, p. 65] describes a 'qualitative objectivity' based on high quality data, nor 'quantitative objectivity' based on replicated data. It is, however, the only study at present of the HRS hypothesis and it gives some foundation with an attempted 'critical spirit' [p. 71] for further study of the hypothesis.

4.10 Conclusion

This study is methodologically flawed, but it nevertheless makes a contribution to a reflection of the value of the HRS concept on improvement at the case study school. It provides a starting point for further investigation of the impact of the project on the case study school and on the phase one and the phase two schools.

The study has given the author the opportunity to reflect on the credibility of a project that has required a large commitment of time from the case study school and from the other pilot schools and financial commitment from the LEA. It has provided an opportunity to consider the strengths and weaknesses of the project and to consider the evidence that is available about the impact that the project is making at the school.

The research has given the project a higher status at the school than it would otherwise have had, and may have contributed to the possibility of success of the project. It is not an example of methodologically sound qualitative educational research, but it is an attempt to reflect on the processes and decisions that have influenced the introduction of the HRS project at the school.

Phillips [1993, p.60] says that 'it makes little sense to search for a summit if you do not believe that a summit exists; and it makes little sense to try to understand some situation if you believe that *any* story about the situation is as good as any other.' The study is based on a belief of three fundamental propositions of school improvement theory:

- Schools can make a difference.

- There is wide variation in departmental effectiveness in schools and there would be very significant improvement if the school could increase departmental performance to its own existing best level.
- The aim of improving value added examination performance with a maximum of three other statistically measurable aims will aid institutional improvement.

Eisner [1993, p. 50] says that the Greek differentiation between knowledge (epistome) and belief (doxa) is still regarded 'today as different states of being'. This case study demonstrates a belief that the HRS project is making a valuable contribution to improvement at the school but it does not demonstrate knowledge of that contribution.

However, the real value of the study will not be determined by its methodology but on whether or not the students at the case study school have benefited from the introduction of the project and on the contribution that this study has made to that process.

CHAPTER FIVE

THE CASE STUDY SCHOOL AND THE NEED FOR IMPROVEMENT

5.1 Background information about the school

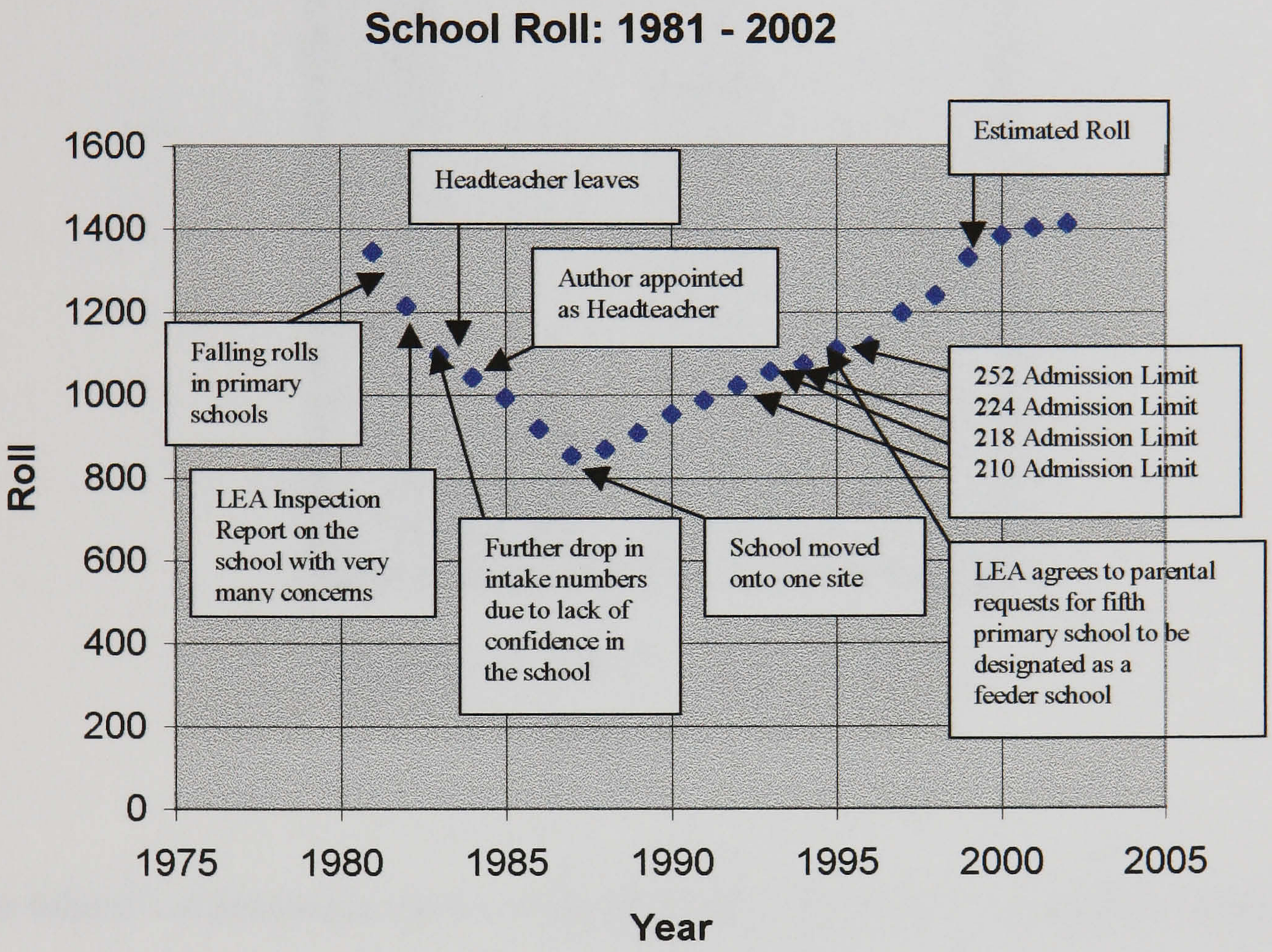
The school in this study is an 11-18 comprehensive school serving an area of very high unemployment in a city in England. Following a period where it had a rapidly falling roll, with the lowest total roll of 854 in 1987/88 (though the intake into Year 7 had already begun to increase), the roll had increased to 1,250 by 1998/99 and is still significantly increasing.

The fall in roll in the early nineteen eighties was due to a fall in the number of pupils in the feeding primary schools. However, following an LEA inspection of the school in 1982 which expressed some serious concerns about the school the roll dropped even further due to a lack of confidence in the school by the feeding primary school headteachers and parents. The headteacher was encouraged to take very early retirement and the school then went through a period of twelve months with an acting headteacher. The headship was advertised twice without an appointment being made and the author was asked to be considered for the vacancy in the late summer of 1984 having applied for the headship of another school in the city.

One clear area of success since 1984 has been the increase in the school roll, since a continued fall in roll numbers would have exposed the school to the possibility of closure. The school had four primary schools designated as feeder schools and

the parents of a fifth primary school successfully sought to become an additional feeder school. The admission limit was increased from 210 to 218, then to 224 and finally to 252 though the standard number remains at 210.

The change in the roll during the nineteen eighties and nineties is shown in the following diagram:



School Roll: 1981 – 2002 estimate

FIGURE 4

The roll is expected to increase to 1,400 during the HRS Project period:

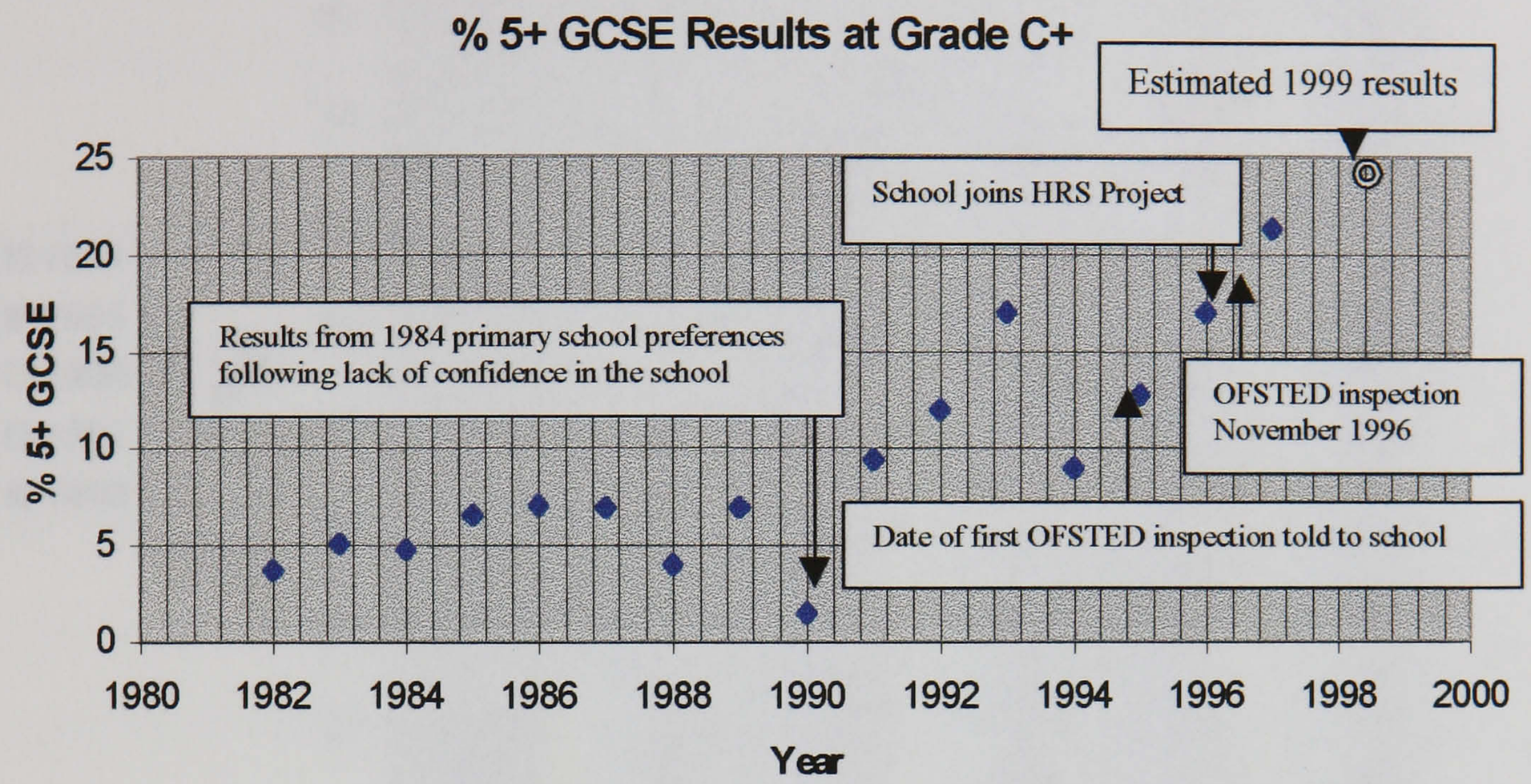
Year	Roll
1981	1346
1982	1215
1983	1097
1984	1043
1985	995
1986	920
1987	854
1988	870
1989	909
1990	954
1991	989
1992	1023
1993	1058
1994	1075
1995	1111
1996	1118
1997	1194
1998	1240
1999 Estimate	1331
2000 Estimate	1385
2001 Estimate	1404
2002 Estimate	1415

School Roll: 1981 to 2002 estimate

TABLE 7

The school's examination results of students obtaining five or more GCSE passes at grade C or above, measured as a percentage of the students in Year 11 on the DfEE January Form 7 returns, was 1.5% (two students) in 1990. The results then followed a varied path until 1994 when they began an incremental path of improvement with 9% in 1994, 13% in 1995, 17% in 1996 and 21% in 1997.

The diagram shows the percentage of students with five or more passes at grades A to C at GCSE, or before GCSE at GCE and grade 1 at CSE, from 1982 to 1998:

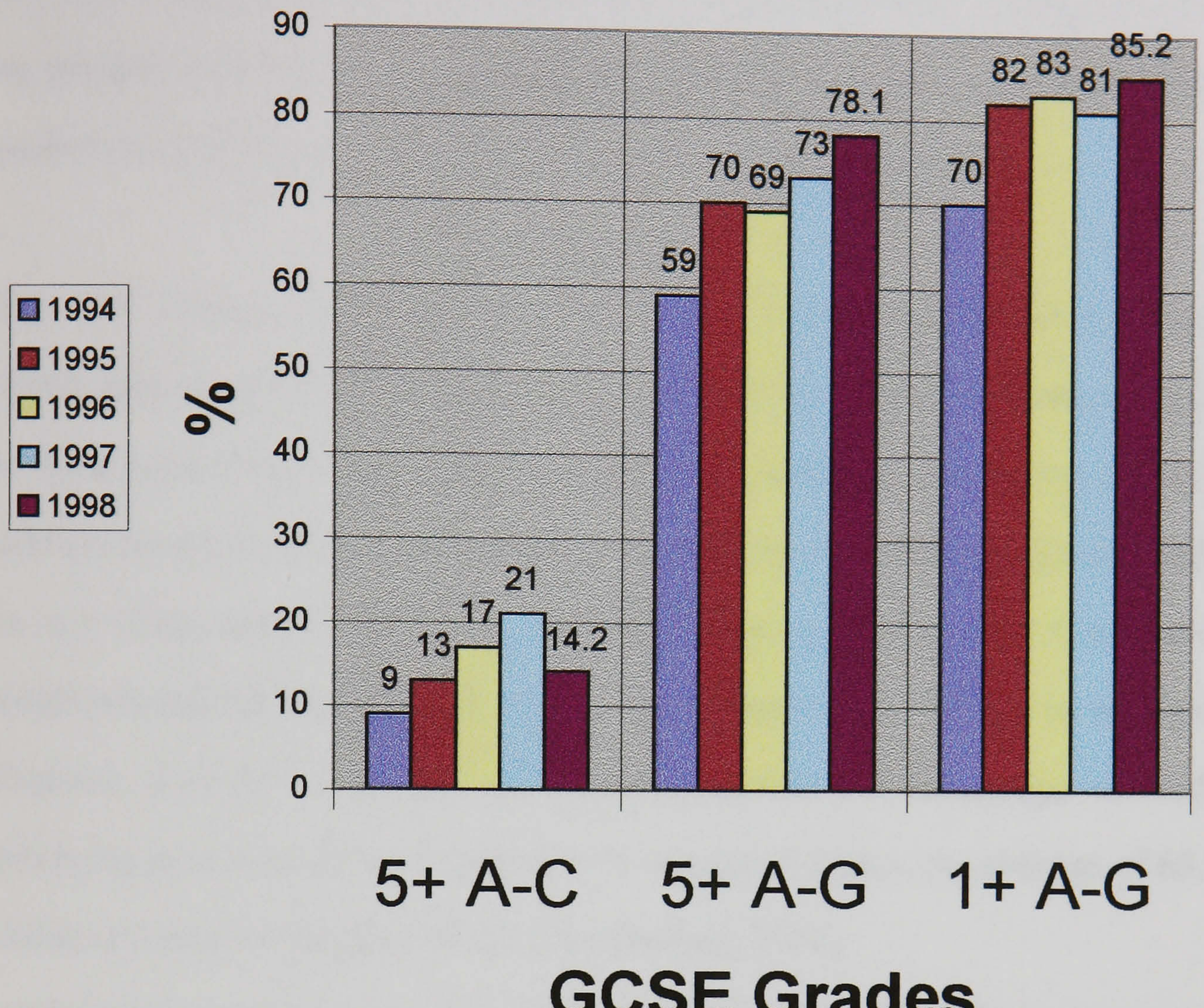


% of students with 5+ GCSEs at grade C or above, 1982 – 1998

FIGURE 5

Although the school felt that the 1998 results would be slightly lower than 21%, the actual figure was 14.2%. The 1998 targets for students with five or more passes at grades A to G and for one or more passes at grades A to G were, however, met and exceeded by 2%. The school is much more optimistic about the performance in the higher grades in the 1999 examinations.

The diagram shows the results for the five years from 1994 to 1998:



GCSE Results, 1994 to 1998

FIGURE 6

5.2 Value added analysis of the GCSE examination results by subjects from 1994 to 1997 against intake measures from 1989 to 1992.

There have been additional spotlights on examination performance since November 1992 when the government published the exam results of every state school in England, but not in that year of the independent schools. This produced a momentum to provide value-added analyses and Hackett [1992] wrote 'new

research by Dr John Gray and Dr David Jesson of Sheffield University indicates that children of professional parents do twice as well as children of manual workers. Children of clerical workers score halfway between. Using information on parental background, the researchers were able to predict accurately the exam performance of 56 out of 75 comprehensives in Nottinghamshire'.

The 1997 Primary School Performance Tables statistics for the five designated feeder schools illustrate the scale of the low starting base of students on transfer to the school. The statistics illustrate that the students on average are a long way behind the city average, which is itself a long way behind the average for England. In one of the schools the percentage of students achieving level 4 or above in English is only 24 % compared with a city average of 51.0 % and an average for England of 62.5 %. At the same primary school the percentage of students achieving level 4 or above is only 16.0 % compared with a city average of 60.2 % and an average for England of 68.1 % [Netland, 1998]:

Percentage of eligible pupils achieving Level 4 or above

	English	Maths	Science	% FSM	% EAL
School A	24	32	16	78.2	0
School B	33	31	44	42.6	0
School C	37	26	43	62.4	2.3
School D	30	52	43	69.3	0
School E	42	32	36	65.8	1.1
City average	51	50.9	60.2		
England average	62.5	61.3	68.1		

The 1997 Primary School Performance Tables statistics for the five designated feeder schools

TABLE 8

The school had taken considerable interest in value-added analysis before joining the HRS project and had tested all students on intake using the NFER cognitive ability tests for the last fifteen years. There are, therefore, statistics available of input and output measures for a considerable period before the school entered the project as well as measures for the early period of the project that is described in this thesis.

The school's interest in value-added analysis has never been solely due to an interest in the percentage of students obtaining five or more GCSE passes at Grade C or above, even though this raw statistic is the one which is most often used as the benchmark for indicating the rate of improvement in a school. Stoll et al [1996, p, 138] suggests that the main purpose in the HRS project of the analysis of intake and GCSE data is to improve this raw statistic, saying that 'schools will then forward-map (from their intake) and backward-map (from GCSEs) the path necessary for a student to obtain five or more A-Cs. Progress along these maps will be closely monitored, and the maps themselves revised annually as schools gather actual testing and process data'. Although Mortimore [1988, p.217], as mentioned in Chapter 1, found that 'schools which were effective in promoting progress for one group of pupils (whether those of a particular social class, sex or ethnic group) were usually also effective for children of other groups' collective improvement is not argued by Stoll as a potential consequence of mapping paths for students to aim for five or more GCSE passes at grade C or above.

The NFER Cognitive Abilities Test provides 'a set of measures of the individual's ability to use and manipulate abstract and symbolic relationships' [NFER, 1986]. It describes the three tests as:

> The Verbal Battery is made up of the following four subjects: Vocabulary, Sentence Completion, Verbal Classification and Verbal Analogies. Since the greater part of education is presented through verbal symbolism, the relevance of a verbal test for educational prognosis and diagnosis is clear. Tests of verbal reasoning have always been among the best ways of predicting educational progress.
>
> The Quantitative Battery is composed of three subjects: Quantitative Relations, Number Series and Equation Building. Next to verbal reasoning the ability to reason with quantitative symbols is the one most frequently required in an educational setting.
>
> The Non-verbal Battery consists of the following three subjects: Figure Classification, Figure Analysis and Figure Synthesis. The items in the sub tests of this battery involve neither words nor numbers and the geometric or figural elements used bear little direct relationship to formal school instruction. Where performance on this battery runs ahead of performance on the Verbal or Quantitative Battery, it may suggest potential that is not fully expressed in performance on school-related tests.

In 1993 the school used the NFER Quantitative Analysis for Self-Evaluation (QUASE) facility. This illustrates that the school's interest in the HRS project was because it fully supported the direction of the work which was already taking place in the school, and provided 'academic' support and credibility for the direction, rather than seeing it as providing a project which would take the school into a new direction. QUASE involved the analysis of data on Year 11 students' attainments compared with their cognitive ability test results on entry to the school in 1988 and also taking into account other factors. At that stage the analysis was very much of a pilot nature with only 17 schools able to provide data

on individual GCSE performance and intake measures for two cohorts of students, together with context information [NFER, 1994].

Using multilevel modelling NFER produced analyses of the 1992 and 1993 GCSE results firstly using outcome measures only, secondly using outcome measures and intake measures and thirdly, using outcome, intake and school context measures. The nine outcome measures used were total GCSE score, average GCSE score, Maths GCSE score, English GCSE score, Science GCSE score, number of grades A-C, number of grades A-G, Maths versus Total GCSE score and English versus Total GCSE score. The school context variables used were catchment area on a scale from inner city to rural and percentage of students entitled to free meals.

The analysis for this first pilot study showed [NFER, 1994]:

Base Case Results

- All of the first seven performance indicators are shown to be significantly below average.

- Mathematics and English scores as a function of total GCSE score are around average.

Results adjusted for Pupil Prior Attainment

- Three of the first seven performance indicators (Total GCSE score, English score and number of A-G grades) are significantly below average, when pupil data is accounted for. One (Science) is significantly above average, and the other three are now about average.

- Mathematics scores as a function of total GCSE score are now above average.

- English scores as a function of total GCSE score remain about average.

Results adjusted for Pupil Prior Attainment and School Context

- Four of the first seven performance indicators are now significantly above average, and only two (Total GCSE score and English score) are about average.

- The number of A-G grades remains below average.

- Mathematics and English scores as a function of total GCSE score are both around average.

General Summary

- The school appears to be underperforming based on raw results, but when pupil prior attainment and school context are taken into account the picture becomes much more positive.

- Number of A-G grades is the only indicator to remain below average when fully adjusted.

The analysis for the second year showed [NFER, 1995]:

> When we look at your school's 'raw' or unadjusted results for the period for which we have QUASE date (Year 11 cohorts, 1992/93 - 1994/95), it appears to have been performing below average on all of the academic performance indicators relating to GCSE results.
>
> ...Your pupils' prior attainment appears to be markedly below average for the relevant Year 11 cohorts. The effect of this is to predict that pupils with this level of prior attainment could achieve, on average, between nine and twelve grade points fewer than the norm at GCSE. Taking this into account changes the picture of school performance to a noticeable degree: now, on total GCSE score, average GCSE score, maths score, English score, science score, number of GCSE grades A-C and number of GCSE grades A-G, the results are higher than those for 'raw' scores, which has the effect of raising all of the indicators, with the exception of number of GCSE grades A-G, to the point where they are no longer significantly different from the QUASE average. Overall,

therefore we can say that performance at GCSE is about what you would expect from pupils with this level of prior attainment.

..From the evidence...it appears that the school has levels of disadvantage among its pupils which are above average for QUASE schools in terms of the proportion of pupils eligible for free school meals. Allowing for these factors changes the results yet again, so that the overall picture now suggests that the school has been performing in general above what you would expect, given the context in which it is operating. The average GCSE score, maths score, science score and number of GCSE grades indicators all show that the school has, in fact, been achieving results which are *significantly* better than anticipated.

When we look at data for the individual years, 1994/95 shows an improvement over 1993/94 and 1992/93 in terms of the adjusted scores on the total GCSE score, average GCSE score and number of GCSE grades A-G indicators. Only the science score indicator shows consistent decline over this period.

..So far as we can tell from three years' data, then, the school is achieving results which are better than the published tables might suggest. It is not, as yet demonstrating measurable 'added value' relative to pupils' potential, but relative to the circumstances within which the school is operating considerable progress has been made.

> ..the total and average scores achieved reveal a positive picture, with many individual scores close to the prediction line on either side. A considerable number of pupils have achieved markedly higher scores than you would predict. Attention must be drawn, though, to the large group of pupils who failed to achieve any GCSE grades.

The 1995 analysis provided clear evidence of which departments were effective, saying that in 'mathematics, art, geography, history, languages and PE pupils have obtained significantly higher scores than one would predict from their overall performance at GCSE.' The report was not, however, as encouraging about progress with attendance saying that 'attendance levels at your school are still shown to be significantly below the level that might be expected', clearly

indicating that attendance is one of the four HRS targets where there is scope for considerable improvement.

5.3 Attendance

There is considerable evidence that attendance and examination results are highly correlated, and therefore a target of improving value added examination performance needs to include a target of high attendance. Casey and Smith [1995, p.11] found that 'the strong relationship between truancy and exam score is entirely as expected' and that in terms of later outcomes that 'the effect of truancy is significant at a high level of confidence' [p.20]. They concluded [p.44] that their analysis had 'produced powerful findings on the relationship between truancy and later educational and labour market outcomes'.

The DES [1989, p.44] concluded that 'non-justified absence is a predictor of employment problems, and can damage a young person's life prospects'.

The school, for the first time, required eight students to repeat a National Curriculum Year in the 1997/98 academic year following exceptional poor attendance in 1996/97. Although all the students returned to the school in September 1997 and the decision to repeat a year was not challenged by any of the parents, the success measured in terms of improved attendance by those students is very limited. The attendance of the eight students up to the end of January 1998 was:

Student	N.C. Year	Repeated Year	Autumn 97 attendance out of 146	Spring 98 attendance out of 30
A	12	11	103	23
B	10	9	6	3
C	10	9	44	12
D	9	8	29	2
E	9	8	9	6
F	9	8	47	4
G	8	7	28	11
H	8	7	100	21

Attendance of students repeating a year

TABLE 9

This may, however, not be a full measure of the success since the real reason for the initiative was to make an impression on other students. Although students were only required to repeat a year if the attendance was 20% or less, all students have been told that the Governors' Attendance Committee will consider whether or not a student is to repeat a year if the attendance falls below 90%.

The school amended the reports to parents in the 1996/97 academic year to give a clearer statement about attendance. The report reminds parents of the promises about attendance in the school contract and makes it clear what is regarded as satisfactory attendance. It gives the percentage attendance for each year at the

school and reminds the parents that the Governors' Attendance Committee can recommend that a child repeats a year.

The wording on the report is as follows: Parents are reminded of the promises made by the school, the student and the parent(s) on the School Contract before your child started at the school.

The promises are:

- The School promises the parent to encourage good attendance and punctuality, to record it for future references and to reward excellent attendance with termly and yearly certificates.
- The Parent promises the school to encourage my child to attend school on time for 190 days each year except where unable to do so due to illness and then to notify the school.
- The Student promises the school and the parent to attend school every day on time except where illness makes it impossible and then to bring a note to the school.

The attendance should be read as follows:

100%	Attendance	Excellent
98% - 99%	Attendance	Good
95% - 97%	Attendance	Satisfactory
90% - 94%	Attendance	Giving cause for concern and unlikely to achieve full potential in examinations.
89% and below		Unsatisfactory. This level of absence must be supported by medical certificates in order for the school to be able to recommend the student for employment.

The Governors' Attendance Committee may recommend that a student repeats a school year if absence, which is not supported by medical certificates, has prevented a student making adequate progress during a year.

The initial impact of this strategy seems to be with students whose attendance is just below 90%, where parents at the report evenings have expressed a commitment to ensure that the attendance will get above 90% before the end of the academic year. There is, however, some evidence of a lack of consistency with the way in which teachers comment on attendance in reports to parents. Some teachers, for example, commented in reports that attendance was 'good' even though the attendance pages gave an attendance which should be described as 'giving cause for concern and unlikely to achieve full potential in examinations'.

Attendance patterns are established before the students enter the school. The 1998/99 year 11 had 27 students out of a total of 202, over 13%, with an attendance below 80% in their first year at the school. 67 students, over 33%, had an attendance below 90% in their first year at the school. In the first half of the autumn term of year 11 over 10% of this group had an attendance below 20% which included over 5% with no attendance whatsoever.

However, over 33% of the year 11 students had an attendance of 100% in that first half term and almost half of the students had an attendance of over 95%.

This seems to suggest that the strategies to improve attendance have the greatest impact on students who already have good attendance.

Attendance statistics for the 1998/99 Year 11 students during each year of their secondary education (Year 11 for the first ten weeks of the autumn term only) expressed in 5% bands, was:

	Year 7	Year 8	Year 9	Year 10	Year 11
100% attendance	19	10	15	16	69
95% - 99% attendance	72	60	63	56	28
90% - 94% attendance	44	48	42	30	18
85% - 90% attendance	24	29	24	26	16
80% - 84% attendance	16	17	11	14	8
75% - 79% attendance	8	9	15	10	12
70% - 74% attendance	5	7	4	13	5
65% - 69% attendance	4	8	8	0	5
60% - 64% attendance	1	3	4	6	4
55% - 59% attendance	1	5	5	7	7
50% - 54% attendance	2	2	5	5	3
45% - 49% attendance	1	0	2	3	1
40% - 44% attendance	1	2	0	3	2
35% - 39% attendance	1	0	7	2	2
30% - 34% attendance	1	2	0	2	2
25% - 29% attendance	1	0	1	1	1
20% - 24% attendance	0	2	1	4	3
15% - 19% attendance	0	2	1	4	2
10% - 14% attendance	1	1	3	5	1
5% - 9% attendance	0	0	0	1	4
1% - 4% attendance	0	0	0	4	2
0% attendance	0	2	1	1	12

Year 11 attendance statistics

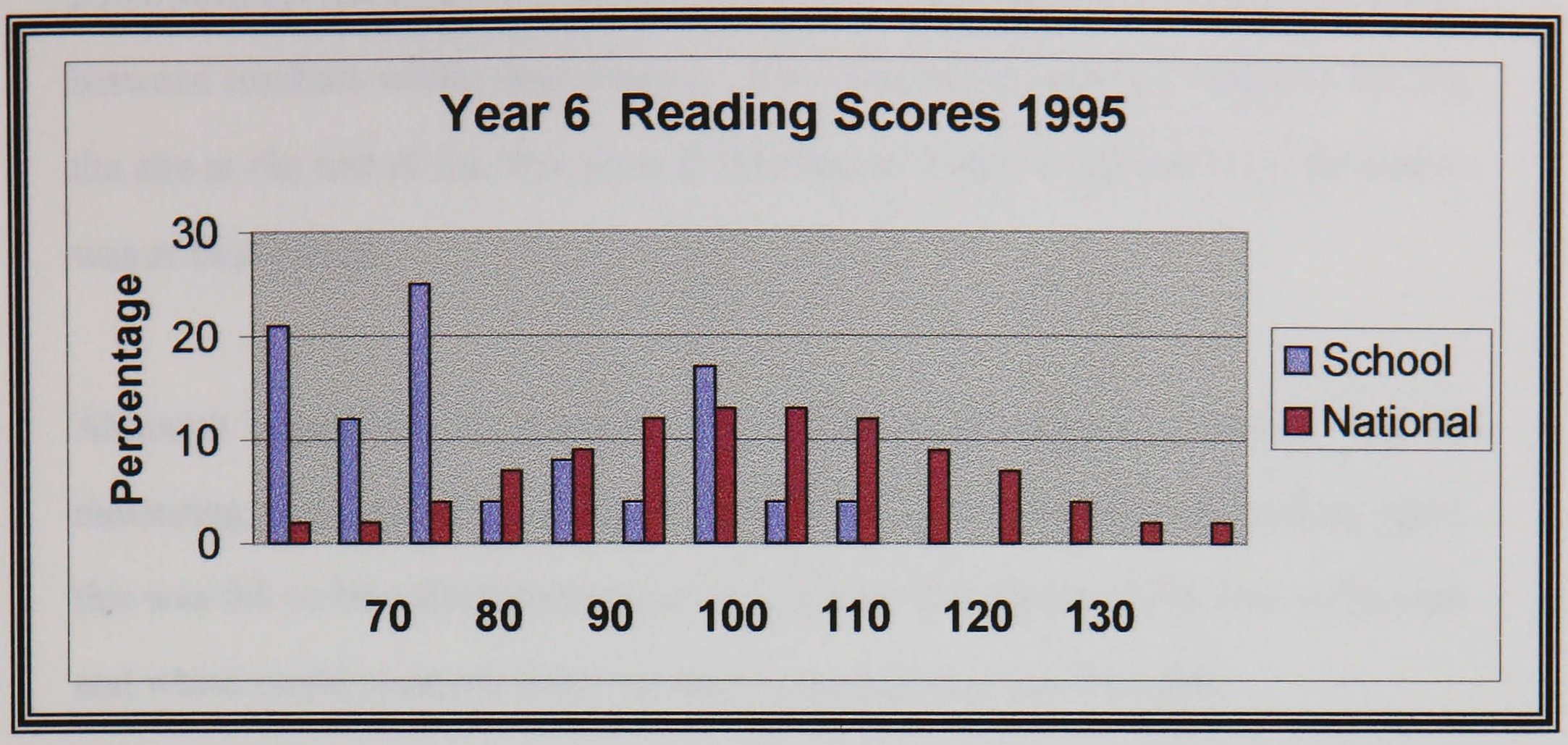
TABLE 10

5.4 Reading Ages

The school has tested the reading of Year 7 students on intake into the school over a long period of time. The school uses the GAP Reading Test and students who score a reading age of 9 years 6 months or below on this test have been given an individual test on the Neale Analysis of Reading (Revised). Students who score 8 years 5 months or below on this test work with SEN staff and follow individual programmes developed to improve their basic literacy skills. The are placed at Stage 2 on the SEN Register. The teachers are provided with this information but are told that the Reading Age is only a rough guide and should be viewed in relation to other scores such as the NFER stanines.

The NFER Suffolk Reading Tests were first taken by Year 6 pupils in the city's primary schools in the Summer Term of the 1994/95 academic year, but the schools were only persuaded to do the tests on the understanding that the results would be confidential to the schools. This meant that the secondary schools still had to test their intake. The primary schools agreed a year later that the results could be passed on to the secondary schools.

The results indicated the scale of the problem in some of the city's primary schools. The 1995 Year 6 Suffolk Reading Test Standard Scores for one of the primary schools which is a feeder school of the school in this study, compared with national scores in the test are illustrated in this bar chart:



Feeder Primary School Reading Test Scores

FIGURE 7

The total percentage with a standard score of 79 or below was 58.3% compared with a national percentage total of 8.5%. The total percentage with a standard score of 110 or above was 0% compared with a national percentage total of 24.9%, and only one pupil had a standard score between 105 and 109 and only one further pupil had a score of between 100 and 104.

5.5 Homework

Although homework provides an opportunity for considerably increasing the learning time of students, it often does not have anything like the same structured strategic significance in schools as timetabled lesson time. At the case study school, although there has always been a homework policy the amount of

homework set has been very variable particularly between departments and less so between teachers within departments. The observation of many students leaving the site at the end of the day without any bag or books suggested that the policy was at best patchy.

Although measuring the quantity and quality of homework is not as easy as measuring value-added examination performance, attendance and reading ages, this was felt to be a fundamental learning area in the school which was underused and which could promote improvement in examination performance.

Homework has begun to have a higher profile nationally, but it has not attracted anything like the same research interest as other elements of the learning process. It adds significantly to the working load of teachers and, in the absence of internal or external pressure on teachers to set homework, there has been a tendency to accept the view of Strang [1955, p.29] that 'there is no conclusive evidence to justify the persisting faith of many persons in the efficacy of *routine* homework'. Strang suggested that research needed to be carried out to answer the questions 'What purpose does homework serve? What effect does a certain kind of homework have on students of different interests and abilities? How else might they spend their time? Could the desired results be achieved by guided study during the school day?

However, there has been a much greater interest in homework from the late 1980s. HMIs [DES, 1987, p.1] observed that:

> Properly designed homework can play a valuable part in pupil's education. Certainly, over a school career, it can add a substantial

> amount of study time. It offers opportunities for work which is independent of the teacher; it can exploit materials and sources of information which are not accessible in the classroom; it allows pupils to complete work started in school or to practise skills learned in class; it permits the setting of tasks in accordance with the abilities of individual pupils; and it can help to strengthen the liaison between the home and the school.

They avoided giving clear conclusions with [p.42] 'it is not possible either to be definite about the kind of homework desirable for all pupils or to be prescriptive about the precise amounts of time which it should be allocated'. They did, however, say that recent research studies 'have shown that the regular setting and marking of homework are associated with good education and effective schools'.

The advantages suggested by HMIs could mainly be seen to benefit students from supportive home backgrounds. Suggestions for questions for homework for primary school pupils from Chisholm and Twilley [1977, p.49] illustrate the potential for differentiation of parental ability to support homework:

> What makes pipes burst after frosty weather?
> Why is the cream found at the top of a bottle of milk?
> How does a vacuum flask keep liquids hot or cold?
> What is rust?
> Why does tinned food stay fresh?

How does a child attempt these questions in a home with no books and with adults who do not have any idea of the answers, especially since any of these questions could merit a forty thousand word answer?

In 1995 [OFSTED, 1995a, p.20] HMIs produced clearer conclusions and proposed that 'for homework to be fully effective each school should have an

agreed, written homework policy. This is likely to be more detailed in a secondary school than a primary school. Where possible governors, teachers, parents and pupils should be involved in formulating the policy'. In particular it said that the policy should refer to 'the procedures for monitoring that teachers set and mark work regularly and appropriately'.

MacBeath [1989, p.21] found that many schools did not explain their policy on homework and that 'when asked if the school had ever explained its policy on homework 65% said no and 33% said yes. The figures for independent school parents were 39% and 60%'.

Recent research has been evaluated by MacBeath [1990] on homework and on study centres by the Quality in Education Centre for Research and Consultancy at the University of Strathclyde working for Strathclyde Regional Council and for the Prince's Trust. Stern [1997] supports Hargreaves [1984, p.49] that the 'setting of homework can increase the time available for study by nearly 25 per cent in any year' saying 'over the five years of secondary education, appropriate homework can add the equivalent of at least one additional year of full-time education' and says that not setting homework produces the loss of the "homework year" [Stern, p.7].

It could be argued that homework has the potential to contribute far more than a 'homework year' to the secondary school learning time. A five-hour timetabled teaching day does not involve five hours on learning tasks for even the most industrious student. Movement around the school, the time taken in giving out books and lessons such as physical education which are not related to learning in

the sense of preparation for written examinations, all contribute to a very significant reduction of learning time. A student working for one hour each evening might therefore be adding at least forty per cent to the learning time. The 'homework year' then becomes two years or more.

Holmes and Croll [1989, p.36] found that 'the association between time on homework and performance was considerably stronger for pupils from working-class backgrounds' and, perhaps rather surprisingly, that 'parental social class and education were only weakly related to the amount of time their children spent on homework and part-time employment and the amount of time spent watching television were not related to time on homework'. Of particular interest to the development of a homework policy was their finding that 'the variable with the strongest relationship with time on homework was how regularly parents signed their child's homework diary'.

Very much ahead of its time were some of the conclusions on homework written in 1937 [Board of Education, 1937, p.64] such as 'The truth is that the highly competitive nature of most examinations confronts both schools and parents with a dilemma. Either special efforts must be made - whether by means of homework, or coaching, or intensive work in school - to secure that their children are among the few who reach the standard of selection required by the examination; or the chances of success in the examination may be jeopardised'. The recommendation for homework clubs puts the report sixty-one years ahead of its time or, alternatively, recent initiatives sixty-one years behind their time. It suggested [p.43] that 'there is need for homework classes at secondary schools in certain areas' and that the need 'is not confined to the London area' and that

some schools arrange for homework 'to be done in the school building, under supervision, but after regular school hours' [p.42].

Although it was not, therefore, an unprecedented idea, a 'Homework Club' was started at the case study school in January 1996 with a grant of £15,000 from the Prince's Trust through the voluntary group Education Extra. The money was used to purchase I.T. equipment that would have a double use in being used in the Learning Support department during the daytime. The club runs during the lunch break each day and from 3.15 p.m. to 5.30 p.m. on Mondays, Tuesdays, Wednesdays and Thursdays. Evaluated in terms of student attendance, it was an immediate success and since the first day of the club students have had to be asked to leave at 5.30 p.m. each day.

The Homework Club at the school was used to illustrate good practice in a DfEE video on study support filmed at the school for three days in the spring term of 1999.

In April 1998 the DfEE published draft guidelines for consultation on the amount of homework which is appropriate for pupils of different ages. In secondary schools it suggested [DfEE, 1998, para. 13] the following times:

Years 7 and 8	: 45 – 90 minutes per day
Year 9	: 1 – 2 hours per day
Years 10 and 11	: 1.5 – 2.5 hours per day.

The guidelines said [para. 4] that they drew 'on extensive research and analysis into good practice in schools'.

5.6 Key Issues for Action from the School OFSTED Inspection

The OFSTED inspection of the school in November 1996 gave the following five Key Issues for Action:

To raise the standards of work and the quality of learning and provision the governors and senior management should:

1 Extend the strategies to improve student attainment by focusing more closely on:

- Higher order language skills in writing and oral work,
- match of task to target identified on individual action plans,
- greater challenge,
- consistency in expectation,
- students who are absent for short periods.

2 Further promote the sixth form with specific reference to:

- improved facilities,
- more defined roles for students in school life,
- marketing of post-16 opportunities,
- re-evaluation of discrete elements of post-16 curriculum.

3 Extend the monitoring and evaluation of student attainment of all levels to include gender issues.

4 Improve the quality of learning in Religious Education with specific reference to:

- more rigorous approaches to assessment,
- greater breadth,
- wider range of resources,

- clearer identity within the whole school curriculum.

5 Improve the toilet facilities for students.

5.7 Performance AND Assessment (PANDA) information

In March 1998 OFSTED sent a Performance AND Assessment (PANDA) report to each school. It gave the following basic summary of the case study school:

- your school is bigger than other schools of the same type (1113 pupils compared with the average size nationally of 907 pupils);
- the percentage of pupils eligible for free school meals (49.3%) is well above the national average;
- the percentage of pupils speaking English as an additional language (0%) is low;
- the percentage of pupils identified as having special needs (25.5%) is above the national average;
- the percentage of pupils with statements of special educational needs (1.2%) is below the national average.

The reason for the percentage of pupils with statements of special educational needs being low at the case study school is because there is a belief that the statements rarely give any form of entitlement to the child and yet require a lot of effort to produce.

The PANDA report gives the composite judgements following the OFSTED inspection of the school in November 1996. The judgements were:

- Standards achieved by pupils were requiring some improvement;

- The quality of education provided by the school was good;
- The school's climate was good:
- The management and efficiency of the school were very good.

The figures given for school attendance in the report were:

	1995/96 attendance	1996/97 attendance	authorised absence	unauthorised
School	82.4%	84.5%	14.7%	0.8%
England	90.3%	90.9%	8.1%	1.0%
Difference	-7.9%	-6.4%	6.7%	-0.2%

The report concludes that:

- The attendance rate at the school in the 1996/97 academic year was well below the national average.
- The rate of unauthorised absence at the school, in the same year, was broadly in line with the national average.

The report made the following conclusions about GCSE points scores:

- Based on an average of the last three years the average total GCSE points score obtained by pupils at your school was well below average.
- Based on figures for the last four years, the average total GCSE points score per pupil showed a rising trend, at a faster rate than the national average.

The report indicated that whilst girls performed better than boys on average over the last four years, the difference was less than the national average difference.

Average GCSE points score:	1994	1995	1996	1997	1995/97 average
Boys	14.5	20.1	18.8	25.2	21.0
Girls	15.0	20.7	24.5	24.7	23.2
School difference	0.5	0.6	5.7	-0.4	2.2
National difference	4.5	4.8	4.7	4.6	4.6

The LEA PANDA information gave the LEA cause for concern when it received the report in March 1998. Using an A to E scale defined as:

- A = well above statistical neighbours or the national average
- B = above statistical neighbours or the national average
- C = broadly in line with statistical neighbours or the national average
- D = below statistical neighbours or the national average
- E = well below statistical neighbours or the national average

the report showed that in Key Stage 3 English tests the interpretation for the percentage of students obtaining level 5 and above in 1995, 1996 and 1997 was C, C and E respectively. In mathematics tests it was C, D and D and in science tests it was D, D and E.

At GCSE the percentage obtaining one or more passes at grade G or above in 1994, 1995, 1996 and 1997 was interpreted as E, E, E and E. The percentage with five or more passes at grades C and above in the same years was interpreted as D, E, D and D respectively. The percentage with five or more passes at grades G and above was interpreted as D, E, E and E respectively.

At advanced level GCE the interpretation of the average point score per student for those entered for two or more A level GCE subjects in 1994, 1995, 1996 and 1997 was interpreted at C, D, D and D respectively, and for those entered for less than two A level subjects at B, C, D and D respectively.

The most optimistic interpretation of the results still gave cause for concern and the LEA is having an OFSTED inspection in 1999.

5.8 Conclusion

The Registered Inspector's comments following the OFSTED inspection illustrated a readiness for an involvement in the H.R.S. project. He said 'of particular note is the strong degree of co-operation between teachers within subjects, across subjects, between senior and middle management, between pastoral and academic, and between teaching and non-teaching staff. It is creating a sense of purpose and commitment which contributes to the quality of teaching, unified sense of purpose and direction for the whole school'.

Involvement in the H.R.S. project has built on this sense of purpose and given it a clearer direction.

CHAPTER SIX

THE INTRODUCTION OF THE HIGH RELIABILITY SCHOOL PROJECT AT THE CASE STUDY SCHOOL

6.1 The origin of the project at the school

The introduction of the HRS project at the case study school took the following chronological steps:

The author became aware of the High Reliability Schools initiative in Gloucestershire through attending Professor Reynolds' course at the University of Newcastle upon Tyne in the 1995/96 academic year on Management of School Effectiveness and School Improvement in the Spring Term and attending his course on Institutional Effectiveness and Improvement in the Summer Term. He felt that the project had far more to do with setting, monitoring and evaluating targets than it had with reliability theory and that it provided a theoretical framework for the direction in which the school was already moving.

As stated in the previous chapter, the project would be better described as a School Target Project than a Highly Reliable Schools Project, at least in the way in which it has been adopted at the case study school. This title would have more market appeal than the HRS title since schools are to be required by legislation to set targets, but not required to be highly reliable and where the term 'reliable' is not defined in an educational context.

6.2 The adoption of the HRS project in the city's comprehensive schools

The city's secondary headteachers were told about the project at a residential conference for all the headteachers held on 23 and 24 May 1996 and were invited to indicate an interest in joining the project. The first year of the project was to be the 1997 calendar year and it was intended that the project would last for a minimum of three years with a likely extension to five years, with David Reynolds offering to be committed to the project for its whole duration. Seven of the city's twelve comprehensive schools (one RC 11-18 school, five other 11-18 schools and one 13-18 high school) agreed to join the project with the cost of £3,500 per school being met by the LEA

The input for each school in each calendar year was proposed to be:

- A half-day initial visit from David Reynolds, including a ninety-minute talk to all the teaching staff to introduce the project and that during that visit David Reynolds would collect basic school documentation.
- Two residential retreats of two days each for two HRS representatives per school for them to be given the relevant knowledge bases for the project.
- Two whole day INSET sessions each year, one on School Effectiveness and one on Teacher Effectiveness in year one, one on Departmental Effectiveness and one on a topic to be arranged on a school specific topic in year two. In year three, the two days would be arranged to cover topics chosen by the

schools from a list of possibilities produced by David Reynolds in association with the schools.

- Three half-day twilight sessions or half day visits on emerging topics, problems and strategies.

The total would be eight days per school per year with as much as possible provided by David Reynolds.

It was proposed that the operational framework for the project would consist of an HRS Steering Committee comprising all Headteachers of the participating schools, the HRS Representative from each of the participating schools, an LEA representative, David Reynolds and other representatives from the LEA and the university as appropriate. The Steering Committee would meet termly, at the end of each term, to:

- review project activities and progress across all schools; and,
- provide a forum to discuss the further development of appropriate programme activities.

There would also be a HRS Committee, comprising one person from each school (the HRS Representative, who would not normally be the headteacher - but, in the case study school is the Headmaster), one representative from the LEA and David Reynolds. It was intended that the HRS Committee would meet monthly, normally for a whole morning or afternoon, and would be the 'driver' of the project. The HRS Committee would monitor the project closely, will plan activities that need synchronising (such as the visit of Professor Stringfield to provide the Teacher Effectiveness input to all schools) and will evaluate progress on a day to day basis. It is also intended that various knowledge inputs will be

given to this committee to facilitate its role in driving the project and that eminent authorities in the field will provide these inputs. Each school would be required to set up its own HRS Committee and to choose its HRS Representative.

Schools which agreed to join the project were reminded that the HRS Project would have six core principles which are [Reynolds, 1996]:

- The creation of data rich schools, using data to make better decisions. This is to be obtained by utilising tests of year 7 initially, and through membership of ALIS (The G.C.E. A-Level Information System) and YELLIS (Year 11 Information System) performance indicator systems (both being projects of Professor Carol Fitz-Gibbon who had recently moved from the University of Newcastle upon Tyne to the University of Durham).
- The obtaining of knowledge on 'good practice' in the fields of school effectiveness, teacher effectiveness, school improvement and departmental effectiveness, from the research base around the world.
- The setting of ambitious goals in four areas: academic achievement, attendance rate and two others.
- A concentration on modifying practices within schools, particularly those that generate or fail to stop the emergence of a 'trailing edge'.
- The willingness to 'benchmark' against best practices within schools, and between schools.

- The willingness to participate in research on the HRS programme, to improve it so that it will be of use to more schools and pupils.

The headteachers were also told that [Reynolds, 1996]:

- The data that schools have already collected on Year 7 will need to be collected centrally and analysed - and that arrangements for this would need to be made.
- It is intended that the schools in the south of the country who had joined the project a year earlier (arising from earlier work of Reynolds at his previous post at the University of Wales College of Cardiff), from September 1995, as a pilot group will also be involved in some of the training activities, particularly the residential sessions.
- The first national HRS Conference would take place on 6 March 1997.

6.3 The introduction of the HRS project at the school and its management

The teaching staff at the case study school agreed to the Headmaster's proposal that the school should join Newcastle University's Highly Reliable School Project at a full staff meeting held on Monday 10 June 1996. They agreed to introduce the targets from September 1996 and this put the school one term ahead of the other schools in the city who joined from January 1997. The teaching staff agreed that in addition to the two compulsory targets, of valued added

examination performance and attendance, that the school would adopt two further measurable targets of reading ages of year 7 students and of homework. The staff also agreed that the School Development Plan would be written in the format of those four targets and that each department would ensure that their own departmental targets were written under those four headings, and that any targets which could not be put under those headings would be put under a heading of whole school target.

The reading age target was seen by the school as an important target since an average of twelve students entered the school each year at the age of 11+ with a reading age of 6 years or below, and the average reading age for all the students on entry to the school was significantly below their chronological age. Blunkett [1997, p.7] stated that 'the child who cannot read cannot learn; the child who cannot learn cannot flourish in a creative world of the new century'. Frater [1997, p.34] concluded that 'when he enters the secondary school, the boy with poor basic literacy is acutely disadvantaged. First he must catch up and then he must keep up'. Unless targets are set by schools for literacy, the government's literacy aim of 80% of 11 year olds reaching the standard expected for their age in English (level 4, Key Stage 2) by the year 2002 will not be met. This target requires an overall improvement across the country from the present level of 60% reaching the target to 80%.

The homework target was perceived by the school as an important target since if is a feature of the learning process and was underused by the school. None of the four targets were seen as making any significant change in the school's targets,

but they provided a very clear focus for the direction in which the school was already moving.

The Governors agreed at their summer term meeting on Tuesday 25 June 1996 to support the proposal of the author that the school should become involved in the HRS project. The minuted agreement reads:

> 1996/97 School Development Plan and Newcastle University's Highly Reliable School research project: The Governors supported the proposal from the Headmaster, which has been supported by all the teaching staff, that the school becomes involved in the Highly Reliable School project from September 1996. In addition to the two compulsory aims of the project of Value Added Examination Performance and Attendance, the governors supported the proposal that the two additional voluntary aims be Homework and Reading Ages of Year 7 students. The LEA Adviser offered to help the school in developing strategies to improve reading ages of Year 7 students with frequent monitoring.

6.4 Further steps in the introduction of the HRS project at the school

The PTA were given a report on the project by the Headmaster at their meeting on Tuesday 10 September 1996. The parents gave the project their full support.

Professor Reynolds spoke to the whole teaching staff on Monday, 24 February 1997 about the philosophy of the HRS project, which was the first time all the staff had met David Reynolds.

Two of the staff (the author and a deputy head) attended the one day national conference 'The High Reliability School: Theory and Practice' held at the New

Connaught Rooms, London, on Friday 7 March 1997 which attracted 215 delegates. This conference included contributions from the eight Gloucestershire schools that had entered the project from September 1995, one year before the studied school. It also included a talk by Professor Sam Stringfield on the Louisiana School Effectiveness Study, the Success for All program at Johns Hopkins University, The Barclay/Calvert Project in Baltimore and on the HRS philosophy.

Eugene Schaffer from North Carolina University spoke to all the staff at the school on Tuesday, 23 September 1997 about teacher effectiveness. Gene Schaffer also spoke about school effectiveness to all the City's Headteachers on Friday 6 February 1998 and to four representatives from each of the seven HRS project schools at a residential conference on Friday 6 February and Saturday 7 February 1998.

The HRS philosophy has been a significant feature of all internal appointments since September 1996 with candidates asked to indicate how they would contribute to the project if appointed to a vacant post. As an example, an invitation for internal candidates for an Assistant Head of House post advertised in December 1997 invited candidates to write a letter of application, in not more than 1000 words, which 'should indicate your views on the contribution the House Staff might make to the Highly Reliable Schools Project'.

6.5 The school development plan and the HRS project

The 1996/97 School Development Plan had already been written at the time when the school joined the HRS Project and a significant feature of the development plan was preparation for the first OFSTED Inspection of the school in the week beginning 11 November 1996. However, following the agreement of all the teaching staff, at the meeting on Monday 10 June 1996, that the development plan would be written under the four headings of the HRS targets the Heads of Department agreed to rewrite their departmental plans under the four headings. This enabled the school to conduct departmental reviews in January 1997, at the very start of the HRS Project in the city, with the following prompt sheet for the Heads of Department:

A Review of the targets set for 1996/97.
Influencing Factors:

i HRS Project

How did the department contribute to the targets of this project?
To what extent have these targets been met?

ii Inspection

In what way did the OFSTED report comment on last year's targets and action plan?

Did the Inspection report (including verbal feedback) comment on other aspects of the department's work relating to development?

iii National Curriculum

Are there any changes?

HIGHLY RELIABLE SCHOOLS PROJECT

1 Value Added Examination Performance

To What extent have last year's targets been met?

<u>KS3/KS4 Examination Results</u>

How do they compare with National averages?
How do they compare across the school?
How did the students do with regard to prior levels of attainment?
What did OFSTED say about this?
What has hindered achievement and what has encouraged achievement?
How should this affect future planning?

<u>Policy and Planning</u>

Are there any modifications to the Handbook or Schemes of Work in the light of OFSTED or the HRS project?
Are assessment records within the department clear and effective?
What did OFSTED say about assessment?
Does the classroom environment assist learning? What did OFSTED say about this?

<u>Teaching and Learning</u>

How is the quality of teaching and learning monitored and developed in the department?
Are student gains in knowledge apparent? How is student progress charted? What did OFSTED say about this?
Information Technology: Are the school contracts with IT appropriately met? How does IT enhance the learning of students? What did OFSTED say about this?
Is SEN appropriately catered for? Are all students able to access the curriculum? Are the most able students catered for?

2 <u>Attendance</u>

To what extent have last year's targets been met?
Are all members of the department familiar with the school's attendance policy?
Are all members of the department familiar with and using the school's system for monitoring and communicating student absence during lessons?
Are there other ways in which the department encourages students to attend (such as extra curricular activities, clubs, exchanges, etc.)?

In what ways does the department support the return of students into the classroom after a period of absence?

3 Homework

To what extent have last year's targets been met?
Does the department follow the school policy on Homework?
How does the department monitor the setting and marking of homework?
Marking: to what extent does the regular marking of homework support and encourage the raising of achievement?
How are rewards and sanctions used to encourage the completion of homework by students?

4 Improving Reading Ages in Year 7

To what extent have last year's targets been met?
Are all of the department familiar with the Whole School Strategies for raising reading ages in Year 7?
Does the department specifically contribute towards the Whole School Strategies?
Are there any strategies particular to the department that contribute towards improving reading ages?
Hoe does the department's SEN policy, worksheets and materials enable students to improve their reading and access the curriculum?

Other considerations which may affect the above HRS targets:

Resources

Are resources deployed to their best effect? What did OFSTED say?
What additional resources would assist in the raising of achievement?
How was the departmental budget used to support learning?
Will there be any whole school implications for the future funding of the department?

Management

Is the work shared? Are specific roles identified?
Does there need to be some modification of roles or responsibilities?
Are there any particular 'strains' which need addressing?

Staff Development

How are members of the department being developed and trained to deliver what is needed? Are there individual needs that are not being met?
Is there a departmental record of staff training?
How do individuals feed back to the department after training? How is the information shared?

5 Other

Are there other issues of particular concern?

6.6 The school HRS committee

The case study school has its Headmaster as the HRS Representative together with one of the Deputy Heads. An existing committee took on the additional role of HRS committee rather than a new committee being formed. The existing committee, known as the MES (Mathematics, English and Science) Committee, consists of the Heads of Department, and the Deputy Heads of Department, of the Departments of Mathematics, English, Science and Learning Support together with the Headmaster and four Deputy Heads and Assistant Heads. This committee first met in February 1996 at which time it did not include the Deputy Heads of Department or the Head of Learning Support. From that date it has met monthly and included the Deputy Heads of Department from January 1997.

The MES Committee was therefore formed during the same term that the author was attending Professor Reynolds' course on the Management of School Effectiveness and School Improvement in the Spring Term 1996. This illustrates

how the HRS philosophy merged with and supported the direction in which the school was already moving.

At the MES meeting held on Thursday 20 March 1997 it was agreed that the committee would also become the HRS Committee and that the Head of Learning Support would be invited to join the committee due to the contribution of the Learning Support Department to the target of raising reading ages. The decision to combine these committees was taken because the MES committee had been set up:

1 to take a proactive role in the raising of examination performance;

2 to drive up performance in the core subjects where five of the examination entries out of a normal nine entries are taken in mathematics (one entry), science (two entries through dual award Science) and English (two entries for all students from June 1997);

3 to recognise that Mathematics, Science and English have a particular key role in value added examination performance arising from their core and compulsory position and also arising from the perception of the importance of passes in these subjects by employers.

An extract from the minutes of the meeting held on 20 March 1997 illustrates the role taken by this committee:

ii It was agreed that the M.E.S. committee would also be the school H.R.S. committee with other staff attending where this is appropriate. This would include the Head of Learning Support because of her major contribution to the key target of reading ages.

6 Future Dates

i Thursday 1 May 1997 at 3.45 p.m. in the Conference Room
Agenda to include:
(a) Final proposals for the 1997/98 curriculum
(b) A review of the progress of students in Year 11 at the C/D borderline

ii Thursday 5 June 1997 at 3.45 p.m. in the Conference Room
Agenda to include:
(a) A review of progress with all our HRS aims.
(b) Proposals for targets with our HRS aims for 1997/98
(c) A review of what has been seen as the advantages and disadvantages of the single sex setting initiative in Year 10 English this year.

iii Thursday 3 July 1997 at 3.45 p.m. in the Conference Room
Agenda to include:
(a) Proposals for strategies to meet GCSE targets in the new Year 11.
(b) Proposals for a date where we can meet for a twilight session in September 1997 to thoroughly examine the 1997 GCSE results as raw statistics, as value added comparative statistics within the school, as value added statistics with Professor Fitz-Gibbon's modification factors and as comparative statistics within the city.

6.7 Involvement of the feeder primary schools

The LEA of the case study school uses the term 'feeder school' to define the order of admission to oversubscribed schools. This definition gives rights to

parents only if they have children at a feeder school to an oversubscribed secondary school. Otherwise, no additional rights come from attending the primary school since any parental preference for an undersubscribed school can and must be met.

The case study school has five 'feeder primary schools' but takes a significant number from a sixth primary school (33 into Year 7 in September 1998), together with a few students from a larger number of primary schools.

The author invited the six main feeding primary schools, one of which exists as separate infant and junior schools, and a nursery school which exists as a separate school feeding two of the primary schools, to adopt similar targets to the school's HRS targets. They readily agreed to do this and with the help and advice of the attached LEA adviser produced a consortium development plan adopting the targets of examination performance, attendance, reading ages and homework from the 1997/98 academic year and clearly setting out the targets in terms of a rationale, objectives, actions, time scale, responsibility, cost, staff time, source of funding, success criteria, arrangements for monitoring and arrangements for evaluation of overall effectiveness.

This goes beyond the requirements of the HRS project and is an additional feature at the case study school. Although additional to the HRS project targets, it is nevertheless seen by the Headmaster as a necessary requirement for long term sustained improvement. The feeder schools agreed to adopt the following development plan at their meeting on Thursday 8 May 1997:

CONSORTIUM DEVELOPMENT PLAN

Consortium Mission Statement

To co-operate in continuing to develop excellent schools in which all students are encouraged to achieve their maximum potential.

Key element: IMPROVEMENT IN PUPILS' STANDARDS OF ATTAINMENTS IN NATIONAL TESTS

Rationale: To improve general standards of attainment across the consortium.

Objectives	To raise standards of attainment in national tests across the consortium
Actions	To track the progress of identified cohorts of pupils through KS1, 2 3 and GCSE tests
Timescale	Begin Summer Term 1997
Responsibility of	Headteachers, LEA Planning and Statistics Department
Cost	£20 per school for photocopying etc.
Staff time	Initial meeting of 2 hours. Annual consortium meeting of 2 hours. Staff meetings per school of 1 hour
Source of funding	School Budgets
Success criteria	i Meetings to discuss sharing data and mechanism for tracking to have taken place ii Annual data/report on cohorts' progress will have been produced and discussed by the consortium iii Annual data will have been discussed with staff of each school
Arrangements for monitoring	i Headteachers to monitor data supplied by their school ii Consortium to monitor trends and schools' experience
Arrangements for evaluation of overall effectiveness	i Consortium meetings will indicate consortium's response to trends ii Staff meeting will indicate schools' response to trends

Consortium Target for Attainment

TABLE 11

Key element: TO IMPROVE ATTENDANCE

Rationale: To recognise importance of attendance in contributing to pupils' attainment

Objectives	To improve the attendance of pupils in all schools in the consortium
Actions	i To share good practice regarding methods of improvement used by schools. ii To draw up an overall strategy to improve attendance.
Timescale	i First half of Summer Term 1997 ii Second half of Summer Term 1997
Responsibility of	Headteachers to discuss in consortium or special meeting. Working Party established consisting of Admin Officer, EWO service and school staff responsible for attendance
Cost	i Nil ii Photocopying and admin costs
Staff time	i 90 minutes for meeting ii 2 hours for meeting
Source of funding	ii School budget
Success criteria	i Meetings to have taken place. Good practice recorded. ii Working party to have met. Overall strategy to have been agreed and recorded in writing.
Arrangements for monitoring	ii Administrative officers to monitor effects on weak attendance. EWOs to monitor strategy through outcomes. Headteachers to report to consortium on overall outcomes and isssues.
Arrangements for evaluation of overall effectiveness	ii Analysis will show measurable improvement in attendance in each school and across consortium as a whole.

Consortium Target for Attendance

TABLE 12

Key element: IMPROVEMENT IN READING SKILLS

Rationale: The need to raise reading standards across all schools in the consortium

Objectives	To work together to raise reading ages in all schools across the consortium
Actions	i To share existing good practice by means of a series of meetings in each school. ii To hold a meeting to devise a means of involving parents and other adults in helping to improve pupils' reading ages
Timescale	i Summer 1997 and ongoing. ii Summer 1997 and ongoing
Responsibility of	Language coordinators, Heads of English and SENCOs.
Cost	i Approximately £10 for refreshements for each school. ii Approximately £10
Staff time	i 1 hour in each school (6 to 9 hours in total) ii 1 hour from each school (6 to 9 hours in total).
Source of funding	i School budgets ii School budgets
Success criteria	i (a) Meetings will have taken place (b) Data and information exchanged. ii (a) Meetings will have taken place (b) Data and information exchanged.
Arrangements for montitoring	i Consortium meetings to monitor (termly) ii Teachers responsible to report termly to consortium meeting
Arrangements for evaluation of overall effectiveness	i (a) Reading indicators/ages annually starting September 1997 (b) Chart improvement ii (a) Parents and AOTs involved across the consortium to be recorded (b) Gradual improvement in reading results.

Consortium Target for Reading Skills

TABLE 13

Key element: TO RAISE STANDARDS THROUGH HOMEWORK

Rationale: To give pupils across the curriculum a good foundation for developing study skills.

Objectives	To develop good habits of study for pupils across the consortium through managing homework effectively
Actions	i To share good practice of how schools manage homework. ii Each school to review existing practice to make it more effective.
Timescale	i Autumn Term 1997 ii By Spring Term 1998.
Responsibility of	i Headteachers within consortium meeting time ii Headteachers responsible for review in each school.
Cost	i Nil ii Nil
Staff time	i 2 hours consortium meeting ii (a) Staff meeting, 1 hour (b) 2 hours for person conducting the review
Source of fundng	i Not applicable ii Not applicable
Success criteria	i Meeting to have taken place. ii (a) Staff meetings to have taken place (b) Review completed by teachers responsible by Spring Term 1998 (c) Each school will have a policy/practice in place
Arrangements for monitoring	ii (a) Headteachers will monitor progress of review in each school. (b) Teacher responsible will collect qualitative/quantitative data on implementation of policy/practice
Arrangements for evaluation of overall effectiveness	ii Report to consortium will indicate qualitative and/or quantitative success of policy/practice.

Consortium Target for Homework

TABLE 14

David Reynolds met all the primary headteachers at the case study secondary school at a meeting on Tuesday 17 June 1997 and he then followed this with a talk to all the secondary school staff about school improvement knowledge.

At the regular meeting of the primary headteachers with the author held on 24 March 1998 the primary headteachers agreed to adopt the school contract which the secondary school had used for the last ten years with minor amendments of the wording, for example reference to the House System, to make it read correctly for the primary parents. This was at the request of the primary headteachers who felt that there would be advantages to adopting similar strategies for dealing with issues such as attendance.

6.8 Other city schools' HRS targets

Some of the other six secondary schools joining the HRS project from January 1997 took rather longer to set their targets. By January of 1998 four of the six had set targets and there was a wide range in the degree of ambition or optimism reflected in the targets. The targets were:

School 1:

- *% grades A*-C* 30% by 1998, rising further
- *Attendance* 90%
- *School target 1* Literacy: all pupils reading age not more than 18 months behind chronological age
- *School target 2* Partnership with parents

School 2:

- *% grades A*-C* — No children to leave without a qualification
- *Attendance* — Significantly improved attendance rates
- *School target 1* — Literacy: improve reading ages
- *School target 2* — Limit the number of exclusions

School 3:

- *% grades A*-C* — 40% by 2000
- *Attendance* — 95%
- *School target 1* — Literacy: 80% of children at chronological age
- *School target 2a* — All children coming to lessons with the required equipment
- *School target 2b* — 95% of homework satisfactorily completed and handed in on time

School 4:

- *% grades A*-C* — 70% by 2001, 98% with at least 1 A-G by 2000, 90% with at least 1 A*-C by 2001, positive pupil level residuals in all subjects, 50% increase in average pupil point score at A-level
- *Attendance* — 91% average by 1998, less than 0.1% unauthorised absence, 99% punctuality
- *School target 1* — Equipment: clear communication of requirements and monitoring procedures: Whole school: pen, pencil + subject specific targets

- *School target 2* Time management: all lessons to begin within three minutes of the bell, meeting all administration deadlines, planned and effective use of homework time

School 5 (the case study school):

- *% grades A*-C* 50%
- *Attendance* 90% average and ensure a first day response by telephone or home visit to the absence of any child whose parents have not contacted the school
- *School target 1* To raise students' reading ages to at least their chronological age
- *School target 2* To ensure that homework is set for all students which is differentiated, relevant and demanding

School 6: Targets had not been set by January 1998 and the headship of the school changed in September 1997.

School 7: Targets are to be revised in January 1998 as previous targets set by OFSTED whilst the school was in special measure have now been met.

The seven schools were invited to send four representatives each to a two day residential conference on February 6 and February 7 1998 to hear Schaffer and Reynolds about departmental effectiveness and also to hear from the head of one of the South Wales schools where examination performance had made impressive improvement.

6.9 Incentives for departments to meet HRS targets

On 10 February 1998 the Heads of Department of Mathematics, English and Science were told by the headmaster that their departmental funding would increase by 50% from the September following achievement of 40% of the students on the January DfEE Form 7 return obtaining GCSE at grade C or above. They were also told that their salary point would increase by one temporary point for retention on achieving that target. They were told that their departmental funding would increase by 100% and their salary by one permanent point for responsibility and by one temporary point for retention on achievement of a target of 50% of the students on the January DfEE Form 7 return obtaining GCSE at grade C or above.

The head of the department of mathematics was optimistic that he might achieve the lower target in 1998 and the higher target in 1999. The mathematics results were, however, well below the target in 1998 at 21%, although they were considerably better than the 14.6% in English and the 7.6% in Science. The mathematics department remains optimistic that the 1999 results will greatly improve. This suggests, since English and science GCSE results nationally are on average better than mathematics results, that a target of 50% of the students obtaining five or more passes at GCSE at grade C or above is an achievable and realistic target even though it is at present a very demanding target.

6.10 Key HRS target of homework for 1998/99

The headmaster's management team concluded at its meeting on 11 February 1998 that the HRS target of homework was the one target where the evidence of what was happening was not matching the intentions of what should happen. Whilst some departments and some teachers were following the school homework timetable in both spirit and letter, the parental perceptions of the homework being set did not match the school promises. It was therefore decided that the 1998/99 school development plan would focus on the HRS target of homework. The headmaster decided that, in order to encourage compliance with school policy, additional departmental funding would be available for the development of homework.

The headmaster proposed that from April 1998 the departments would be funded by the normal funding formula, but all additional funds for the 1998/99 financial year would be directed to supporting homework. The additional funding, to be released in three equal parts: at the end of the October half term in 1998, at the end of the Christmas holiday in 1998 and at the end of the February half term in 1999, would only be released if the agreed homework timetable has been followed in full by all teachers in the department. This will involve:

- the teachers keeping a record of all the work which has been set with wording identical to that which the students have been required to enter into the homework diary (and this record must be available to both the Head of Department and to the link member of the Heads' team);

- the homework diaries, following a check of some of the most co-operative and parental supported students, correlating with the teachers' records;
- the teachers keeping a record of the assessment of every homework of each student, which at the very least will indicate whether or not the student completed the homework on time;
- a fundamental requirement that the teachers' perceptions of what has been required being matched by the students' perception, by the parental perception and by the Heads' team perception of the negotiated and agreed departmental homework timetable.

6.11 Other LEA Interest

On May 6 1998 the author was invited to visit Bristol LEA to speak to headteachers, advisers and officers about the project. Although the first schools to join the project were in neighbouring LEAs, they were interested in how the project might be able to assist improvement within city comprehensive schools rather than its effects on rural comprehensive schools.

6.12 Improvement in Reading Ages

The improvement in the Year 7 reading ages, one of the four HRS project aims, between October 1997 and March 1998 was very noticeable. One third of the thirty-three students who were given additional help gained two years or over on their reading ages, using the Neale Analysis of Reading Ability (Revised). Almost

80% improved by between nine months and two years eleven months during the first six months of intervention.

Comprehension results for the targeted group also showed improvement with two thirds of the students gaining between ten months and three years five months. More work was done in groups of five or six during this intervention than had previously been attempted with Year 7 students and this resulted in students gaining in confidence with their reading. Parents readily agreed to the inclusion of their children in the intervention project.

Twenty seven [redacted] the students also had extra help with numeracy and over half of the students improved their scores in Heinemann Level 3 Number tests by between ten and twenty percent during the first six months. The cohort were taught in their normal mathematics lessons and it was therefore the subject teacher who directed most of the work.

All the Year 6 students in the primary schools who are transferring to the school in September 1998 have been offered six sessions of one hour with their parents in the school library as part of the initiatives for the National Year of Reading starting in September 1998.

The Year 8 Suffolk Reading Test scores showed a significant improvement at the end of the first year of the project. In 1996, 49.8% of the year group had a Standard Score of 85 or below compared to a national figure of 17%. This had reduced to 47.2% in 1997 and, very significantly to 29.6% in 1998. In 1996, only 13.4% had a Standard Score of 100 or above compared to a national figure of

50%. This had increased to 16.1% in 1997 and very significantly to 41.6% in 1998. The Group Standard Score was 86.48 in 1996 compared to a national score of 100. It had increased to 87.69 in 1997 and to 96.12 in 1998. The Year 8 Reading Test scores for 1996, 1997 and 1998 are shown in the following three charts:

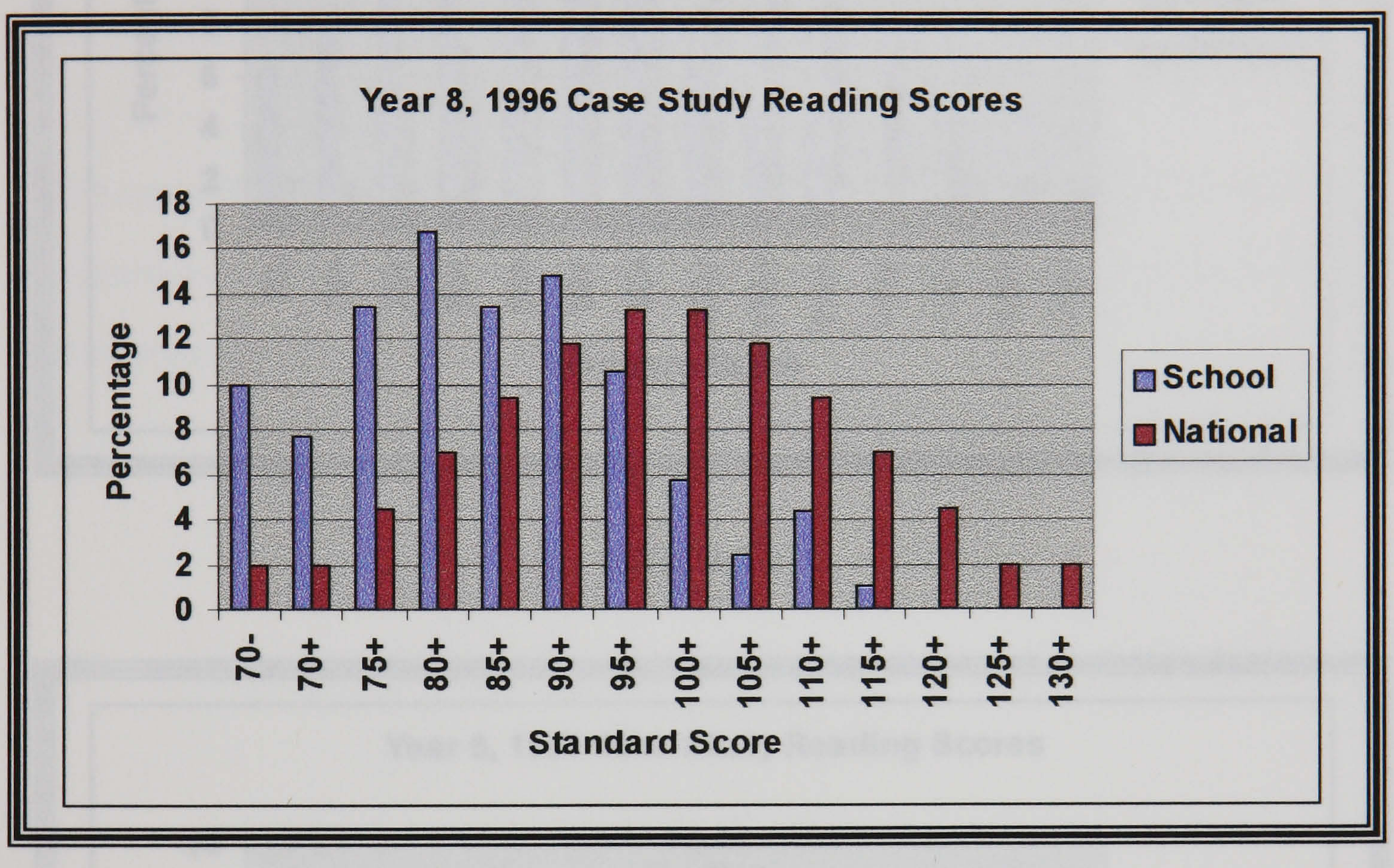


FIGURE 8

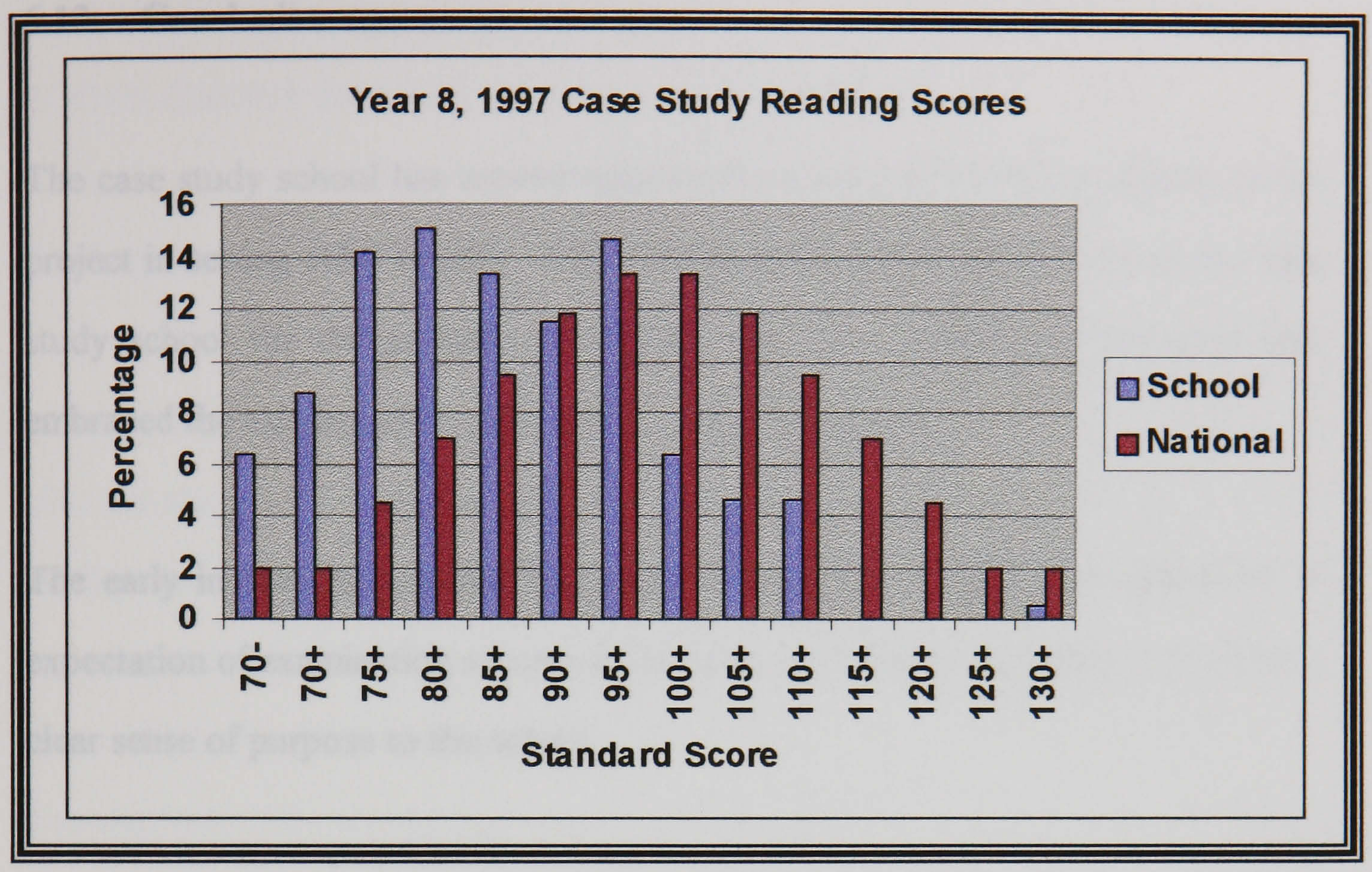


FIGURE 9

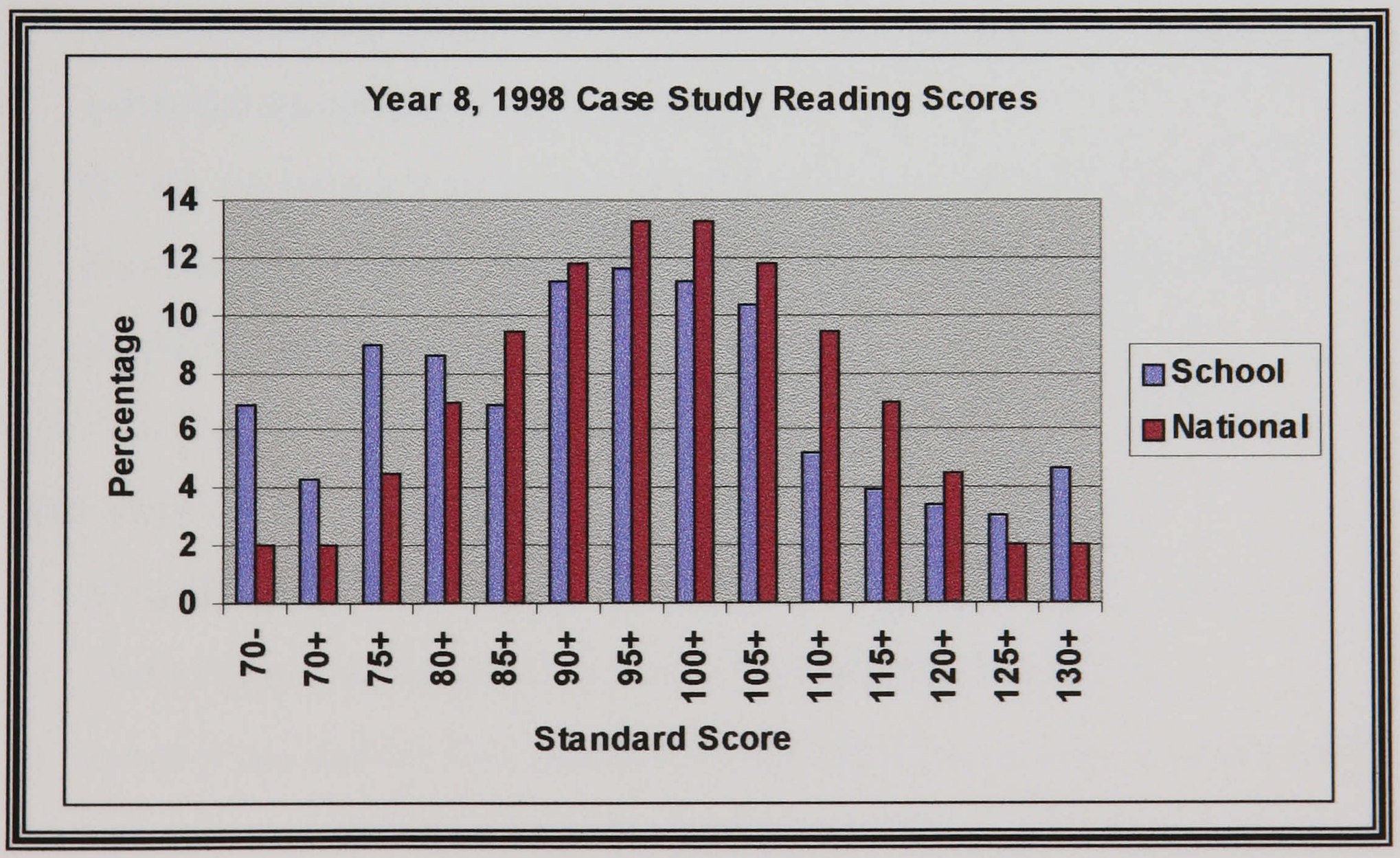


FIGURE 10

6.13 Conclusion

The case study school has moved significantly ahead of the other schools in the project in setting HRS targets. This is largely due to the enthusiasm of the case study school for the project, particularly since it provided a framework that embraced the existing philosophy and targets of the school.

The early indications are that the project is making a significant difference to expectation of examination success at the case study school and that it has given a clear sense of purpose to the school.

CHAPTER SEVEN

FOCUS GROUP REPORT ON THE HRS PROJECT

7.1 Purpose

Multiple focus group interviews were held in February 1999, seven school terms after the start of the project at the case study school, to evaluate the impact of the HRS project on the school by asking for the responses of all the teaching staff to a number of questions.

The aim was:

- to obtain everyone's views,
- to see what arguments were used in forming the opinions of each group,
- to obtain some full quotes of the views expressed and particularly those that influenced the opinions of each group,
- to help the management team at the school put forward some proposals for discussion by all the staff which might influence the progressive evolution of the HRS project in the future.

The questions were selected:

- to see if the staff felt that the HRS project had given a clearer focus to the aims of the school compared with its earlier five mission statements,
- to see if the staff felt that the HRS targets had been imposed on them or if they felt that they had been involved in choosing and implementing the targets,

- to see if the staff felt that they were part of a school-driven project or part of an LEA or university-driven project,
- to see if the staff were fully aware of the four HRS targets,
- to find out what impact the staff felt that the project had made on the school,
- to find out if the staff felt that the project had received differential support from departments which might have contributed to differential examination performance,
- to find out if the staff felt that the targets should be changed and if the staff believed that the project could be more effective if changes were made to it,
- to find out what the staff felt had been the key successes of the HRS project,
- to find out what factors, other than the HRS project, the staff believed had contributed to improvement at the case study school,
- to find out what the staff felt had been the differential effects of the four HRS targets,
- to find out if the staff believed that the project had impacted in any other ways on the school.

7.2 Composition of the groups

Six focus group interviews were conducted at the case-study school involving all the teaching staff. The groups were cross-curricular, and all included the full range of staff from senior management to newly qualified teacher. The groups were composed from staff in each of the three school houses but split into two groups for each house. This grouping was chosen since the house groups had been used for many years as a means of obtaining frank opinions from the teaching staff. Also, unlike other meetings at the school, the minutes of the

meetings had usually been in a focus group report format with the opinions of the group quoted.

This produced six groups with the largest group having thirteen members and the smallest group having ten members. The total number of teachers who were present in the six groups was sixty-eight and, in addition, there were eight teachers who were absent or who were unable to be present for other reasons. The discussion lasted for approximately two hours and the six groups therefore produced a total of approximately twelve hours of staff views on the HRS project.

The interviews were held following an early closure of the school that was consistent with the way in which HRS in-service training in teacher effectiveness and departmental effectiveness had been introduced to the staff. It also had the advantage of ensuring that all staff took part and was designed to get the views of any doubters as well as the views of the believers in the value of the project.

The group facilitators were the three Heads of House and three Deputy Heads of House. The scribes were three Deputy Heads, one Assistant Head, the Head of Science and the Head of English. A meeting was held one week before the focus group interviews of all the six facilitators and six scribes. The purpose of the interviews was explained to them and also the methodology of the use of a focus group in survey research. They were told that a summary of the focus group report would be given to all the staff and that the report would be used to formulate proposals for the continuing evolution of the project at the school.

They were given a copy of an example of a focus group report so that they were aware of the intended format of the report.

The author made it clear that he would not be present at any of the groups so that the members would not feel under any obligation to support the author. It was made clear to the facilitators and scribes that the views of any staff who did not support the project would be equally valued. The facilitators were particularly asked to ensure that all the members of their group had an opportunity to express a view on each topic.

The scribes were asked to indicate which of the following four categories the respondents were in (and the category is indicated in brackets after each quote):

1. Deputy Head, Assistant Head, Head of Department or Head of House (i.e. four points for responsibility, or above).
2. Deputy Head of House, Assistant Head of House, Deputy Head of Department (i.e. two or three points for responsibility).
3. All other teachers except those who joined the school in September 1998.
4. Newly qualified teachers and other teachers who joined the school in September 1998.

7.3 Topics discussed at the focus groups interviews

A range of questions was asked that were intended to cover different perspectives of the project. There was some deliberate overlap of issues within the questions to see if different arguments were more effective in the way in which staff arrived at an opinion. The questions introduced by the facilitators were:

1 Have the HRS targets given greater clarity to the aims of the school compared with the five intentions in the Statement of Intent (which are in the School Brochure, in the Information for Parents and are in frames on walls in many parts of the school)?

2 Could you quote the five intentions from the Statement of Intent? All of them (or at least indicate their themes)? Some of them?

3 Could you quote the four HRS targets?

4 Considering the four HRS targets separately:

(a) What do you think has been the impact on students and teachers (both positive and negative) of the HRS homework target?

(b) What do you think has been the impact on students and teachers (both positive and negative) of the HRS reading target?

(c) What do you think has been the impact on students and teachers (both positive and negative) of the HRS attendance target?

(d) What do you think has been the impact on students and teachers (both positive and negative) of the HRS examination achievement target?

5 Do you think that the school should consider alternative targets or are these four targets the key issues for the future development of the school?

6 Do you think that these targets were imposed on you, or do you think that they were agreed by you?

7 Is the difference in GCSE performance in the core subjects of Mathematics, English and Science due to a difference in commitment to the HRS philosophy and targets or due to completely different reasons?

8 Which aspects of development and improvement in the school are wholly or partly attributable to the HRS Project?

9 Have any other strategies and factors in the school contributed to improvement?

10 In what other ways has involvement in the HRS Project impacted on the school?

11 Who/what mechanisms are the key driving forces of the HRS Project in the school? What are the relative influences on the project in the school of the Headmaster, the HRS Committee, the Heads of Department, the L.E.A., Professor David Reynolds and Professor Gene Schaffer?

12 How significant is the part played by HRS within the school's development? [Not necessarily under the name of HRS]

13 (a) What have been the key successes of HRS in this school?

(b) Why were they successful?

(c) What have been the key failures of HRS in this school?

(d) Why were they unsuccessful?

(e) Why does the HRS project have so much or so little significance in this school?

14 In what ways could the HRS Project be changed in order to make a greater contribution to improvement at the school?

In addition, all the teachers were asked to write a response to the following:

15 In a maximum of 10 lines, describe how you think the High Reliability Project has influenced the school.

7.4 Clarity of aims

The first three questions were designed to see if the HRS project targets had given greater clarity to the aims of the case-study school. The school has had a 'statement of intent' for thirteen years that is in the school brochure and copies of which are in frames on walls in many parts of the school. The statement of intent says:

Our intention is:

- To provide a school at which all students are able to experience success.
- To provide a school to which any parents could, with confidence, send their children.
- To provide the best possible environment for its students and employees in which learning can be an enjoyable experience.
- To make a positive contribution to the quality of life in the (named) area.

- To work as a partnership of parents, students and teachers with an agreed and negotiated contract signed by all the partners before a student starts at the school.

In one of the six groups three of the staff were able to quote the statements of intent. These were either teachers involved in a pastoral role with experience of talking about the statements to parents or teachers who had particularly rehearsed them in preparation for interview for an internal promoted post. Comments included:

> 'I know them because I have been interviewed a few times and I use the contract with students.' (1)
>
> 'It depends on your school role and focus. As a pastoral member of staff my focus is different. I quote the school contract to kids.' (2)
>
> 'I am able to quote them', and did. (2)
>
> 'I couldn't quote exactly but I know the themes.' (1)

Although the staff with pastoral responsibility were distributed equally between the six groups none of the members of the other five groups said that they could quote the statements, though a few members said that they knew the themes. One teacher said that he had not seen the brochure (although a copy was given to every member of staff) and had not seen the Statement of Intent on the walls. Many teachers felt that the lack of knowledge of the statement of intent was due to it having far more words than the HRS targets:

'Intents are not easy to remember.' (1)

'The statements of intent are too wordy.' (3)

'HRS targets are much clearer and easier to remember.' (3)

However, nearly all the staff were able to quote the four HRS targets. In one group all members said that they knew all four targets. In the other five groups a total of nine staff said that they could not remember all four targets, and these nine were fairly evenly distributed between the four divisions of responsibility that the scribes had been asked to identify. Typical reasons given for being able to remember them included:

'Words are easier to remember than long statements.' (3)

'The HRS targets are enforced more regularly.' (3)

'The statement of intent is a load of waffle.' (2)

A number of teachers said that they could easily remember the HRS targets because they had prepared themselves for possible questions on the targets for internal interviews. One reason given for not being able to remember them was:

'A bit irrelevant to PE.' (2)

There was a clear consensus from all the groups that the HRS targets had given greater clarity to the aims of the school:

'As an NQT definitely the HRS targets. It was highlighted when we first started. For me, that is the focus of the school.' (4)

Some staff in one group, however, felt that comparing the HRS targets with the Statement of Intent was 'not a fair comparison' (1 and 2), that the HRS targets

are 'more academic' (2) and that 'if you get the targets right then some of the intents will follow' (3). This was supported by views in another group that 'you can't compare the two, one is objectives and the other long-term targets' (2).

There was some concern expressed that the HRS targets might 'detract from other things that the school does well' (2) and that the school's outdoor pursuits centre should become one of the targets (1).

7.5 Impact of the four HRS targets

The fourth and fifth questions sought to investigate the separate impact of each of the four HRS targets and whether or not the staff felt that alternative targets should be considered for the future.

A great deal was said about homework with a wide variation in views and this particular question produced the most discussion. At one extreme it included a belief that the target has resulted in more homework being set and evaluated:

'Homework is being set and followed up more.' (2)

'Students are aware that homework is a priority.' (1)

'Getting homework back in is a good way of assessing students.' (3)

'Parents are more involved.' (3)

'Excellent organisation for students.' (2)

'Homework is set and marked much more effectively.' (1)

'Lot of students asking for homework.' (1 and 3)

'Homework Club has been a very positive thing.' (1)

At the other extreme a few teachers felt that little progress had been made with homework or that it had some negative effects:

'Those who don't do homework still don't.' (2)

'Lesson wastage with setting and discussing homeworks.' (2)

'Record keeping is suffering due to homework focus.' (2)

'Worry about books not being up to date due to homeworks.' (2)

'It is too regimental. The students do not appreciate homeworks that are not written and marked, so this is now the type given.' (2)

There were a number of concerns about who had responsibility for ensuring that students kept their homework planners up to date:

'Not having a diary is equal to having shirt out. They are saying they will not co-operate with the school.' (4)

'No one has taken responsibility for it. It is not the Form Teacher's responsibility and not the House staff, so who do subject teachers go to?' (2)

There were also a number of concerns about the increased work-load for the teachers, although some staff did try to give a response to this:

'Extra workload on teachers from increased levels of homework' (1), followed by 'not a massive increase of work to mark depending on how it is set.' (3)

'Annoying that some children blatantly don't do homework' (3) followed by 'give homework but don't necessarily expect all to do it' (3) and 'the Head said to reward those who did homework, not waste time with those who don't.' (1, and agreed by all)

A number of teachers felt that the homework target was having a greater effect with younger students. Examples included there is 'no difference to amount of homework handed in with hardcore of year 11' (1) but 'has with other year groups' (1 and 3), and 'one year 7 class tells the form teacher if no homework is set' (1). One teacher suggested that it might be a good idea to ask the headteachers of the feeder primary schools to introduce the homework planners to their years 5 and 6 and this suggestion is being followed up in consultation with the primary headteachers.

There was a much greater, though not unanimous, feeling that the reading target was having a positive effect:

'We are adding a lot of value although we are starting from a low starting point.' (3)

'I think the kids are keener to read than they ever used to be. Even if they are weak they do not seem embarrassed if they get stuck.' (1)

'More kids are more willing to read.' (2)

'I find that with year 10 even weak ones are prepared to read.' (3)

'It is absolutely fantastic to see the year 7 registration reading times.' (2)

'The students really love it.' (4)

'Potentially the most important of the four targets.' (1)

'Children are aware of their reading age and how they are improving.' (4)

A view that taking year 7 students to reading classes in the library 'produces extra pressure for the Form Tutors' (2) was vigorously disputed by other year 7 form tutors (mainly 1).

There was a consensus that the attendance target was proving very difficult to achieve, combined with a feeling that attendance might have been considerably worse if it had not been targeted. There were some views that the attendance target had been more effective in improving the attendance of students at the higher range of attendance:

'We get a lot more response from parents whose kids are rarely off.' (2)

'The students who are going for 100% go for it but it has not made a difference to the whole.' (1)

'I feel there are more children getting 100% attendance.' (1)

'Some kids are now hell-bent on getting 100%, others attend less frequently because they are chased for absences.' (2)

There were many expressions of despair with absence of students:

'We haven't got the manpower or the time to follow up every case.' (1)

'Sending students home is only sanction which affects attendance.' (1)

'Often nice students in year 11 who have poor attendance.' (3)

'Parents allow students to stay off school.' (3)

'Continuity in lessons is very difficult.' (2)

'Difficult for the school as parents must take the major role.' (2)

'We should be focusing on good kids not bringing back the likes of (named student)' (2)

'I don't think we've made any impact on attendance.' (2)

The examination achievement target also produced many concerns though there was a considerable variation in the views of the different groups and in the way in which their discussion developed. There was a particular concern with the perceived message that obtaining lower than grade C at GCSE is the same as failing, and this concern was expressed by many teachers:

'Anything under a C is considered a failure by students and staff.' (3)

'Must value achievement of all students not just C or better.' (1)

'For some a G is a great achievement, we should address this.' (1)

'Large groups of students not taking the pressure of A to C and dropped out.' (1,1 and 3)

'Need to look at other courses which gain recognition other than GCSE.' (1)

'A lot of kids have been almost discarded.' (2)

There was also some concern that aiming for improved examination performance had put 'greater pressure on staff' (1). One teacher in one of the six groups expressed the view that the school 'should not go along with targets set by outside groups, we do a very good job here and should not be pressurised by targets' (2). Another teacher in the same group said that 'we do a very good job enabling many students to succeed in many ways other than academically' (3).

There was some optimism that examination performance will improve when the younger students in the school take external examinations and 'there may not be a significant difference until year 8 get to examinations' (3). There was also a view that if the school 'got better pupils then results will improve' (1 and 2).

There was some despair that the percentage of students with five or more passes at grades A to C at GCSE in 1998 had gone down in spite of examination performance being one of the HRS targets. This feeling was not disputed even though the target for the percentage of students with one or more passes at grade G or better and the target for the percentage of students with five or more passes at grade G or better had both been exceeded in 1998.

The discussion took place one day before an analysis of predicted grades for 1999 was distributed to all the staff. This showed a prediction that the percentage of students in the present year 11 who are expected to obtain five or more passes at

grade C or above is 24%, in spite of a determination to be very cautious with the predictions following the 1998 dip with this statistic. This might have had some influence on the discussions if the staff had been aware of this greatly increased optimism for the 1999 results.

Behaviour was suggested by many teachers as a possible alternative or additional target in responses to the fifth question. Some pointed out that this was not a readily measurable target, and there was no agreement as to what target should be removed in order to include discipline as a target. Students walking round the school with a shirt or blouse flap not tucked into trousers was given as an example of challenging behaviour by a number of teachers. No one pointed out that this would not have been seen as an achievable aim a few years ago:

> 'We can't reach the other targets if we can't get the kids to tuck their shirts in.' (3)
>
> 'Your other four targets will be easier if the kids are behaving properly.' (3)
>
> There should be 'more money for duties and monitoring behaviour.' (2, and lots of agreement for this view)
>
> 'Behaviour would be a lynchpin to support the other four targets.' (4) followed by 'behaviour is a good target but it is too difficult to measure.' (1)

Other suggestions for alternative targets included PSE and social skills, participation in clubs and activities, school ethos, making the school a happy place to be in, caring atmosphere, increased parental involvement and use of the

school's outdoor pursuits centre. Behaviour and discipline, however, were suggested as themes by four of the groups and this is clearly an issue that needs to be followed up.

7.6 Origin of the targets and the driving forces of the project

The sixth question asked if the staff felt that the targets had been imposed on them or if they felt that they had agreed them. The eleventh question tried to find out the staff perceptions of whether the HRS project is a university, LEA or school driven project and what they perceived as being the relative influences of the key leaders in the project.

The targets were first introduced when the school was aware of the date of its first OFSTED inspection. At that time the school development plan was a very large document without any common theme or any clear strategy for achieving the targets in the plans. This had clearly now been forgotten by some teachers and many felt that the targets had been imposed, though it was said that was no bad thing. It was also pointed out that the staff would not have accepted the targets if they had not agreed with them. One group recognised that two targets were compulsory but felt that the other targets had been negotiated at senior management level.

'I don't remember them being discussed.'(2)

'Definitely imposed, but not a bad thing.' (2)

'I agree with all of the targets but I do not remember being consulted.' (3)

'If the staff had said no I feel they would not have come in.' (3)

'I remember thinking yes because I was involved with the M.Ed.'

(2)

In spite of the dominant feeling that they had either been imposed or they could not remember, it did not produce any great concerns though one group restated their position on question five that the homework target should be changed to a discipline target. This group felt that homework 'could be phased out because it has been successful and just needs to be monitored' (all group).

There was fairly unanimous agreement in response to question 11 that the key driving force of the project is the school and not the university:

'98% driven by the Headmaster.' (all group)

'Key figure is the "boss".' (1, 1 and then all agreed)

It was also felt by some that the Head of Department has a key role and that this has been particularly influenced by the provision of additional departmental funds for correctly followed homework policies:

'For me it is my Head of Department who checks my file for the homework details.' (4)

Three teachers expressed the view that the half-termly accountability of Heads of Departments in meetings with the Headmaster and line manager that had been introduced from September 1998 was having a significant impact as a mechanism for driving the HRS targets.

The contribution of Professor Schaffer's talks on teacher effectiveness was acknowledged in two of the six groups:

> 'Schaffer being there raised profile,' (1) though one teacher in the same group expressed the view that he was 'telling my granny to suck eggs' (3)

This view was not supported, and many teachers supported the view that 'his advice is worthwhile'. (many)

> 'Good, especially the first time.' (1, 2 and 2)

The HRS committee was not seen as significant, though this view changed slightly when it was explained that this was known in the school as the MES (Mathematics, English, Science) committee. None of the groups saw the LEA as a driving force for the project. However, no attempt had been made to explain the funding of the project by the LEA and this might have had some influence on the opinions if the teachers had been aware of it.

The sixth and eleventh questions did not produce any strongly held views of objection about how the targets had been introduced and this would support the proposition that most people prefer to be clearly led in some clear direction, rather than be unsure about the direction.

7.7 Staff perceptions of the successes and failures of the project

Questions 13 and 14 were designed to find out what the staff felt had been the key successes and failures of the project and how the project might be changed to make a greater influence on improvement at the school. Key successes were seen to be:

> 'Made all staff have common goals.' (3)
>
> 'Literacy and homework.' (a theme in all the groups)
>
> 'Enhanced the educational debate within the school.' (2)
>
> 'Co-operation between departments, sharing ideas and good practice.' (all the group)

A wide variety of reasons were given for the successes. All the groups agreed that targeting money for homework had made a significant impact:

> 'Don't get money if we don't do homework' (1)
>
> 'Increased funding for homework', (2) which was described as 'bribery for homework' (all) by one group and 'sneaky homework money' (1) by another group.

There were many very positive comments about the way in which the targets had produced a clear focus:

> 'Literacy has improved because it has been widely addressed.' (3)
>
> 'Focused effort and commitment across the school.' (2)
>
> 'Increased amount of time spent on targets.' (2)

'People talking more.' (2)

'Commitment of staff.' (1)

'Consistency across school.' (3)

'Staff have control.' (3)

'Termly meetings with the Head help focus.' (1)

The key failure was seen by all the groups to be the inability to make significant progress in improving attendance:

> 'Attendance not improved' (all) and 'everything we do has so little impact', but countered with 'what would it be like without the attendance strategies' (1) and 'is staying the same failure?' (all).

Another recurring perception of failure in all of the groups was the 1998 examination performance although a similar question to above was asked with 'is not reaching a target failure?'

Three of the six groups did not express any view on possible reasons for the perceived failure, but in the other three groups the reasons included:

> 'Culture of the area.' (1)
>
> 'Trying to do too many things that get in the way of the four targets.' (4)
>
> 'Not sure that the strategy reaches the pupils we can make most improvement with – middle ability sets' (supported by all the group).

'Perhaps we need to have a total rethink about the curriculum for the lower ability to improve attendance.' (1) – and this led to discussion on an alternative curriculum for some students.

No group expressed the view that the HRS project had little significance and all groups agreed that it had much significance, though with a variety of reasons given:

'It has a lot of significance because the Head wants it to work.' (2) and 'due to Headmaster's external commitment as a driving force. (1, and the view of three of the groups.)

'It does have an effect because of literacy initiatives and focus on targets.' (all the group)

'Because it's what has to go in the Development Plan.' (1 and 1)

In answer to question 14, about how the project could be changed in order to make a greater contribution to improvement at the school, two of the six groups felt that the targets should be left alone:

'Need stability – leave it alone!' (all the group)

'Needs to stay as it is until it can be evaluated.' (2)

One group expressed the strong view that behaviour needs to be included as a target. Two groups felt that an alternative curriculum needs to be introduced. One group said that ethos and a parental commitment need to be added as targets, and another group said that the 'whole child' needs to be a target.

7.8 Other factors influencing improvement

Question 8 asked the staff to say which aspects of development and improvement in the school are wholly or partly attributable to the HRS project, and question 10 asked them to say if the project had impacted in any other ways on the school. Question 9 asked them to say if any other strategies and factors in the school contributed to improvement. Question 12 asked staff to comment on the significance of the project within the school's development.

Question 8 produced many very positive views on aspects due to the project. These included:

'Homework – more given.' (Stated by all the groups).

'The Homework Club.' (1)

'Cash to departments for homework.' (2)

'Cash input through homework has been a benefit.' (1)

'Students much more aware of coursework needing to be done at home.' (1 and 4)

'Reading, more emphasis and clear improvement.' (Stated by all the groups).

'The Development Plan has departmental targets related to the HRS targets, a big difference and more focused.' (1)

'Being able to focus on four targets to exclusion of other distractions.' (1)

'The constant Year 11 revision classes.' (2)

'Setting.' (1)

'Reduction in the numbers in lower sets.' (4)

'A lot of training. Things like time on task and effective teaching.' (2)

'The students at risk of exclusion centre.' (1) (The funding for this however is from a GEST bid and is not directly linked with the project.)

Question 10 illustrated a feature of focus group methodology in the way in which the opinions of a group can be swayed. Four groups gave a positive but brief response to the question of what other ways the project had impacted on the school. One group gave a brief but negative response and the sixth group gave a longer negative response.

The positive responses from four groups included:

'More focused in action planning.' (Two groups – 1 and 1)

'Sharing good practice.' (1)

'Some INSET good due to HRS.' (3)

'Adds beef to bids for money.' (1)

The brief but negative responses from one group included a repetition of concerns that other aspects of education might be less valued, such as overseas exchanges, Duke of Edinburgh Award work and the use of the school's outdoor pursuits centre. A reduction of emphasis in any of these areas could not however be supported by statistical evidence. 'Stress levels' were also mentioned.

The one group with a number of concerns had most of the concerns from two members of the group. Their concerns centred on an increase in pressure on the staff and a repetition of the view that a message is being given to students that GCSE grades A to C are a pass and grades D to G are a fail.

The responses to question 9, asking what other strategies had contributed to improvement, produced some very positive and optimistic comments from five of the groups. The sixth group gave some positive examples but also listed some concerns, with most of the concerns coming from two members of the group who repeated previous comments on possible stress levels on staff and concerns about behaviour. Strategies that were seen to have contributed to improvement included:

'Staff's hard work.' (1)

'Use of the outdoor pursuits centre for revision classes,' (all the group) (contradicting the concern that the value of the outdoor pursuits centre is an example of something being neglected).

'New buildings,' (Technology and Business Studies in 1998, Sixth Form Common Room and Seminar Rooms in 1997). (Three groups)

'OFSTED.' (1) and in another group 'threat of OFSTED'. (2)

'Links with The Prince's Trust.' (1)

'Whole School Photographs'. (1) (taken in 1992 and in 1997).

'Extra curricular activities,' (3) (again contradicting a view from another group).

'External funding for the reduced exclusion initiative.' (Five groups)

'The quality of new staff.' (1, 2 and 4 from two groups)

'Learning support work and the summer school.' (all the group)

'Lesson observations and sharing good practice.' (1)

'Expansion of the feeder schools and the numbers of students from two (named) primary schools.' (2)

'Current Year 7 are among the best in terms of reading, grammar and understanding.' (1)

'More emphasis on rewards.' (3)

'The shorter lunch break.' (3, and supported by all the group)

Question 12, asking for views on the significance of the project within the school's development, produced a fairly unanimous response from the six groups. They all saw the project as being very significant and recognised that the whole of the school development plan is written under the headings of the four HRS targets.

This question also illustrated how one focus group can develop very different lines of argument from other groups. One group observed that the HRS targets are a main focus of full Governors' meetings, even though the group did not contain any teacher governors but did contain a number who had attended governors' meetings as part of the school INSET programme. This group also observed that examination performance has always been a key target in the school and that the impact of the HRS project will not be seen in full for a further two to three years. This group also felt that the project had influenced family literacy,

improved relationship with parents and had influenced the readiness to provide summer schools in 1997 and 1998 for new intake students.

7.9 Differential commitment to the HRS philosophy

Question 7 asked the staff to say if the difference in GCSE performance in the core subjects of Mathematics, English and Science is due to a difference in commitment to the HRS philosophy and targets or due to completely different reasons. This question was asked because the relative performance of these three core subjects at GCSE differs from that found in most of the other schools in the city. The percentage of students obtaining five or more GCSE passes at grade C or above in 1997 in the city schools, together with the percentage entitled to free school meals and the percentage attendance, is shown in the following table with the case-study school as school 9:

School	% 5+ A*-C GCSEs 1997	% Free School Meals	% Attendance 1996/97
1	54	21	91.6
2	52	18	92.6
3	52	10	90.4
4	45	17	90.4
5	37	20	89.1
6	30	20	85.1
7	26	30	88.4
8	24	43	83.1
9	**21**	**47**	**84.5**
10	13	34	82.2
11	9	54	72.2
12	8	55	72.2

GCSE Performance in the City Schools

TABLE 15

The variation in the percentage of students who obtained five or more GCSE passes at grade C or above illustrates the variation between schools. In addition to this there is a very significant variation in the relative performance in English, Mathematics and Science, illustrating the variation between departments in the schools. The percentage performances at GCSE in English, Mathematics and Science for the twelve schools are:

School	English % C+ GCSE	Mathematics % C+ GCSE	Science % C+ GCSE
1	59	46	32
2	60	54	Some take Ph, Ch, Bio
3	59	52	53
4	52	41	46
5	48	38	34
6	38	30	30
7	25	35	29
8	34	27	30
9	**20**	**25**	**17**
10	20	7	8
11	10	9	17
12	13	5	6

Differential Performance in English, Mathematics and Science

TABLE 16

In Table 16 there are two schools (1 and 5) where the percentages with grade C or above are in the order English, Mathematics, Science. There are four schools (3, 4, 10 and 12) where the order is English, Science, Mathematics and one school (6) where the order is English, Mathematics=, Science=. There are two schools (7 and 8) where the order is Mathematics, Science and English and one school (11) where the order is Science, English, Mathematics. In the case study school (9) this is the only school with the order Mathematics, English, Science.

Clearly the percentage entitled to free school meals provides no explanation for the differences in order and an explanation must be sought from departmental effectiveness. The case study school has a +5% difference between Mathematics and English compared with –13% at school 10 and compared with –7% at school 8 which is the nearest comprehensive school to the case study school, serves a very similar catchment area and takes many of its students from the same feeder primary schools.

None of the groups entered into lengthy discussions with this question and two groups quickly moved on to the next question. The groups seemed to be uncomfortable with the question in that any comments might imply a criticism of other colleagues. No members agreed that the differences in performance were due to a commitment to the HRS philosophy and targets.

Many said that they did know and therefore could not comment, and there was a clear reluctance to make any comments about teaching in another subject area. Where reasons were given they were mainly to do with the syllabus and examination boards. One of the six groups did try to suggest reasons and they were:

> 'I don't think it is down to commitment in anything. It is due to such things as syllabus, examination boards etc.' (2)
>
> 'English, like Science, is trying to do two different examinations and this is very difficult.' (3)
>
> 'Not many kids are good at all three sciences.' (4)
>
> 'Try doing Shakespeare with a bottom set Year 10 or 11.' (3)

'Due to the nature of different subjects. Our kids have a huge disadvantage with English because they don't speak English.' (1)

'If you were to put it down to anything it is exam boards.' (2)

'It is down to individual teaching methods.' (3)

'Last year the social groups in Year 11 dragged them down.' (1)

All of these suggestions avoided the fact that the examination performance in the three core subjects of Mathematics, English and Science is not in the same order as in other schools in the city. In particular, it is not the same as in the neighbouring comprehensive school that has a similar intake. At the neighbouring school the English GCSE results are much better than the Mathematics results, and the reason for this can not be explained by 'try doing Pythagoras with a bottom set'.

Choice of examination syllabus might be a valid explanation to partly explain the differences, but this decision is made by the department and is not imposed on them. The science department obtained relatively good results until a change of examination from one where 25% of the marks were obtained from modular tests and 25% from a practical assessment to an examination where there are no modular tests but there is still a practical assessment worth 25% of the marks.

The rationale for the change was two-fold. Firstly there was a change in the regulations so that the modular examinations could not be resat in order to obtain a higher mark. Secondly, the multiple choice nature of the modular test was changed to a written paper. The change of examination resulted in very poor science results from 1994 to 1998.

The HRS project, with its emphasis on statistical data, highlighted the differences in performance. The science department agreed to a senior management suggestion that they should go back to the examination which includes the modular tests, which have reverted to a multiple choice format. The department further agreed to a change towards the end of year 10 for the cohort sitting the examinations in 1999. The first modular tests, taken in June 1998, were very encouraging.

Although the science department was given a very strong message from the senior management team that it should go back to the modular examination, and that it should do so in the middle of the course, the department did make the decision for itself. The views of one group did include the modular element and they also suggested some other possibilities:

'Stability of departments.' (1 and 2)

'Experience of departmental staff.' (1 and 2)

'Suits pupils here to work on coursework.' (3)

'Too soon to predict if the HRS literacy target has made a difference at GCSE.' (1 and 2)

7.10 The project's influence on the school

The last question was not part of the focus group methodology since it asked all the staff to write, in a maximum of ten lines, how they thought the HRS project had influenced the school. It did, however, provide an opportunity for all

respondents to offer their views independently. This was done at the end of two hours of discussion about the project and was therefore an opportunity to write a fairly thoughtful and considered response.

Sixty-six of the sixty-eight teachers produced the requested written response, the two missing being from two of the scribes who were still busy writing the record of their group meetings. The suggested maximum of ten lines varied from a minimum of three lines to a maximum of twenty-five lines.

The length and the enthusiasm of the responses were distributed fairly evenly within the four categories of responsibility and experience that was the only identification requested from the respondents. The exercise provided an opportunity for all the teachers in the school to write any concerns. The responses, however, were overwhelmingly positive.

The greatest impact of the project was seen to be on providing a clear focus, on increasing the amount of homework expected and done and on improvement in reading with students in years 7 and 8. Forty-one teachers, almost two thirds of the respondents, said that the project had given a clear focus and clear aims to the school. Forty-four, exactly two thirds, said that the project had made a significant impact on homework through its focus, increased amounts set and increased consistency of practice.

Thirty-three respondents, exactly half, said that it had improved reading and that this made an impact throughout the curriculum, with many examples of students being willing to read aloud in class and improvements in writing. There were

many comments about how this gives confidence for an expectation of improved performance when the students who are in the present years 7 and 8 reach their GCSE examination year.

Twenty-three respondents mentioned attendance, almost all despairing at the apparent lack of progress in improving the overall attendance statistics but at the same time wondering whether it would have been much worse had attendance not been one of the targets. Eighteen respondents wrote about examination performance with many restating their concerns that less than grade C is perceived to be a failure, though there were many statements of optimism for improved performance.

Only eleven mentioned the influence of the project targets on the school development plan. This probably indicates that the development plan is not used as a useful working document by the staff, although they all have a copy, and is still perceived as an administrative exercise.

The total of 201 issues mentioned by the respondents are summarised under fifteen headings, with the teachers identified under the following four categories:

1 Deputy Head, Assistant Head, Head of Department or Head of House (i.e. four points for responsibility, or above).

2 Deputy Head of House, Assistant Head of House, Deputy Head of Department (i.e. two or three points for responsibility).

3 All other teachers except those who joined the school in September 1998.

4 Newly qualified teachers and other teachers who joined the school in September 1998 or later.

Category of respondent:	1	2	3	4	Total
Clear focus and aims	12	10	14	5	41
Great influence on the School Development Plan	6	2	2	1	11
Raised awareness of school improvement and/or sharing of good practice	3	1	3	1	8
Has improved homework focus and consistency of practice	12	8	18	6	44
Has improved reading with impact across all the curriculum	9	6	13	5	33
Focused funding has made an impact	4	1	0	1	6
Increased pro-active attendance strategies but not making significant improvement	5	3	11	4	23
Increased focus on examination performance but with many giving concerns about the perceived focus on A-C grades	4	3	8	3	18
Increased the accountability of staff	1	0	1	0	2
There is a need to ensure that other areas of success, such as out-door pursuits, are recognised	1	1	4	0	6
Behaviour needs to be added as a target	1	1	2	0	4
The project has made very little impact	1	1	0	0	2
It has made appraisal much more positive	0	1	0	0	1
It has produced additional pressures on staff	0	1	4	2	7
It has increased student responsibility	0	0	1	0	1
Total number of staff in each category:	18	13	23	12	(66)

Staff views of the HRS project influence

TABLE 17

Examples of a selection of full written responses of two teachers from each of the four categories are included to provide examples of the variety of responses, but are not intended to imply that they are in any way typical of the responses:

From category 1:

> The High Reliability Project has influenced certain aspects of school development. Homework has been given greater focus, with the impetus coming from a financial perspective. Reading improvement will benefit the school as a whole, across the curriculum and as such needs to remain the most important focus. If this progress can be maintained, or possibly improved, then the HRS project will have been a worthwhile success.
>
> HRS has probably been used as an effective lever in applying for extra funding (suspension initiative, homework club, SRB etc.). Greater focus in action planning by HoDs. Focusing on fewer targets means things tend to get don. Homework consistency in staff has improved. HRS drives the school in many ways but maybe needs to move on and address the direction it is taking and the impact it makes.

From category 2:

> It has focused our attention on what are the real priorities for the school. Although success has been only partial so far, we do have the right targets and we are still awaiting some of the fruits of our labour. The whole exercise has been motivating for the staff as a whole, has resulted in the spreading of good practice and the setting of targets for the future.

There is no doubt in my mind that certain aspects of HRS have focused our thoughts and efforts. There appears to be a much greater emphasis on homework – particularly the setting and marking. However I am not sure that we have increased parental pressure on all students to do homework, and until we do many students will continue to fail in the handing in of homework.

Attendance continues to be a problem, particularly in years 10 and 11. Although we had a 'blitz' in previous years we seem to have slipped back in our efforts to improve attendance.

As for reading there is certainly more concidence shown by Year 7's in their willingness to read out loud in a classroom – even poorer readers seem prepared to have a go.

Concerning examination success we have made great steps over the past 4/5 years. However at times there are limits to the progress we can make, and we should not lose track of the fact that the majority of our students do not get 5 A-C grades – we must be careful not to label these students as failures or necessarily consider that we have failed.

In conclusion the HRS has focused our thoughts, targets, however we have never been able to nor should we, only focus on 4 targets, though these may well be an important part of a wider plan.

From category 3:

The HRS project has basically highlighted some areas of the day to day running of the school which, if improved upon, would raise the school's achievement. As a result of this the school has been 'forced' to be more consistent with its basic tasks, such as the setting of homeworks and improving of literacy. The school has, therefore, established a self-checking project, or a process of ensuring that every single teacher is doing his/her job as they would be expected to do it.

The High Reliability Project has influenced the school in the following ways:

- it has meant that instead of individual departmental targets there are four main targets set as a school, so it is a more cohesive approach,
- it has focused most staff in the way that they plan and set homework, makes people more accountable,
- makes action plans, whole and department, easier to understand and compartmentalise.

From category 4:

HRS has helped teachers to focus on individual targets – all of which have improved the students' learning. Gene Schaffer and various HRS meetings have highlighted ways to combat problems

regarding attendance, homeworks, literacy etc. and this has aided my own teaching strategies.

The High Reliability Project has influenced my teaching in several ways. I have lower numbers of pupils in the lower set groups so allowing me to give these pupils more time. The homework has also had an impact due to the fact that pupils expect two lots of homework per week. A negative to this is the extra time spent on marking.

The extra work on the 'reading' part will also influence all subjects.

7.11 Conclusion

The six focus groups demonstrated that a significant majority of teachers believe that the project is making an impact on improvement at the school. Some staff stated that the school was already tackling these targets before joining the project. However, this was a clear attraction and strength of the project to the school - it provided an academic and theoretical structure for the direction in which the school had already begun to move.

There is clearly a need for the origin of the project, and how the targets were derived, to be restated to the whole staff. The concerns about the perception of GCSE grades lower than C being considered to be a failure need to be addressed. The achievement and exceeding of the targets for one or more pass at grades A to G, and for five or more passes at grades A to G, in 1998 need to be publicised

and celebrated. It also needs to be demonstrated to the staff that other aspects of the school have not in any way been neglected by not being key targets, particular examples of this would be the use of the school's outdoor pursuits centre and success with Duke of Edinburgh awards.

The concerns about discipline not being one of the four core targets needs to be addressed. The widely held belief that some form of alternative curriculum, through which students could experience success, needs to be introduced is also a key issue for further consultation and decision.

There is a great deal of optimism that the strategies will have an influence on improvement in the future and that the greatest impact of the project has been with younger age groups who will be taking external examinations in three or four years time. The staff clearly believe that much has been achieved with the homework target, even though some staff believe that this has significantly increased their work-load. This target demonstrated the power of additional funds to persuade teachers to ensure that targets are met.

The teachers also believe that the reading target is having a great influence. Surprisingly, no staff suggested that this target would be better tackled at a much earlier age even though the five feeder primary schools have adopted the same four targets.

The view that attendance could have been much worse had it not been a target is probably a very sensible description. It was not given to the school as a target following the OFSTED inspection in November 1996 because the inspectors took

the view that, whilst attendance is clearly a problem, there were no ideas that any of them could think of that the school was not already trying. It would clearly be a sound strategy to ensure that this will still be the position when the next OFSTED inspection takes place. The attendance statistics look less gloomy when compared with some other schools in the city, and perhaps this needs to be pointed out to the staff – though not as a reason for any complacency.

The predominantly positive nature of the discussions, and the expressions of two of the Senior Management Team scribes that they had 'just attended the most positive meeting of their career', support a conclusion that there can be optimism that the HRS project strategies will make a significant contribution to improvement at the case-study school in the future.

CHAPTER EIGHT

OTHER FACTORS WHICH HAVE CONTRIBUTED TO IMPROVEMENT AT THE SCHOOL

8.1 Introduction

In Chapter one, the eight factors which are frequently identified as contributing to school effectiveness were written as: [Rutter in Reynolds and Cuttance, 1992, pp 8-9]:

1 The balance of intellectually able and less able children in the school.

2 The system of rewards and punishments.

3 The school environment.

4 Ample opportunities for children to take responsibility and to participate in the running of their school lives.

5 Good use of homework, setting of clear academic goals and an atmosphere of confidence in the pupils' capacities.

6 Good models of behaviour by teachers with good time-keeping and willingness to deal with pupil problems.

7 Preparation of lessons, unobtrusive discipline, a focus on rewarding good behaviour and swift action to deal with disruption.

8 A combination of firm leadership with a decision-making process in which all teachers feel that their views are represented.

8.2 The balance of intellectually able and less able children in the school

There has been a small but steady positive incremental shift in recent years in the balance of intellectually able and less able students in the case study school. This is only marginally within the control of the school, although decisions have been made and strategies used which have contributed towards this positive shift. These changes have very definitely contributed to the improvement in examination results, even though they were based initially on intuition and only more recently reinforced by statistical evidence.

Primary Feeder School B only became a designated feeder school in September 1995 having gradually increased the numbers transferring each year. In 1994 all the pupils except one from School B were allocated a place on secondary transfer to Year 7, due to the case study school being oversubscribed. The PTA of Primary School B then started a campaign to become a designated feeder school of the case study school and the LEA agreed to the request from September 1995 with an increase in the admission limit from 224 to 252, even though the Standard Number, based on the available space at the school, remained as 218. School F is not a feeder school but has been sending increasing numbers of students at secondary transfer, with the greatest number of 33 transferring in September 1998. Schools B and F serve a more comprehensive intake with more students living in the lower end of the available private housing and less in council housing.

The slight shift in the nature of the intake is partially demonstrated in the 1997 Key Stage 2 Tests Results [Netland, 1998]:

Percentage of eligible pupils achieving Level 4 or above

	English	Mathematics	Science	% FSM	% EAL
Feeder A	24	32	16	78.2	0
Feeder B	33	31	44	42.6	0
Feeder C	37	26	43	62.4	2.3
Feeder D	30	52	43	69.3	0
Feeder E	42	32	36	65.8	1.1
Non-Feeder school F	43	45	75	40.2	0.3
City average	51	50.9	60.2		
England average	62.5	61.3	68.1		

1997 Primary Feeder Schools Performance Statistics

TABLE 18

The Science test result for School F shows the greatest difference in the nature of the intake with a result that is higher than both the city average and the average for England. The increasing numbers transferring to the school from School B and School F, firstly in the late 1980s and secondly in the late 1990s, are shown in the following table:

	1985	1986	1987	1988	1994	1995	1996	1997	1998
School B	7	16	17	26	34	35	31	37	35
School F	6	2	3	2	18	29	27	20	33

Transfer numbers into Year 7 from Primary Schools B and F

TABLE 19

School B began to be significant as a feeding school, though not at that time designated as a feeder school, from 1986. School F began to be significant as a feeding school, though not designated as a feeder school, from 1994. The 1997 GCSE results illustrate the differences. Four out of ten students in Year 11 who had transferred from School F, that is 40% of the intake, obtained five or more GCSE passes at grades C or better. Ten out of twenty one students in Year 11 who had transferred from School B, that is 48% of the intake, obtained five or more GCSE passes at grades C or better including one boy who obtained eleven passes all at grade A or A* and, additionally, a grade A at GCE advanced level mathematics taken in Year 11.

Thirty-three pupils are to transfer in September 1998 out of seventy-seven in the Year 6 from Primary School F. The large numbers in Primary School F would prevent it from becoming a designated feeder school, even if that were to be the wish of the parents at the school. It is, however, in closer proximity to the secondary school than any other non-designated primary schools and increasing

preferences from School F would squeeze out preferences from any other non-designated feeder primary schools due to the distance criterion which operates with over-subscription.

Some of the reasons associated with this shift of parental preferences at Primary School F were investigated by Thomas and Dennison [1991]. Thomas and Dennison emphasised the role of the child in making the choice of secondary school. They concluded that 'no single or straightforward explanation of choice emerged. Instead a complex, inter-related mix of factors, which varied with individual perceptions and circumstances, emerged.' They found that the child often had the major part in the decision but where parents were involved it was the mother who normally took the lead. Friendship patterns and peer group pressure were important factors, as also was the feeling of whether or not the secondary school was a 'good' school.

8.3 The system of rewards and punishments

Although the school has a history of putting resources into systems of rewards and punishments, it has greatly increased the strategies used for rewards from March 1996 with the introduction of House and School Colours. These are awarded termly and the timing of the first awards ceremony, on 20 March 1996 with discussions about the awards over many months before the first ceremony, further illustrates that the HRS project provided a theoretical framework for the existing direction of the school rather than provided an alternative direction.

Colours are awarded either as House Colours with a score of 9 points and the recommendation of the Head of House or as School Colours with a score of 20 points and the recommendation of the Head of House. One point can be obtained for each of the following:

- 100% attendance for a term
- Visit to the school outdoor pursuits centre in Year 7 with Tutor Group
- Play in school team for a year attending all practices
- Play in school orchestra for a year attending all practices
- Gold Achievement Certificate
- Platinum Achievement Certificate
- Participate in five House activities in a school year
- Participate in the School Drama production for a year

and two points can be obtained for each of the following:

- Bronze D of E Certificate
- House Head's commendation for school report
- Any school foreign exchange visit

Three points can be obtained for

- Headmaster's commendation for school report
- Silver D of E Certificate

It is possible for students to have obtained House Colours at some point in year 8 with great effort and 100% attendance, and it is reasonably achievable by a large number of students with effort and by some 100% attendance for whole terms by

the end of year 9. School Colours need a considerable amount of participation and good work in addition to good attendance, but is intended to be achievable by any students who make a real effort and make a contribution to the school.

Colours are presented only once each term at a reception for parents and award holders. House colours are distinguished by a house colour narrow ribbon at the top of the blazer badge pocket and a badge with the house colour. Students also receive a certificate, which is included with their Record of Achievement for employers on leaving the school. The house colour ribbon and a badge in gold colour distinguish school colours. Students also receive a certificate, which is included with their Record of Achievement for employers on leaving the school.

The numbers being awarded colours each term is between forty and sixty students. The awards ceremonies have always had one hundred per cent attendance by award holders and parents, with many students being accompanied by as many as four generations of their families. The introduction of colours awards was discussed at length over a period of two years. Initial doubts about the number of students who might apply for the awards and the number of students who might reach the proposed standards for the awards gradually diminished and all initial doubters were converted to enthusiasm by the success of the scheme.

Ten centimetres of yellow, blue or red ribbon of one centimetre width and one sheet of A4 paper for the certificate have been sufficient reward and encouragement. Encouragingly, the percentage is steadily increasing. Initial concern that students might not wish to be seen with the colours stripe on their

blazer has been replaced with evidence that students exhibit considerable pride in having their colours stripe visibly seen by younger students and by their peers. Parents exhibit their pride with cameras, video recorders and attendance by whole families at the awards ceremonies.

8.4 The school environment

The first impression on walking into a school has a great impact. Recent changes at the case study school have greatly improved the initial impressions of the school environment. Considerable effort has been put into the permanent display of students' work around the corridors and this gets favourable comments from parents during the open week for Year 6 primary school pupils and their parents.

A £2m building programme in 1997 and 1998 provided greatly improved facilities for the sixth form and provided a new technology and business studies centre and the landscaping of the area between the new buildings. The improved environment is important for a number of reasons. The new facilities have contributed significantly to an improvement in the staying on rate into the sixth form, which will influence future examination statistics. The increasing numbers have had a significant impact on the school budget since the low numbers in the sixth form classes were not cost-effective. The improved environment may have a positive impact on parental choice and it may have an impact on student motivation.

8.5 Opportunities for children to take responsibility and to participate in the running of their school lives.

The school has made greater use of a school council of student representatives in recent years. The students in all year groups were particularly involved in the planning stages of the new sixth form accommodation and the students believe that every feature, including lockers, shower room, kitchen, pool-table, television, drinks and sweet machines and furnishings were chosen by them. The sixth form numbers increased from 51 in September 1996 to 91 in September 1997 and to an estimate of 130 for September 1998. Much of the increase in the numbers was due to the improvement in the facilities and the confidence of the students that they would be provided. The new sixth form common room was completed at the end of October 1997, half a term later than had been intended.

The increase in student numbers in the sixth form was the main reason for being able to produce a balanced budget for the 1998/99 financial year, following three years with a deficit budget.

8.6 Good use of homework

Rutter's fifth factor of 'good use of homework, setting of clear academic goals and an atmosphere of confidence in the pupils' capacities' is a key target of the HRS project at the case study school. It is a compulsory target from the value added examination requirement aim and a voluntary target from the school's decision to have homework as one of the HRS targets.

It is a factor at the case study school that still needs attention and where the experience of students is very varied depending on their subject choices and depending on which teachers they have.

8.7 Good models of behaviour by teachers

Rutter's sixth factor of good models of behaviour by teachers with good time-keeping and willingness to deal with pupils' problems is taken very seriously by the case study school. The school is divided into three houses of 350 students in aged from 11 to 16 and each house has a head of house, a deputy and two assistants. Together with the form tutor the house staff provide a strong framework for dealing with pupil problems.

Teachers are at the school from 6.30 a.m. each morning with activities available for the students from 7.30 a.m. and many staff are at the school until 6 p.m. or later. Good timekeeping by staff is a strong feature of the school with an aim that the staff 'own' the corridors and are at their rooms before the students.

8.8 Preparation of lessons

Rutter's seventh factor contributing to school effectiveness of preparation of lessons, unobtrusive discipline, a focus on rewarding good behaviour and swift action to deal with disruption is probably a significant strength of the school. However, the monitoring of lesson preparation is not as well established as it could be and, since mutual monitoring is one Stringfield's thirteen characteristics

of highly reliable organisations, it is clearly an area where the school has the capacity to aid further improvement.

8.9 Firm leadership

Since the author is the headmaster of the case study school it would not be appropriate to make a comment on the leadership. However, the HRS project does provide clear, firm and highly focused aims for the school and the project targets were thoroughly discussed with all the teachers. The HRS project therefore contributes significantly to Rutter's eighth characteristic of a combination of firm leadership with a decision-making process in which all teachers feel that their views are represented.

8.10 Conclusion

Seven of Rutter's eight factors that contribute to school effectiveness are factors that are in the capability of the school to make very significant changes. It is not so easy to alter the balance of intellectually able and less able children in the school. However, the influences that have been made to this at the case study school may be a reason for the potential for improvement to continue for at least a further five years.

CHAPTER NINE

THE CHARACTERISTICS OF THE SCHOOL AND THE OTHER PROJECT SCHOOLS AS HIGHLY RELIABLE ORGANISATIONS

9.1 Introduction

This chapter considers the present position of the case study school and the other project schools in terms of Stringfield's thirteen characteristics of highly reliable organisations.

9.2 Staff have a strong sense of their primary mission

The requirement that within a highly reliable organisation the staff should have a strong sense of their primary mission, can also be worded as a requirement that there is an unwillingness to accept failure with a very small number of primary goals which are clearly understood by everyone within the organisation.

The HRS project has given a sense of purpose to the case study school. The school has had a 'statement of intent' as a mission statement for the last twelve years. The statement is:

Our intention is:

- to provide a school at which all students are able to experience success;
- to provide a school to which any parents could, with confidence, send their children;

- to provide the best possible environment for its students and employees in which learning can be an enjoyable experience;
- to make a positive contribution to the quality of life in the area;
- to work as a partnership of parents, students and teachers with an agreed and negotiated contract signed by all the partners before a student starts at the school.

The part of the statement that produced most discussion when it was first negotiated, particularly with the teachers, was the second statement. The headmaster had proposed a statement that read 'to provide a school to which the teachers would wish to send their own children'.

The objections raised to this statement were based on two main propositions. The first proposition was that some teachers may not wish to have their own children in any school in which they taught and, conversely, the children of some teachers may not wish to be taught in the same school as their parents. The second proposition was more fundamental and produced a number of concerns. It was based on the belief that, given the nature of the area served by the school, some teachers would not wish their children to be taught in that kind of school. That is, there was a belief that the school was not truly comprehensive and therefore could not offer the same quality of education as could be offered by a school with a different balance of more able students.

Many teachers failed to understand that where a school is the best available then there are many examples of comprehensive schools in this country where many of the teachers send their own children. The rewording of the intention recognised

that, at that time, it was not going to be possible to persuade the majority of teachers that it would ever be possible to make the school into one where the teachers would wish to send their own children.

An ongoing concern about the statement of intent is that, although it is displayed framed in many parts of the school and is in the school brochure and information for new parents, most teachers are unable to say what is in the statement. Most can, however, say that there is a requirement to sign a tripartite contract with the three partners of student, parent and school.

The HRS project of four clear targets has given the staff that strong sense of their primary mission that was not given to them through the statement of intent. There are no teachers at the school who could not state the four HRS targets with confidence. The 1998/99 focus on the homework target will give even further impetus to that sense of purpose.

There has been a requirement since the school entered the project that applicants for internal appointment will both be expected to write about their contribution to the development of HRS if they should be appointed, and to answer questions at interview about the project. This has helped to give high profile to the project. The HRS co-ordinator is the headmaster and this adds to the profile in a number of ways, not least through the power of being able to give priority to resourcing the key targets.

After one year into the project with the city's schools and two years for the first pilot schools in South Gloucestershire, the primary aims were not clear for all of

the project schools. It would need more information about the past historical performance of the schools to be able to comment on the extent to which the targets set by the schools are demanding and achievable. The South Gloucestershire secondary schools' GCSE and attendance goals are shown in Figure 8 and the city secondary schools' four primary goals in Figure 9 with the case study school in bold type.

Pilot School	Percentage with five or more grades A to C at GCSE by 2001	Pupil attendance target for 2001
A	60%	96%
B	10 to 15% better than intake scores predict	95%
C	70%	95%
D	40% better than YELLIS predictions	98%
E	Predicted grade from intake +2 grades	96%
F	75%	95%
G	10% better than YELLIS predictions	
H	75%	98%

The Pilot Schools' HRS Targets

FIGURE 11

Most of the schools have set incrementally increasing targets for improvement in the percentage of students obtaining five or more passes at grade C or above in GCSE examinations. There is a clear conflict in intention and definition with schools throughout the country setting incremental targets for improvement in norm referenced examinations. By definition, within a norm referenced examination system there needs to be as many students going down the table as there are those going up the table. Only criteria referenced examinations could allow a target for improvement of all schools throughout the country since schools would then know, for example, what they need to teach to students in order that they might achieve a grade C at GCSE.

City School	Percentage with five or more grades A to C at GCSE	Attendance	School Target 1	School Target 2
1	30% by 1998, rising further	90%	Literacy: all pupils to have a reading age which is not more than 18 months behind their chronological age	Partnership with parents
2	No children to leave without a qualification	Significantly improved attendance rates	Literacy: improve reading ages	Limit the number of exclusions
3	40% by 2000	95%	Literacy: 80% of children at their chronological age	All children coming to lessons with the require equipment, and 95% of homework satisfactorily completed and handed in on time
4	70% by 2001 98% with 1 A-G by 2000 90% with 1 A-C by 2001 Positive pupil level residuals in all subjects. 50% increase in average pupil point score at A level.	91% average by 1998 less than 0.1% unauthorised absence 99% punctuality	Equipment: clear communication of requirements and monitoring procedures, whole school with pen, pencil and subject specific targets	Time management: all lessons to begin within three minutes of the bell, meeting all admin deadlines, planned and effective us of homework time.
5	**50%**	**90% average First day response to absence not notified by parents**	**To raise reading ages to at least the chronological age of Year 7 students**	**To set homework for all students which is differentiated, relevant and demanding.**
6	Not yet set			
7	Not yet set			

The City Schools' HRS Targets

FIGURE 12

None of the schools have adopted Stringfield's suggestion that targets should be set at 100% in order to produce a radical improvement. It could be argued that improvement in attendance in percentage terms is not entirely within the hands of schools to achieve, since social factors outside school have a profound effect on attendance. The case study school's aim to ensure that there is a same day response to absence that has not been notified by parents is, however, within the control of the school.

Some of the seven city schools had leadership changes during the first year of the project. The headteacher of school 1 was invited to take early retirement at the start of the project. The acting headteacher of school 2 was invited to take early retirement during the first term of the project. The school then had the deputy headteacher of school 5 as acting headteacher for four terms before reopening as the first 'Fresh Start' school in the country. The headteachers of schools 3 and 6 both left after two terms into the project to take up headships outside the LEA. The headteacher of school 4 left during the fourth term of the project following criticism of the management of the school in its second OFSTED inspection report, although it did not have any similar criticism four years earlier in its first OFSTED inspection report with the same management team. School 7 was taken out of OFSTED special measures during the third term of the project.

This therefore left school 5, the case study school in this thesis, as the only school with some degree of leadership stability within the first year of the project. It would therefore not be possible to draw any conclusions about the progress of the case study school relative to the other city schools in the project.

Some of the schools were relatively slow in setting their targets and can not therefore all have their progress evaluated from the same starting position. Lack of parental support is seen by some of the schools to be a major problem, but that concern seems to illustrate a lack of belief in the fundamental hypothesis of the project that a school can make a significant difference to the outcome of its students independently of parental influence. The sense of a strong primary mission as a highly reliable organisation needs to be held by the teachers, who in turn can inculcate that mission unto the students. If it is believed that the school can make a difference regardless of parental support, then that sense of a primary mission does not have to be held by the parents for the school to have that first characteristic of a highly reliable organisation even though an individual child's progress might be greatly enhanced with parental support.

9.3 Formal, logical decision analysis is based on SOPs

Ensuring that there are standard operating procedures in the case study school was given additional impetus through the school's first OFSTED inspection in November 1996 and even more so through the HRS targets. This has led to the school having clearer procedures to ensure that examination performance is targeted and monitored and that everything which supports an improvement in examination results, such as ability setting, the use of text books and the allocation of resources including teachers, being closely examined.

Although the school has clear standard operating procedures for improvements in literacy, attendance, value-added analysis, behaviour, bullying, homework and many other key areas, there are nevertheless some gaps and concerns. There is a

significant gap between reality and intention with homework and steps are being taken to ensure that this gap will close in the 1998/99 academic year. The departments which are achieving the greatest value added output in examination performance are also the ones which are expecting the most from students outside timetabled lesson times, for example through revision classes during twilight time after school and through expectation of very high quality coursework.

There is a major issue to be tackled with planning and delivery of lessons where there is no standard operating procedure in place even though it is through lessons delivered by teachers that the school sets about achieving its key function of educating its students. In spite of the lack of a S.O.P. the senior management team could give a clear indication of where there are concerns in lesson delivery and planning. Some of the long-term concerns have gradually been rectified through the city's generous early retirement terms, which effectively came to an end from September 1997.

There is a wide variation in departmental performance and this is being vigorously tackled in the core subjects through monthly meetings of the HRS committee, challenging targets and regular reviews of the performance of all students.

The other schools in the project are also working to improve consistency. Departmental variation in following school policies and inconsistency in the way in which students are disciplined are the two main areas noted in the city schools and the South Gloucestershire schools where improvements need to be made before the schools could be said to have consistent practice based on standard operating procedures.

9.4 Extensive recruitment and training to compel adherence to SOPs

The recruitment position varies significantly between the project schools, largely depending on whether they have growing, static or falling rolls. Two of the South Gloucestershire schools and one of the city schools have obtained the Investors in People award and a number of the schools, including the case study school, are working towards the award.

In the South Gloucestershire schools, three have lost experienced staff without replacement due to falling rolls and three of the schools have had to restrict opportunities for staff development due to budget difficulties. In the city schools, one school has had difficulty recruiting staff due to being under a threat of closure in addition to having a falling roll but that position is now changing under a new 'fresh start' initiative from September 1998.

The case study school invests extensively in INSET for its staff and twelve of the present teaching staff are at various stages of completion of a M.Ed. degree. Most have had the four taught units of the degree taught at the school following a negotiated course with the university. The full-time librarian has recently completed a degree following six years of part-time study with day release and one of the technicians and one of the secretaries also have day release to obtain further qualifications. The university fees are paid in full by the school for all the staff, and in addition, the staff are allowed a book allowance of £80 per year but most of them do not claim this allowance.

The city does not have difficulties in recruiting teachers. Both of the universities in the city train teachers and many PGCE students wish to stay in the city following their training. Conversely, there is relatively little movement of staff with teachers wishing to remain in this area of the country and, therefore, with their opportunities for promotion being restricted to the area. Twelve of the teachers at the case study school have been at the school for more than twenty years and a total of thirty-three of the teachers, 48% of the total, for more than ten years. For all internal posts of responsibility the staff are expected to show a thorough understanding of the HRS project and a total support for the project through their letter of applications, interview questions and their actions within the school.

9.5 Initiatives to identify flaws in SOPs

This is one characteristic in particular which needs significant development before it could be seen to be a feature of the schools. Within the project schools there is a requirement that examination performance should have a value added analysis through the use of baseline intake testing with NFER cognitive ability tests and KS4 testing through Yellis. Some of the schools have only introduced NFER testing in this academic year and there will therefore be a five year gap before the first value added data is available based on the initial intake.

The case study school has used NFER cognitive ability testing for fifteen years and therefore has substantial data for value added analysis. Although significant use has been made of the data to illustrate trends, there is much which could still be done to expose areas of strengths and weaknesses. Recent further additions to

the networking of the management I.T. system have greatly enhanced the ease of access for the management team to the data.

Identifying flaws in the standard operating procedures of the key targets within the project is fundamental to the ethos of the project. It is a further example where a high reliability characteristic is being introduced through the project, rather than necessarily being an initial feature of the project schools.

9.6 Attention to performance evaluation and analysis

An increase in data at transfer to secondary schools has highlighted problems with reading ability in many of the primary schools and has provided statistical evidence for the concerns. Publication of primary school key stage test results has made the primary schools more exposed to performance evaluation and analysis. An initial reluctance to share reading test data in the city primary schools has been removed but has been replaced by suspicion of some of the strategies used for improvement in published results.

The HRS project has a fundamental requirement that the schools should have targets that are measurable and the schools should become data rich in order to evaluate their performance with the targets. Stringfield's conclusion that attention to performance evaluation and analysis is present in the more effective schools in the U.S.A. is probably also true in the project schools, but all the project schools are working towards this aim.

At the case study school there is a history of performance analysis data being available to all heads of department and being discussed, but not of it being used for the ruthless eradication of weaknesses. The NFER value added analysis has, however, been used as a tool to distribute additional resources to successful departments. In particular, the core departments of English and science have been set performance targets to bring them up to the performance level of mathematics in the school.

9.7 Mutual monitoring

Although there is considerable support for newly qualified teachers, and although the H.R.S. project is seeking to share good practice in schools, mutual monitoring as a characteristic adapted by Stringfield from Pfeiffer [1989], Roberts [1990] and LaPorte & Consolini [1991] is just as much a distant dream in the project schools as it is in U.S.A. schools.

It may be argued that this is an undesirable characteristic for a school. Roberts and Rousseau [1989, pp.132, 133] use their eight characteristics to 'distinguish high-reliability organizations from other kinds of organizations' and say that the mutual monitoring characteristic is a 'degree of accountability that does not exist in most organizations – substandard performance or deviations from standard procedures meet with severe adverse consequences'. They say that that nuclear reactor operators speak of 'the amount of tension caused by having to do things right all the time' and that 'flight deck personnel on aircraft carriers are constantly cross checked to insure (sic) reliability and consistent adherence to procedure'. There is no evidence that this level of pressure would contribute to school

improvement, nor any evidence that it would not make a contribution to improvement.

9.8 Alert to surprises or lapses to prevent cascade failure

LaPorte and Consolini [1991, p.28] described this characteristic as 'to be alert to the surprises or lapses that could result in errors small or large that could cascade into major system failures from which there may be no recovery'. Many of the project schools have focused on detailed plans, but this does not necessarily mean that schools possess inherent features that give them the capacity for small errors to lead to a major system failure. It would be possible to give examples of errors that could potentially lead to very serious consequences, such as preparing students for the wrong text in an English literature examination or failing to monitor the school budget adequately. These however would not lead to catastrophic failure and do not therefore define schools as highly reliable organisations.

Roberts and Rousseau [1989, p.133] say that a primary characteristic of high-reliability organisations is that 'more than one critical outcome must happen simultaneously'. They give as examples the simultaneous 'catapulting and recovering of aircraft on carriers or the landings and takeoffs of commercial airliners'. This is not an obvious characteristic of schools.

Many of the project schools have focused on detail in dealing with absence, such as making contact with parents by telephone or by home visit on the first day of any absence. Literacy is seen as a factor that can have a major impact on future

academic performance in nearly all of the schools. Mentoring students who are at the C/D borderline of GCSE is a strategy used at many of the schools. Many of the schools have developed procedures to tighten discipline. Although none of these illustrate how lapses could cascade into major system failures they do, however, illustrate how the project has developed a focus on the measurement of essential data at student level.

OFSTED inspections, the publication of examination results and a requirement for target setting have produced a climate in which schools have become more alert to the possible ways in which they could be seen to be failing.

9.9 Discretion with decisions at peak activity

Stringfield concluded that this was not a characteristic of schools in the U.S.A. Roberts and Rousseau give an example of this characteristic of a highly reliable organisation as the need for 'numerous interdependent individuals making decisions simultaneously, while employing highly redundant communications systems'. They use an aircraft carrier as an example, this being seen to have the potential to illustrate all the characteristics of a highly reliable organisation.

At the case study school heads of department have considerable powers for decision making devolved to them and might reasonably assume that they would receive support for their decisions. They would however be expected to justify their decisions.

9.10 Hierarchical and functional-skill based authority

Although Stringfield concluded that hierarchical and functional-skill based authority is one characteristic of high reliability organisations that is not a feature of schools in the U.S.A., he sees this characteristic as a willingness to put a lack of trust in rules. Roberts and Rousseau [1989, p.133] however, see this characteristic as 'multiple levels, each with its own elaborate control and regulating mechanisms'. They give, as an example, the chain of command on an aircraft carrier with 'a captain at the top, an executive officer, followed by seventeen department heads. These men are generalist advisors, with limited duty officers, masterchiefs, senior chiefs, and chiefs as specialist operators'.

This willingness and need to devolve important decisions to the operational level of authority is a characteristic which needs to be encouraged in schools if we believe that the heart of school improvement is in the classroom. Reynolds [1998, p.20] wrote that 'all the evidence suggests that the classroom level is a much more powerful determinant of children's achievement than the school level'.

An audit of all the schools involved in the project indicates that teachers recognise the significance of the role of the leadership of the school, but they do not seem to see their own authority role as being of equivalent importance. Where there is a lack of vision with the management team, or a lack of credibility with the ability of the management team to communicate its vision, the teachers do see this to be a major obstacle to improvement in the school. There is a need for research into how leadership of the headteacher and the senior management team interacts with

and supports multilevel decision-making and in particular at the level of the classroom teacher.

At the case study school only the headteacher and one of the assistant headteachers have been appointed to the senior management team from outside the school. The others have had very successful middle management experience at the school and this adds 'common-room credibility' to the senior management team for two reasons. Firstly, the members of the team were perceived by their colleagues to be very successful in their middle management roles and secondly, they each believe their present tasks to be far more demanding than their middle management roles had been.

9.11 Close interdependence during peak performance

Close interdependence is probably not a characteristic of schools since for it to be so would seem to contradict the evidence that the greatest variation in performance is within schools rather than between schools. This variation would suggest that schools tend to have what Roberts and Rousseau [1989, p.132] call 'loose coupling' rather than the 'tight coupling' of high reliability organizations.

It could, however, be argued that the reason for the large variation within schools is because the schools do not have closely coupled systems which would seek to bring the weakest performance at departmental level to that of the strongest departmental performance. Research needs to be carried out to investigate how the performance gap can be closed at a school level by moving the 'floor' upwards faster than the 'ceiling' moves upwards. One challenge to this is that

upward movement at the case study school gets discussed far more often by those at the ceiling than it does at floor level, which might be why these departments are so successful or it might be that success breeds a belief in and a mission for further success.

9.12 Highest working order of equipment maintenance

There is a considerable variation in the way in which teachers perceive equipment, and in particular the school buildings, to be maintained in the schools in the project. Schools with rising rolls seem to have greater capability to put resources into care of the building than the schools with falling rolls. Some have a backlog of maintenance neglect to tackle. Schools that have been successful with competitive bids for additional funds, for example in obtaining technology college status, have been the most successful.

At the case study school there was a successful bid for £100,000 per annum for three years from 1 September 1996 for GEST funding for an initiative to reduce the number of exclusions. The school put in an unsuccessful bid for technology college status in 1996 and submitted a further unsuccessful bid for technology college status in 1998. However, the school was particularly fortunate to have £2 million capital funding from the single regeneration budget in 1997 to 1998, though the funding was technically for the provision of community facilities rather than improvement to the school facilities.

Although the new technology and business studies buildings were completed in the late autumn of 1998, additional funds to equip the buildings were approved in

the spring term of 1999. The main benefit of these resources will begin to influence the school in the 1999/2000 academic year.

The case study school also has a rapidly rising roll although small sixth form numbers have resulted in very uneconomic sixth form provision in recent years which resulted in a deficit budget of £135,000 being set for the 1997/98 financial year. The much improved facilities from the SRB capital expenditure had a considerable positive effect on the staying on rate in September 1997 which enabled a balanced budget to be produced for 1998/99. Further improvement in the staying on rate into the sixth form will give greater ability to keep equipment in the highest working order in future years.

There has been no change in the policy of allocating money through competitive bidding following the change of government in May 1997, and nor had there been any change in the policy of allowing parental preference to determine the rate of growth or rate of decline in school numbers. The variation in the ability of schools to replace equipment is not therefore likely to change in the near future.

9.13 Valued by supervising organisations

Stringfield's proposition, about the twelfth characteristic, that 'there is some evidence (e.g. Wimpelberg et al., 1989) that school districts provide more attention and support to some schools than others, and that it is often the schools in the least advantaged neighborhoods that receive the least attention and local support' [p.13] is not endorsed by the level of support for schools in the city in this study.

Basic funding through the L.M.S. formula means that schools do at least understand how they get their funds, even if the formula is not in itself seen to be fair and is, perhaps, unduly complex in attempting to replicate funding for the provision which existed before L.M.S. The highest level of funding per capita since the introduction of Local Management of Schools has been associated with social and age-weighted factors. The age-weighted factor has resulted in a considerable differential between the primary and secondary phases of education.

The case study school has the lowest per-capita funding of the city's secondary schools in spite of the high percentage of students who are entitled to free school meals. This is partly due to the high occupancy of the building, partly due to the age profile of students with increasing numbers of students in lower years in the school and partly due to the way in which the LMS formula funds features which are not features of the case study school.

Factors such as additional funding for split sites, funding for the floor area and ground area of sites, additional funding for curriculum protection for low roll numbers and funding for heated indoor swimming pools have resulted in a wide band of per capita provision in the city. The case study school has a particularly small site, does not have a low roll, is not a split site school and does not have a swimming pool. These factors combine to give it the lowest per capita income of the city's secondary schools. The per capita funding, with the case study school being school 1 in the table, has been:

	1997/98	1996/97	1995/96	1994/95	1993/94	1992/93	1991/92	1990/91
School 1	**1 £2093**	**1 £2100**	**1 £2021**	**1 £2068**	**1 £2042**	**1 £1937**	**2 £1837**	**2 £1693**
School 2	2 £2167	2 £2154	2 £2072	2 £2091	2 £2056	2 £1966	1 £1760	1 £1574
School 3	3 £2227	3 £2203	3 £2131	4 £2174	4 £2161	4 £2071	3 £1877	3 £1723
School 4	5= £2300	4 £2251	4 £2154	3 £2173	3 £2147	3 £2064	4 £1916	4 £1760
School 5	4 £2267	5 £2260	5 £2191	6 £2258	6 £2231	6 £2127	6 £2040	6 £1837
School 6	9 £2642	6= £2332	6 £2212	7 £2339	7 £2329	7 £2262	8 £2344	9 £2267
School 7	7 £2360	6= £2332	7 £2265	9 £2367				
School 8	5= £2300	8 £2348	8 £2303	8 £2354	9 £2402	9 £2280	9 £2463	8 £2113
School 9	8 £2354	9 £2491	9 £2387	10 £2413	8 £2373	8 £2278	7 £2231	7 £2061
School 10				5 £2253	5 £2202	5 £2081	5 £2027	5 £1791
School 11				11 £2722	10 £2522	10 £2528	10 £2825	10 £2421

Per-Capita Funding

TABLE 20

Comparisons including the catholic schools are not completely equivalent, but a close comparison can be made if rates are excluded. The amounts for 1997/98 were:

	1997/98 Excluding Rates
School 1	**1 £2022**
School 2	4 £2103
School 3	5= £2154
High School 4	9 £2223
High School 5	7 £2199
School 6	12 £2529
School 7	10 £2289
School 8	8 £2209
High School 9	11 £2422
School 10	
School 11	
R.C. School 12	2 £2050
R.C. School 13	3 £2077
R.C. School 14	5= £2154

1997/98 Per-Capita Funding excluding rates

TABLE 21

Although the case study school receives the lowest per-capita funding of the city's comprehensive schools, the evidence in the city in which this study is undertaken would nevertheless tend to contradict Stringfield's suggestion that 'it is often the schools in the least advantaged neighborhoods that receive the least attention'. Considerable additional resources have been put into the schools in the city which have failed their OFSTED inspections, though all the evidence seems to indicate that an increased level of funding does not have any direct effect on school improvement. Failing an OFSTED inspection produces a lack of confidence in the school by parents and by the feeder schools. This lack of confidence is usually demonstrated through a transfer of students to other schools who make relative gains in the nature of their intake for negative reasons. A return of confidence can not be purchased through additional funding.

9.14 Short-term efficiency takes a back seat to very high reliability

Stringfield [1995, p.13] says that 'wasteful management' has been an issue in the U.S.A. for the last thirty years. There has been a similar debate in this country since the introduction of L.M.S. about how much budget share LEAs might be allowed to retain and how efficiency should be a prime goal. The prime goal of short-term efficiency is a clear contradiction to the characteristic of short-term efficiency taking a back seat to very high reliability.

It may be that education is not perceived to have the capability for failure such that 'the costs associated with major failures in some technical operations are greater than the value of the lessons learned from them' [LaPorte and Consolini, 1991, p.19]. We continue to tackle improvement in efficiency of education through a trial and error method and, whilst we continue to regard individual educational failure and institutional educational failure as not being catastrophic failure, education can not be a highly reliable organisation.

This HRS project, by its very nature of being a trial of different ideas, could be seen to have a trial and error characteristic that accepts the costs of failure.

9.15 Summary of the high reliability characteristics

There is so little written and proposed about reliability theory in an educational context, that trying to compare the characteristics of schools which seek to be highly reliable with the characteristics of aircraft carriers and nuclear power plants

results in the conclusion that most of the characteristics are not there. What is needed is a proposition of reliability theory that is defined in an educational context.

However, Stringfield's thirteen proposed characteristics of a high reliability organisation hold up reasonably well in the case study school. They have also been far more evident in recent years when the school has being going through a period of significant improvement. It might be possible that improvement produces the characteristics of high reliability rather than high reliability produces the characteristics of improvement. It might be that they are the same things and that a highly reliable school *is* an improving school.

The following three tables give a summary of the high reliability characteristics of the pilot schools, the city schools and the case study school in a similar format to the summary of the characteristics of U.S.A. schools in chapter 3.

	Characteristics of High Reliability Organisations	Characteristics of the Pilot Schools
1	Staff hava a strong sense of their primary mission	Goals is some schools are more challenging than in others. Schools have set achievable goals, rather than Stringfields proposed 'outrageous' goals.
2	Formal, logical decision analysis is based on SOPs	Departmental variation and inconsistencies.
3	Extensive recruitment and training to compel adherence to SOPs	Varied, depending on falling rolls and budget constraints.
4	Initiatives to identity flaws in SOPs	Being introduced through the project, rather than already being a feature of the schools. Further research needed.
5	Attention to performance evaluation and analysis	Data richness is a fundamental feature of the project. Reading ages have been exposed as a particular weakness.
6	Mutual monitoring	As much a distant dream as it is in U.S.A. schools, but no evidence that this pressure would lead to school improvement.
7	Alert to surprises or lapses to prevent cascade failure	Cascade failure is not a characteristic of schools, but the project has made the schools alert to the measurement of essential criteria at student level.
8	Discretion with decisions at peak activity	Not a feature of schools.
9	Hierarchical and functional-skill based authority	Management level leadership seen as vital. Research is needed into multiple level leadership, particularly at classroom level.
10	Close interdependence during peak performance	Close coupling needs to be researched.
11	Highest working order of equipment maintenance	Not a general feature, but considerable variation between the schools.
12	Valued by supervising organisations	Probably more so than in the U.S.A.
13	Short-term efficiency takes a back seat to very high reliability	The converse is true at L.E.A. and national level – there is a continuing thrust for short-term efficiency. The trial nature of the HRS project contradicts this characteristic.

Characteristics of high reliability organisations

that are present in the pilot schools

TABLE 22

	Characteristics of High Reliability Organisations	Characteristics of the City Schools
1	Staff hava a strong sense of their primary mission	Some schools have set more challenging goals than other schools. Goals are still to be discussed by some schools four terms into the project.
2	Formal, logical decision analysis is based on SOPs	Departmental variation and inconsistencies.
3	Extensive recruitment and training to compel adherence to SOPs	Varied, depending on falling rolls, budget constraints and threats of closure.
4	Initiatives to identity flaws in SOPs	Being introduced through the project, rather than already being a feature of the schools. Further research needed.
5	Attention to performance evaluation and analysis	Data richness is a fundamental feature of the project. Reading ages have been exposed as a particular weakness.
6	Mutual monitoring	As much a distant dream as it is in U.S.A. schools, but no evidence that this pressure would lead to school improvement.
7	Alert to surprises or lapses to prevent cascade failure	Cascade failure is not a characteristic of schools, but the project has made the schools alert to the measurement of essential criteria at student level.
8	Discretion with decisions at peak activity	Not a feature of schools.
9	Hierarchical and functional-skill based authority	Management level leadership seen as vital. Research is needed into multiple level leadership, particularly at classroom level.
10	Close interdependence during peak performance	Close coupling needs to be researched.
11	Highest working order of equipment maintenance	Not a general feature, but considerable variation between the schools.
12	Valued by supervising organisations	Probably more so than in the U.S.A. and considerable additional funding for failing schools.
13	Short-term efficiency takes a back seat to very high reliability	The converse is true at L.E.A. and national level – there is a continuing thrust for short-term efficiency. The trial nature of the HRS project contradicts this characteristic.

Characteristics of high reliability organisations

that are present in the city schools

TABLE 23

	Characteristics of High Reliability Organisations	Characteristics of the Case Study School
1	Staff hava a strong sense of their primary mission	The HRS project gave a strong sense of purpose to the school. This characteristic of reliability came from the project itself.
2	Formal, logical decision analysis is based on SOPs	Given impetus through the first OFSTED inspection, but progress still to be made with homework target and with monitoring of lessons.
3	Extensive recruitment and training to compel adherence to SOPs	INSET is a very significant characteristic of the school.
4	Initiatives to identity flaws in SOPs	A wealth of data available to identify flaws, but considerable development needed in the use of the data.
5	Attention to performance evaluation and analysis	There is a foundation on which to build further work. The primary schools have agreed to data monitoring across the consortium.
6	Mutual monitoring	As much a distant dream as it is in U.S.A. schools, but no evidence that this pressure would lead to school improvement.
7	Alert to surprises or lapses to prevent cascade failure	Cascade failure is not a characteristic of schools, but the project has encouraged the school to focus on the measurement of essential criteria at student level.
8	Discretion with decisions at peak activity	Not a characteristic of the school, but heads of department have discretion with important decisions.
9	Hierarchical and functional-skill based authority	Management level leadership seen as vital. Research is needed into multiple level leadership, particularly at classroom level.
10	Close interdependence during peak performance	Research needed into how the range of performance at school level could be closed.
11	Highest working order of equipment maintenance	Equipment replacement neglected in recent years, but additional funds from recent successful competitive bids.
12	Valued by supervising organisations	No evidence that it is not valued.
13	Short-term efficiency takes a back seat to very high reliability	The trial nature of the HRS project contradicts this characteristic.

Characteristics of high reliability organisations

that are present in the case study school

TABLE 24

CHAPTER TEN

CONCLUSIONS

10.1 Introduction

Education is not at present seen at a macro level as so important that the possibility of failure is too disastrous to allow it to happen, although at a micro level many parents would see the possibility of the educational failure of their own child to be disastrous. The consequential cost of individual educational failure does not have the same impact as the failure of an aircraft to land safely, even though the total cost of educational failure each year is probably in a completely different higher scale than the cost of aircraft accidents.

At the most basic level we do not have any propositions about what we would consider to be the most unacceptable failure in education which we wish to attempt to avoid. We are unable to give the parents of any child an assurance that within our educational system the child has guarantees that there are some unacceptable outcomes that will be avoided at all costs. Since we do not have any propositions of what we are trying to avoid, we can not be readily compared with nuclear power plants, aircraft carriers and other operations where failure is clearly defined.

10.2 High reliability characteristics in schools

Although Stringfield concludes that only two of the characteristics of high reliability organisations are characteristics of the more effective schools in the U.S.A., there are more characteristics as features of the HRS project schools in this country. The most significant characteristic that is present in the case study school is that the staff have a strong sense of their primary mission, but this strong sense of mission has developed through the school's involvement in the HRS project.

10.3 Modified goals for the project

The literature used for the Gloucestershire schools says 'the goals are simple:

- Schools get it right, first time every time.
- Pupils succeed every time.

This is the High Reliability Strategy'

The literature used for the London conference on 7 March 1997 said:

'The High Reliability Schools Project is an attempt to move beyond the goal of relatively successful schools towards the creation of schools which are absolutely successful and have eradicated failure.'

However, the typical definition of reliability in engineering does not use the term 'absolutely successful', nor the term 'eradicated failure' nor the term 'get it right, first time every time' and nor the term 'succeed every time'. The use of these terms has the potential for giving some unease to practitioners about the potential

of the project. 'Get it right, first time, every time' has rather too much of a 'sound-bite' 'gimmicky' message.

The typical definition of reliability, given in chapter two, says that 'reliability is defined as that characteristic of an item expressed by the probability that it will perform its required function in the desired manner under all the relevant conditions and on the occasions or during the time intervals when it is required so to perform' [Green and Bourne, 1972, p.25]. A definition of the High Reliability Project as practised at the case study school is that it is a target setting project with the key target of improving examination performance supported by three further targets of attendance, reading ages and homework. The setting of demanding but realistically attainable targets is supported by intake date and by the collection and analysis of appropriate data.

10.4 The impact of the project at the case study school

Before the introduction of the project the case study school lacked a clear direction for development. The mission statement was highly commendable but few of the staff were able to state the mission statement or even give some reasonable suggestions of what the mission statement promised. After the introduction of the H.R.S. project all staff have been able to give a clear account of the four basic aims.

The H.R.S. project did not fundamentally change the philosophy or direction of the school. The school was already on an improving path backed up with a wealth of statistics for value added performance analysis. The school recognised

that the H.R.S. project path clearly met its existing path and gave a clear road for the school to continue on its journey supported by the most up to date research evidence for school improvement strategies. The introduction of a requirement for target setting by all schools produced a climate in which the project would be more likely to be welcomed by teachers.

In the conclusion to the first chapter it was said that the involvement of the feeder primary schools illustrates the dimension of the length of the school improvement journey. The strategies being used by the primary schools with their intake classes this year are intended to lead to improvement in examination performance in ten years time. The case study school may therefore not arrive at a plateau in its performance for at least ten years even though its journey during that time may have troughs as well as peaks.

The case study school has adopted the proposals of Reynolds and Stringfield in full. It has also added to the proposals with the involvement of the feeder primary schools in the project and with inducements for heads of department to meet very demanding targets with performance related pay. If the project can make a difference in an inner city school then it has been given every possible aid to do so at the project school.

The answer to the question raised in this thesis of 'can the rationale of a highly reliable organisation aid the improvement of an inner-city comprehensive school?' is considered by the author to be a definite 'yes'. The question did not ask 'by how much?' and the answer to this will only become clear in the next few years. At the time of writing this thesis the author is optimistic that the project will make

a very significant difference and the school will continue to have the aims of the project as the basic rationale for its development plan.

The HRS project is a target setting project based on the evidence from school improvement knowledge that the greatest degree of freedom for improvement lies within the classroom. It therefore seeks to impart the most recent research evidence of school improvement and school effectiveness knowledge not just to the senior administration team in schools but to the heads of department and to the classroom teachers. The project is also based on research evidence that there are greater differences between departmental performances within schools than there are differences in average performances between schools. The project assists schools to raise performance to their own best practice.

All schools will become under increasing pressure to adopt similar strategies since target setting for improvement in examination results is now a requirement for all schools. The HRS project schools may therefore be two years further along the road on which all schools must travel in the future.

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