

**The analysis of school examination**  
**results as a formative aid to school**  
**improvement**

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# **The analysis of school examination results as a formative aid to school improvement**

## **Summary**

Currently very much in the news and at the forefront of the Government's educational agenda, school improvement and the analysis of examination results to aid school improvement are not new issues in themselves.

My work in this area started in 1990 when as Examinations' Officer in my school I was asked to establish how well the school was doing.

I have developed bespoke computer software to aid my analyses and use this to provide a service to some 30 schools directly and to two LEAs.

In 1996 the GCSE examination results of over 3000 pupils were analysed, the total figure for the years 1991-1996 being near to 9000 pupils with both GCSE and indicator test data.

My research, started in a period of intense competition between schools, has developed into a collaborative project where schools share their public examination results, all be it anonymously, for their mutual benefit.

A thorough review of the existing research literature increased my awareness of the issues involved in the analysis and interpretation of examination data.

These issues are discussed in this thesis along with my methodology and the analyses provided to schools.

The focus of this thesis is on providing advice to schools on the analysis of their data, particularly with regard to issues of correlation, subject area differences, variation within and between schools and the consideration of trends over time. Advice is given to schools on the introduction of an examination analysis system and its formative use for the benefit of current pupils with examples from current practice at Sexey's school.

## Introduction

Over recent years there has been increasing pressure on schools and teachers to demonstrate to those who would hold them accountable that high standards are being maintained in the provision of the educational processes and in the attainment of educational benchmarks of success by the schools themselves, by their subject departments and individual pupils.

The Education Act of 1980 served to highlight these pressures, making them rather more explicit, particularly at the level of the School and Local Education Authority, with the regulations regarding the reporting of examination results and successive additions to the legislation leading to the publication of "School Performance Tables" issued for the first time in 1992.

The emphasis given to examination results in this respect can be traced back to 1979 when Members of parliament were in debate over the forthcoming Education Act 1980. Nuttall (1986) points out that, in introducing the parliamentary debate on the 1980 Education Act, Dr. Rhodes Boyson suggested that the publication of examination results was essential to the Conservative party's concern to "provide full(er) information on schools so that parents can make their choice of school . . . an informed choice" (Hansard 1979).

In the same debate Mr. John Carlisle emphasised the market orientated view of education and suggested that,

"Sales literature for a school must by statute be honest and contain all relevant facts about a school. That is an essential part of the offer made to parents. Examination results speak for themselves."

One of the problems in subsequent reporting of examination results is that whilst they may appear to "speak for themselves" there are relatively few people who can tell what they are saying or who have the necessary expertise

to interpret the messages they give about a school, its pupils and staff. Raw examination results are open to different interpretation by different audiences and expertise is needed to interpret them in a way which is both meaningful and helpful to schools.

Since the publication by the Government of secondary school examination results in the form of Performance Tables, the media have referred to these tables as "League Tables". The Government did not produce league tables as such, merely alphabetical listings, but, by releasing the details to the Press before they were released to the schools, the daily newspapers effectively did the job for them, the journalists catering for the public's perceived desire to see the best and worst sets of results in the kingdom. Whereas the Government tables baldly state the performance figures for each school without explicit judgement on how effective each school is, the blatant message from the rankings produced by the newspapers is that the schools at the top of the tables are better than those lower down. This is quite often not the case, as I hope to show in this thesis, and ignores the many factors influencing pupil performance in examination results not least of which is the prior ability of the pupils.

Some newspapers, notably the Guardian, Daily Mail and Daily Telegraph amongst others, were so keen to reveal "the best schools in the country" to the general public that they contacted schools directly in order to produce their own tables prior to the release of the official government figures. This creates further problems for schools in that the integrity of the information is suspect. The criteria used by the newspapers for their ranking procedures vary. Some use GCSE or A level results whereas others use some combined measure. Some newspapers focus on a particular indicator, such as the percentage of the year cohort achieving five or more GCSEs graded 'C' or above.

The choice of performance indicator used to consider schools' performance is not a simple matter as each can tell a different story. During the course of this thesis I will look at several indicators that could be employed when looking at

examination results as a measure of school performance.

In 1996 all the major daily newspapers still published these tables in November, when the Department for Education and Employment (DFEE) released their figures, after many newspapers have already published their own tables in August following the release of school examination results, thus testifying to the public demand for information on schools' performance.

Further evidence of this trend for placing emphasis upon examination results as indicators of how well a school is performing is given by the school inspection body, the Office For Standards in Education (OFSTED), which explicitly stated that the performance indicators the inspectors would be looking at were the results of National Curriculum assessments and external examinations (OFSTED, 1992).

The publication of examination results is by no means the only measure being used to exert pressure upon schools; the government's promotion of parental choice in the selection of schools for their children, limited though that choice is in some regions, means that those parents who have the means and facility to transport their children to a school other than the nearest have been looking more critically at educational provision and seeking measures of good and bad schools.

One of the most easily quantifiable measures, at least superficially, is examination performance. If these parents exercising their right of choice are essentially middle class with high expectations for their children, the sort of background from which one would expect children to perform at a high level in examinations, then one can see that an apparently successful school is going to attract potentially successful pupils who will in turn make the school more successful. The apparently less successful school will be left to educate the pupils of parents who are not able to exercise any choice of school because of their circumstances, their children not enjoying the advantages of a home

background which would support their school studies.

This scenario has obvious potential for the creation of "sink schools" but it would be unwise to assume that the schools attracting the more able candidates were performing any better than the other schools with the pupils in their charge without some measure of actual performance in relation to expected performance. In other words are the schools with the more able pupils actually adding as much value to their pupils' academic performance as other schools? My point is that without full and proper analysis of school examination results parents are potentially being misled into thinking one school more effective than another or indeed that a particular school is more suitable for their child.

If one goes further and adds in the funding arrangements for schools, essentially linked to the number of pupils a school attracts; the removal of the Local Education Authority's ability to provide extra funding as budgets and management responsibility have been transferred to schools under the Local Management of Schools (LMS) scheme; the creation of Grant Maintained Schools which seem, in terms of pupil recruitment, to have become very popular with some parents, then one can see that pressures on schools to "deliver the goods", be successful "in the market place", are more acute than ever. The apparently less successful school, as judged by a simplistic analysis of examination results, will tend to attract less pupils and therefore less funding. With less funds available the quality of the educational provision, in terms of staffing, curriculum breadth, general resourcing, state of repair of the buildings and general fabric, will decline and become less attractive to parents and their children. As the cycle of decline tightens the proportion of pupils with "problems" is likely to increase with consequent increased demand on scant resources. It is essential that schools' performance is presented as accurately as possible to avoid parents and children being misled with the resultant haemorrhaging of the educational provision.

In the 1990s with current financial stringency there is also intense pressure on

areas such as education to show value for money and demonstrate that the end results of the process warrant the expenditure from the public purse.

This concern became all too apparent in the Audit Commission's report (1993) on post 16 educational provision with its emphasis on schools using quantitative information to monitor performance,

"Quantitative measures are particularly important for the 16-19 phase of education, because participation in this post-compulsory phase is a matter of the student's and the institution's choice, and study is in all cases directed towards the securing of qualifications. Quantitative measures can be directed at three main audiences. One is the inspection and other bodies through which schools and colleges are held to account. The second audience is the internal management of institutions, to help them develop and improve their provision and the third is the immediate clients of the courses - students, prospective students, parents and employers" (Audit Commission (1993) )

The Audit Commission's emphasis on the intended audiences for this quantitative data, Inspection agencies, Internal Management and Prospective clients serves to emphasise the importance attached to this form of data and emphasises my point, namely the need for correct interpretation of that data. The report goes on to stress the role of "value-added" analysis of examination results and claims that their study has,

"confirmed that students' A-level examination achievements are strongly related to their prior achievements at GCSE. So taking account of students' progress requires a comparison of final A-level and AS level results with these prior achievements." (paragraph 175 page 62)

This value-added approach to considering the performance of school courses has the advantage of being able to offer more genuinely useful information for prospective pupils than bland statistics on percentage pass rates,

"A key virtue of value-added evaluations of courses is that they are more relevant to decision - taking than are raw results. For a student trying to



decide whether to enrol on a course, the success rate of the course with students who had similar prior qualifications is more informative than the general success rate of the course." (paragraph 181 page 63)

This widely read acknowledgement of the worth of value-added analysis of examination results was published in 1993 and yet in 1997 there are still no national data available or official system to aid schools in this sort of approach to the use of examination data. There are schemes available, of which the best known is the ALIS scheme (A Level Information Service), and work has been commissioned to look at the use of National Curriculum Key Stage assessments as baseline indicators for value-added analysis (Fitz-Gibbon, 1995 and Trower and Vincent, 1995) but this is still in its early stages.

The Audit Commission's report also looked at the issue of cost effectiveness and the viability of small teaching groups. Here again, one of the most accessible quantifiable measures of performance in schools is examination results. Schools are well aware that those who would hold them accountable are keen to establish which schools and, indeed, which subject departments are producing the best examination results and therefore the best value for money. The same issue of cost effectiveness is of course one which pertains to Local Education Authorities. Some of the highest spending authorities are towards the bottom of the examination results league tables (Times Educational Supplement, March 31 1995).

Many of those involved in education know that a simplistic interpretation of value for money suffers from many serious faults, but that a full understanding of the issues involved cannot be assumed for all those who are responsible for watching the purse strings or indeed for those who are placed in judgement over schools. Schools are therefore faced with not only establishing their educational effectiveness but the cost effectiveness of their educational provision.

There is, as my previous points have shown, a very apparent need for schools to address the issues of school effectiveness and its illumination, to seek to educate those who are involved with our schools as to the factors that should be considered prior to making any judgement about the performance of a school. Schools need to be able to demonstrate to parents that the school is capable of doing "a good job" with pupils of all abilities within its intake, that not all pupils are of the same ability and expectations should be tailored accordingly. Headline figures, such as percentage passrates or numbers achieving five or more GCSEs graded A\*- C, are not sufficient evidence of effectiveness on their own. Schools must be able to demonstrate that they are doing their utmost for all their pupils across the ability range and are not concentrating on the education of any one ability group to the detriment of others.

A school must be able to evaluate its own performance within the context of its own catchment area, pupil intake and its previous achievement, as well as within the national context. It is therefore essential that the school develops and uses valid and reliable measures of performance in order to help discover its weaknesses, celebrate its successes and plan further improvement.

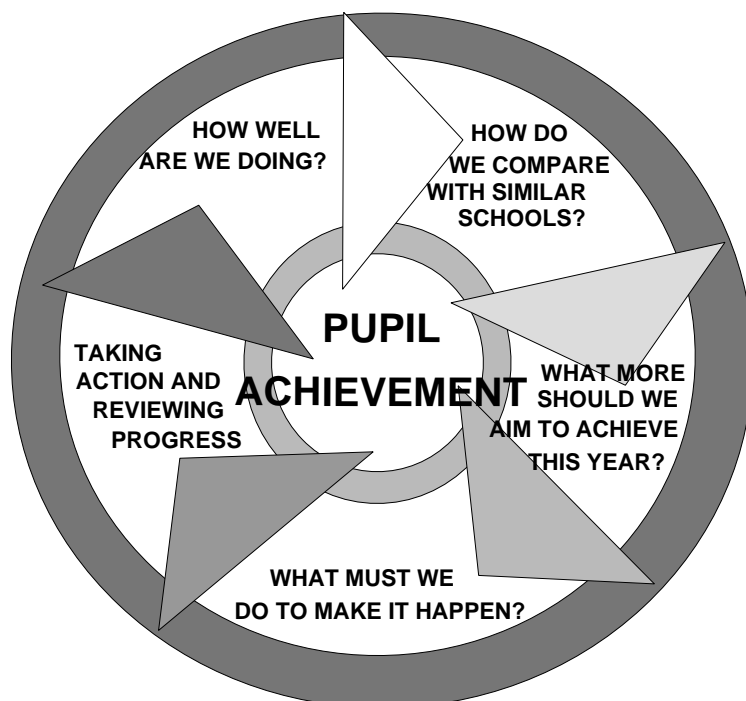
This thesis is a study of the writer's attempt to develop and implement such measures in a school environment with insight gained from the research literature and consideration of examination data from a number of schools over a period of years.

The preceding arguments and problems are now becoming recognised 'officially'. At a conference in London, 20 November 1996, organised by the DfEE (Department for Education and Employment) and entitled "Raising Standards for All" Gillian Shephard, Secretary of State for Education, in her opening address outlined the government's drive for improvement in schools. Central to her proposals was the Five Stage Cycle for School Improvement, illustrated below (*Figure 1.1*), essentially the areas that I have been addressing in this research.

I would assert that in order for schools to compare themselves with other similar schools, to help establish their performance level in relation to others, common benchmarks are required - measures of pupil ability, pupil outcomes, schools with similar problems and advantages. For this reason I involved Sexey's school in links with other South Somerset schools as early as 1990 and eventually undertook this research. In 1996 the Government's encouragement

Figure 1.1

## A FIVE STAGE CYCLE FOR SCHOOL SELF-IMPROVEMENT



of schools to "Network", to join with other schools in similar situations and / or locations to share information supports my view that networking is the way forward for schools.

Networking on examination results is not an easy thing for schools to do on their own. They generally have some knowledge of schools in their own locality but the very fact that these other schools are local tends, under the current competitive market forces, to make these schools rivals rather than encourage mutual self-help and sharing of information.

On the basis of information gleaned from comparing themselves with others, the DfEE would encourage schools to set targets, decide an action plan, review progress, consider attainment and complete the cycle by comparing this attainment with other comparable schools.

All this begs the question of how well equipped are schools to partake in this review cycle? Do they have the necessary statistical, evaluative and judgemental skills to make fair comparisons, to consider their true performance as opposed to their apparent performance? Without these skills management decisions are likely to be misguided, steps in the dark rather than steps to enlightenment.

Schools, then, are faced with a number of challenges.

- How can examination results be interpreted usefully?
- What information can examination results give a school that will assist in improving the performance of pupils, staff and the school as a whole?
- Who will interpret this information for schools? Schools will need to have, or develop, the necessary statistical awareness to be able to cope with the sort of data that value added analysis throws up. Many of the statistical techniques employed in school effectiveness research rely upon correlation techniques but what does "correlation" really mean? How much reliability can be attributed to any findings? Are those findings valid?

Inter-personal and management skills will need to come to the fore in order to take the staff, very few of whom are likely to have a statistical bent, forward in implementing changes suggested by the data.

- How can quantitative examination data inform pupil / parental choice of educational institution, as suggested by the Audit Commission report (1993) ?
- How can schools use this data to aid recruitment or prevent falling rolls? Schools need to be confident enough in their interpretation of the data to educate those in positions to make judgement on schools, which

includes parents - current and prospective, and try to ensure that any judgements are based upon sound understanding of the schools' data and circumstances.

- Are schools equally effective or are some more effective than others and within schools are some departments more effective than others? Indeed are schools or departments equally effective across the ability range or just in restricted ability groupings?
- Schools certainly need to address issues of school effectiveness for the reasons already mentioned but also because unless a school knows how effective it is it cannot plan for improvement or measure the extent of any improvement.
- A school should consider its own performance not in isolation but in comparison with others. The national benchmarks available so far tend to be limited to percentage passrates without the baselines for a value added analysis and therefore without the means for a more meaningful appraisal of performance.

Mindful of the problems in establishing school effectiveness mentioned above I undertook this research. I was keen to establish baseline indicators against which to measure the performance of the school, consider departmental performance and trends over time. I needed to know how the school stood in comparison to other schools in the area and whether examination performance was improving or not.

I would need to undertake a thorough review of the relevant literature to establish the best techniques to employ in comparing school examination results year on year, between schools and between genders.

Not only would my research methods have to be valid and reliable but my findings would have to be accessible to school managers and teachers. It was my intention to explore the raw data and attempt to implement a system of analysis that schools could use year on year and which would be both informative and cost effective in terms of time.

Issues of accountability were very much to the fore as Sexey's School took on Grant Maintained status and school performance tables were issued for the first time. In a period of increasing competitiveness between schools I sought to bring schools together to consider examination performance in a manner that would benefit all rather than to seek to establish superiority.