

An evaluation of performance of schools before and after moving into new buildings or significantly refurbished premises

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Her Majesty's Inspectorate
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Introduction

- 1 The purpose of this advice is to provide the Welsh Assembly Government with an evaluation of the performance of schools before and after moving into new buildings or significantly refurbished premises.
- 2 The evidence base includes:
 - research into the literature available on the performance of schools before and after moving into new buildings or significantly refurbished premises;
 - visits to eight local education authorities (LEAs);
 - visits to eight schools; and
 - analyses of data¹ from 74 schools.
- 3 This is similar methodology to other research carried out on evaluation of the performance of schools before and after moving into new buildings or significantly refurbished premises.
- 4 For the purposes of this report, the performance of schools is measured by performance data and Estyn inspection grades on the:
 - attainment² and achievement³ of pupils over the three-year period 2003-2005;
 - behaviour as indicated by the level of fixed-term and permanent exclusions and Estyn grades where appropriate;
 - attendance;
 - quality of teaching;
 - quality and range of the curriculum; and
 - leadership and management.

¹ 47 primary schools and 27 secondary schools. 12 new schools and 62 refurbished schools.

² This means how well learners are doing, as measured in national assessments and in the qualifications or credits they gain.

³ Inspectors judge achievement by how well learners are doing in relation to their ability and the progress they make.

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5 The Welsh Assembly Government aims to make all school buildings fit for purpose. 'The Learning Country: Vision into Action' (Welsh Assembly Government 2006) states that the Welsh Assembly Government will:

- “promote sustainability and security in the design of new schools and significant refurbishments by requiring local authorities to have regard to the BREEAM⁴ standards and to incorporate fire sprinklers when using Assembly Government grant;
- promote effective procurement and strong project management in the provision of school buildings through collaborative action between local authorities supported by Value Wales⁵;
- provide on average funding of £150m each year from 2006-2007 to 2009-2010 for school buildings;
- keep under review the progress made by local authorities; consult authorities on the need for investment beyond 2010 and set target dates for individual local authorities to reach the fitness target;
- consider developing a link between allocation of funding for capital investment in schools and effective strategic planning by local authorities, based on their asset management plans and their assessment of demand for school places; and
- promote schools as a focus for the local community, providing opportunities for out-of-school hours activities (educational and otherwise) for pupils, their families and the local community, including local voluntary groups; and as a base for other services.”

⁴ Building research establishment environmental assessment method is used to assess the environmental performance of both new and existing buildings.

⁵ Value Wales gives procurement support to Welsh local authorities and encourages improvement across the public sector.

Main findings

- 6 In all schools, better buildings contribute to improving one or more of the performance areas that we defined earlier in this report. This generally agrees with the outcomes found by other research studies.
- 7 In Estyn survey work we found that leadership and management are major influences on improving performance in those schools with new or refurbished buildings.
- 8 Ageing school buildings which are in a poor state of repair cannot meet modern teaching and learning needs. Inadequate buildings make improvements in standards of achievement more challenging.
- 9 In nearly all schools with new or refurbished buildings that we surveyed, pupils' attainment and achievement have improved. In some cases the improvement in attainment has been significant, especially in a few schools in communities with high level of social and economic deprivation.
- 10 Estyn inspection report findings show that the quality of teaching has improved in those schools that have moved into a new or refurbished building. Improvements in the quality of buildings have a very beneficial effect on the quality of teaching and morale of staff which has a positive effect on pupil performance.
- 11 Pupils' attendance in their new school is similar when compared to what it was in their old school building.
- 12 Pupils' behaviour generally improves in their new school compared to what it was in their old school building. There are less permanent and fixed term exclusions.
- 13 Most schools offer pupils more choices than in their previous buildings because they have more space and better facilities. Also, the provision the school makes for before-school and after-school activities significantly improves.
- 14 Local Education Authorities (LEAs) in our survey are doing a lot to improve the quality of school buildings. Most LEAs in our survey use grants and capital money wisely. They spend their money in order to manage the increasing challenge of surplus places⁶.
- 15 The best LEAs in our survey develop their school asset management⁷ plans alongside their policies for improving pupil performance.
- 16 In the LEAs we visited, very few produced reports about the difference that improving school buildings can have on the quality of pupils' education. As a result, elected members do not have a clear enough view about the issue.

⁶ Where there are fewer children in an area than there are school places. Sometimes known as surplus places.

⁷ The planning that authorities do to manage land and buildings owned by the councils.

Recommendations

- 17 In order to make all school buildings fit for purpose, the following actions need to be taken:
- 18 The Welsh Assembly Government should:
 - R1 continue to make schools fit for purpose through its grants to LEAs; and
 - R2 encourage collaboration between LEAs to promote value for money and good project management in the provision of new or refurbished school buildings.
- 19 LEAs should:
 - R3 identify the contribution that school buildings make to raising standards and school improvement, to better inform elected members, so that school buildings feature prominently in Council priorities;
 - R4 invest in schools that have a long term future in order to deliver high quality education for pupils and the wider community; and
 - R5 seek to learn from and work with other LEAs and partners to ensure value for money in their school building projects.
- 20 LEAs and schools should:
 - R6 ensure there is a clear link in LEA and school plans between the strategies for improving school buildings and raising standards.

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Attainment and achievement of pupils over the three-year period 2003-2005

- 21 In nearly all schools with new or refurbished buildings that we surveyed, pupils' attainment and achievement have improved. In some cases the improvement has been significant, especially in a few schools in communities with high levels of social and economic deprivation. This contrasts a little with research undertaken by Pricewaterhouse Coopers on behalf of the Department for Education and Science⁸ which found that improvements to the buildings brought about little improvement in performance in the least and most well-off areas.
- 22 From our sample we were able to identify 23 primary schools for which we could make direct comparisons in the attainment of pupils (see appendix 2). We compared the core subject indicator at the end of key stage 2 over the three year period 2003-2005. We found that the range of improvement has been between -8 and 45 percentage points. The average improvement was 11.6 percentage points.
- 23 From our sample we were able to identify 16 secondary schools for which we could make direct attainment comparisons (see appendix 2). We compared the core subject indicator at the end of key stage 4 over the three year period 2003-2005. We found that the range of improvement has been between -5 and 10 percentage points. The average improvement was 3.9 percentage points.

⁸ Building Better Performance: an Empirical Assessment of the Learning and Other Impacts of Schools Capital Investment. Research report 407, DfES (2003)

Improving attainment

Primary school A is a new school, made up of two primary schools, which opened in September 2004. There are 195 pupils on roll. Thirty per cent of pupils are entitled to free school meals, which is well above the national average of 19%. Twenty-eight per cent of pupils are on the school's special educational needs register, which is above the national average of 20%.

The school has made significant improvement during 2005 and 2006 since the two schools were merged.

Performance before moving into the new school:

Old school 1		Old school 2	
Year	% Key Stage 2: CSI ⁹	Year	% Key Stage 2: CSI
2003	30.8	2003	48.0
2004	33.3	2004	36.6

Performance in the new school:

Primary school A	
Year	% Key Stage 2: CSI
2005	76.3
2006	73.3

The school had an Estyn inspection report in 2006, the report stated that:

- the accommodation provided excellent facilities for teaching and learning; and
- the school offered good value for money; was rapidly improving and well positioned to improve standards further.

- 24 Direct comparisons about how much standards of achievement have improved in many of the schools that we surveyed are not always possible because many of the schools in our survey have not been inspected since improvements to the buildings were made. In appendix 3 we have taken extracts of reports from one school to show that moving into new buildings does raise the standard of pupil achievement. This agrees with other research referred to later in this report.

Behaviour as indicated by the level of fixed-term and permanent exclusions and Estyn grades where appropriate

- 25 Pupils' behaviour generally improves as a result of their move into new or refurbished buildings and this improvement is supported by research (see section on research). In nearly all new or refurbished schools, especially secondary schools, there has been a decline in fixed and permanent exclusions.

⁹ CSI – Core subject indicator. This indicator shows the percentage of pupils who attain the level expected of them in each of mathematics, science and either English or Welsh as a first language.

- 26 Pupils' personal, social and learning skills are good. The good features are:
- pupils are well-motivated and apply themselves well in lessons;
 - good numbers participate enthusiastically in a range of extra-curricular activities;
 - standards of behaviour in lesson and around the school are good; and
 - pupils show respect for their fellow pupils, whatever their linguistic or ethnic background.
- 27 Headteachers of a few new schools that we surveyed claim that it took time for pupils to settle into the new building and understand the rules of the new school. Once these rules were well known, behaviour of most pupils was at least good. Pupils show high levels of self-discipline, move sensibly around the school buildings and take greater pride in their new school.

Reducing exclusions

In one new secondary school, there was a major issue with poor behaviour that resulted in a number of exclusions. Pupils took time to adapt to the rules of the new school. This is now being addressed by establishing behaviour units in the school that help pupils to understand good behaviour. Teaching these pupils on the school site would not have been possible in the old school building because there was no room to establish behaviour units. As a result, these pupils would probably have been permanently excluded.

Attendance

- 28 Pupils' attendance in their new school is similar when compared to what it was in their old school building. Moving into new buildings or having improved facilities such as new science laboratories or sports centre has less impact on improving pupil attendance than any other area of performance. Pupils' attendance generally returns to what it was in their old school, once they get used to their new building, and it loses its sense of 'newness'.

Quality of teaching

- 29 The quality of teaching has improved in most cases in the schools that we surveyed. This finding agrees with other research found later in this report. Improvements in the quality of buildings have a very beneficial effect on the quality of teaching and morale of staff and this has a positive impact on standards and general performance. This is shown clearly by comparing Estyn inspection report findings before and after moving into a new or improved building. The tables below show how the quality of teaching compares in seven schools before and after significant refurbishment or moving into a new building.

Percentage of grades awarded before moving into improved buildings

School	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
A	0	49	47	4	0
B	11	46	37	6	0
C	4	67	25	4	0
D	6	53	37	8	0
E	15	55	30	0	0
F	3	23	67	7	0
G	12	37	44	7	0

Percentage of grades awarded after moving into improved buildings

School	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
A	17	52	24	7	0
B	38	50	10	2	0
C	27	54	17	2	0
D	14	81	5	0	0
E	47	43	10	0	0
F	9	45	43	3	0
G	15	65	18	2	0

30 The characteristics of good teaching in these schools were that:

- teachers have good subject knowledge and share their enthusiasm for their subjects with pupils;
- teachers question pupils effectively to develop their knowledge and understanding;
- relationships between teachers and pupils are very good;
- lessons proceed at a brisk pace, ensuring high levels of learning;
- there is effective lesson planning to ensure that pupils with different learning needs in the same class are challenged enough at the appropriate level;
- teachers have high expectations of what pupils can achieve; and
- teachers use a range of teaching approaches to sustain pupils' interest.

Evaluating the effect on staff of moving from a poor and ageing building into a new purpose-built building.

In one secondary school the headteacher evaluated the impact on his staff of moving from a poor and ageing building into a new purpose-built building.

The following factors were identified:

- subject classrooms arranged together in a suite has resulted in a closer team approach within and across similar subjects;
- better resources and use by all staff especially in practical subjects such as design technology, drama, physical education, art and music;
- better provision and use of information technology resources to support lessons;
- heads of department able to monitor more closely the standard of teaching and learning within all teaching groups; and
- a large staffroom which helps staff to meet together regularly.

The impact of these factors include:

- improved quality of teaching (80% of lessons were graded 2, good features and no important shortcomings or better across the school and 100% grade 2 or better in the sixth form, compared with 65% grade 2 in the previous inspection);
- better results in key performance indicators¹⁰ at GCSE and A level;
- teaching staff keen to undertake professional development activities (nearly one-fifth have the National Professional Qualification for Headteachers¹¹ qualification);
- a broader curriculum including extra-curricular provision offered to pupils across all key stages;
- teachers informally and formally sharing ideas and best practice; and
- much improved staff morale.

Quality and range of the curriculum

- 31 Our survey agrees with other research that there is a stronger link with performance where there have been improvements to specific curriculum areas. In our survey, we

¹⁰ These include the percentage of pupils gaining five or more A* - C and A* to G at GCSE and the percentage of students who gain at least two A level grades A to C and at least two A level grades A to E.

¹¹ National Professional Qualification for Headteachers. This is a qualification for teachers and senior staff who want to be headteachers.

found that improving facilities contribute to improved teaching and as a result better learning opportunities for pupils and students. This is particularly true in subjects that contain practical elements, such as, science, drama, design and technology, physical education, music and ICT.

32 The quality and range of curriculum has improved in refurbished buildings and especially so in new schools that we surveyed. Most schools that have new or refurbished buildings offer:

- more subject choices;
- better resources that contribute to pupils having more good or outstanding learning experiences in their lessons;
- significantly improved provision for pupils before-school and for pupils and the community after-school; and
- increased and improved partnerships with other schools and agencies which benefit pupils.

Working with the local community

The headteacher of a new school, which opened in September 2005, made up of a junior and two infant schools, serving a socially-deprived estate is spending a lot of time working with the local community. The focus of the work is to get the community to make use of the school facilities and encourage parents to understand how they can support their children's school work. Her work is certainly helped by the high quality of the new build and the presence of community facilities such as:

- a Surestart programme designed to give pre-school children the best possible start in life;
- a crèche for very young children to allow parents to attend sessions on supporting their children's school work;
- breakfast and after school clubs; and
- office space for health visitors.

Although it is too early to assess the long term impact, the increased and improved involvement of the community has contributed to improving standards. In 2006, 92% of the pupils gained level 4 or above in English, mathematics and science, which is a good performance for a school with 34% of pupils receiving free school meals.

Leadership and management

33 In our survey, leadership is good and sometimes outstanding in many of the new or refurbished schools. This is the key influence on improving performance. In many cases, experienced, and successful headteachers are appointed to lead newly created schools. In new buildings senior leaders spend less time dealing with time-consuming issues such as leaking roofs, over-crowded classrooms and the use of classrooms as dining halls. Analysis of leadership and management in Estyn primary and secondary school inspection report findings show that the good and outstanding features in these schools include:

- leaders with a clear purpose, who are imaginative and have a strong sense of direction;
- the close links between senior managers and departmental teams which make sure that good communication, consultation and monitoring of staff and pupil performance are carried out;
- a wide range of information on pupils' previous achievement that is used to set meaningful targets for classes, departments and pupils;
- good processes for managing performance help schools to focus more clearly on how the quality of learning and teaching affects the overall outcomes attained;
- targets that are used to monitor achievement and encourage improvement; and
- managers and staff who use their available resources efficiently and effectively.

The work of LEAs in improving school buildings

- 34 LEAs are doing a lot to improve the quality of school buildings. Most LEAs in Wales use School Building Improvement Grants and capital money effectively to:
- build new schools to replace buildings in poor condition;
 - merge schools especially junior and infant schools; and
 - significantly refurbish school sites.
- 35 LEAs use three indicators in judging value for money when completing new or refurbished buildings. These indicators are that the building is of good quality, within budget and on time. Careful monitoring and auditing takes place of how contracts are awarded and completed for new or improving buildings. Most LEAs are members of benchmarking clubs and have a great deal of comparative information available which they use effectively to make value for money judgments.

Working in partnership

In 2001, one Council prioritised improving the quality of buildings in the primary sector in its Corporate Plan. Funding from the capital programme has been set aside to 2008-2009 to help deliver the priority.

A very good feature of this LEA's work is the long term partnership arrangement that it has formed with a private company to deliver the capital projects. This is an alternative approach from the traditional 'stand alone' school construction contracts. One of the benefits of the partnership arrangement is that it allows the contractor to:

- be involved right from the start of each new project before building work begins;
- provide advice and expertise to take projects from concept stage and planning through to construction and completion;
- have a greater certainty on the price of each job; and
- have a greater flexibility to switch resources between contracts as required.

The benefit to the LEA is that the partnership arrangement delivers:

- new or refurbished buildings of good quality, within budget and on time; and
- reduces administration time and costs in setting up new building projects.

- 36 All LEAs have clear objectives in their key strategic plans to raise standards and improve the condition and suitability of buildings. LEAs also have a great deal of performance information although only a few LEAs formally evaluate the impact of improving school buildings on performance data. In the best example, information from the evaluations is fed into the education service or council asset management plans. This is then used to inform planning for new buildings or refurbishments of existing buildings.
- 37 Elected members do not know enough about the difference that improving school buildings can have on the quality of education and the standards pupils achieve. In most LEAs, there are no reports to members on the impact of new buildings on school performance and members do not actively seek them. Members need to be well informed in order to help them make difficult decisions about how best to manage surplus places.

Evaluating the impact of new or improved buildings

In one LEA, a programme of school re-organisation has reduced the number of primary schools serving three to 11 year olds by around 30%. In 1996 there were 43 primary schools in total, but this had reduced to 29 in September 2006.

The LEA undertook a study of the impact of this investment in school buildings on raising standards of pupils' achievement, attendance, behaviour and the general development of supportive communities in schools. Estyn has read this study and agrees with the findings. The main findings of the report show that the investment has contributed well to improvement in standards. In particular:

- the percentage of pupils gaining 5 or more GCSE grades A*-C in the LEA has gone up from 35.5% in 2002 to 48.7% in 2006. This is a significant improvement and indicates that LEAs clear focus on raising standards is working;
- two new primaries had better inspection reports than the former schools. In one there has been a significant increase in CSI (30% to 75%) and the other has remained at a relatively high level (about 75%);
- of the three refurbished primary schools, one has seen a sharp increase in the CSI (54.5% to 85.7%), another a steady increase (41% to 54%), while the remaining one, which is a much smaller school has remained high;
- one secondary school with major refurbishment has improved A* - C performance (44.4 % to 50%) and has received a very good inspection report;
- one other secondary with improvements to the building in the English department has seen a steady rise in performance in that subject; and
- in both secondary schools attendance and fixed term and permanent exclusions have improved.

Findings from research

Research¹²

- 38 There have been many studies in the USA on the impact that new or improved buildings have on learner performance. In the UK, there are far fewer studies and those that have been carried out tend to come to the same conclusions as the American studies. The American studies indicate that learner achievement improves with improved building condition. They also indicate that individual factors such as lighting levels, air quality and temperature, and acoustics have an effect on learner behaviour and outcomes, though there is limited quantitative evidence available on some of these factors.
- 39 The main piece of research in the UK was carried out in 2003 by Pricewaterhouse Coopers on behalf of the Department for Education and Science¹³. This study analysed the impact of capital investments on performance through quantitative and qualitative methods.
- 40 For the quantitative analysis, the research considered a wide range of attainment information at key stages¹⁴ 1, 2 and 3, GCSE and A level. The researchers looked at capital investment under three categories of suitability, sufficiency and condition. The research concentrated on three LEAs that together represented a reasonable cross-section of the types of authorities in England. In total, the study included 900 schools, including 700 primary schools and 125 secondary schools. The study looked at investments from 1990 to 1995 and at the levels and changes in performance from 1996 to 2000.
- 41 The researchers compared the performance of those schools that had received some improvements to their buildings or had moved into new buildings with those schools that had not. Researchers also introduced a number of contextual factors such as the socio-economic background of the community served by the school, and the quality of teaching and management. The key findings from the quantitative analysis were that:
- there is a positive and statistically significant link between capital investment and pupil performance;
 - in terms of the different types of capital investment, there is a stronger link with performance where there have been improvements to specific curriculum areas for example the provision of new or improved science laboratories and ICT suites. These have a direct benefit on teaching and learning; and

¹² All research papers are listed in Appendix 1.

¹³ Building Better Performance: an Empirical Assessment of the Learning and Other Impacts of Schools Capital Investment. Research report 407, DfES (2003)

¹⁴ Schools divide the period of compulsory education into the following four key stages. Key stage 1 for pupils aged five to seven; key stage 2 for pupils aged seven to 11; key stage 3 for pupils aged 11 to 14; and key stage 4 for pupils aged 14 to 16.

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- most of the significant evidence concerns primary schools. The researchers conclude that this is probably due to the larger number of primary schools looked at rather than there being a weaker link in secondary schools.

42 For the qualitative part of the study, the researchers conducted interviews in the three local authorities. There were 32 interviewees, including headteachers, teachers, support staff, local authority officers and key stakeholders in the local community. The key findings from this aspect of the study were that:

- improvements to the building enhanced learner performance through increased learner and teacher motivation and better learner behaviour;
- in some cases, a relatively small investment was seen to have a significant impact;
- improvements to buildings alone did not have as much influence on learner performance as other factors, such as the quality of teaching;
- improvements to the buildings brought about little improvement in performance in the least and most well-off areas. In the least well-off areas, interviewees saw that other factors such as social and economic deprivation and limited parental support were more significant. In the most well-off area, interviewees felt that learners would succeed irrespective of the quality of the buildings; and
- improved buildings tended to have beneficial effects on the local community, especially in areas of high economic and social deprivation.

43 In 2005, the University of Newcastle produced a report on the impact of school environments for the Design Council¹⁵. The report states that there is strong evidence that poor environments in terms of air quality, noise and temperature have a negative effect on learners and teachers. However, once the environment has been brought up to minimum standards, the effect is less significant. Some research reviewed in the report found little or no evidence that improvements beyond this minimum standard raises attainment, while other researchers see more extensive improvements as a way of improving attitudes and possible attainment.

44 A small-scale piece of research into the impact of new school buildings in Wales on pupil achievement was carried out by Merthyr Tydfil County Borough Council. The research looked at new primary schools built in Wales since 1996. It showed that in the first year following the opening of the new building, the primary schools achieved an improvement in results of about 10 percentage points and that this compared well to the average for Wales which was 3%. However, the research only concerns new buildings and does not relate performance to socio-economic factors, the proportion of pupils with free-school meals or their attainment in previous year. In addition, other than for two schools, it does not look at the impact of new school buildings over a longer time scale than one year. The study contains useful suggestions about how local authorities should manage the process of moving into a new school as performance appears to drop in the year that a school opens.

¹⁵ The Impact of School Environments: A Literature Review. Design Council (2005)

Appendix 1

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Appendix 2

Attainment in primary and secondary schools

Primary schools

Percentage of pupils achieving core subject indicator at the end of key stage 2

School	2003	2005	Variation +/-
1	53	59	+6
2	71	79	+8
3	33	45	+12
4	51	52	+1
5	64	61	-3
6	70	64	-6
7	54	63	+9
8	44	56	+12
9	70	66	-4
10	49	72	+23
11	49	76	+27
12	69	66	-3
13	54	85	+31
14	41	53	+12
15	31	76	+45
16	54	67	+13
17	49	72	+23
18	54	76	+22
19	55	56	+1
20	75	63	-8
21	56	80	+24
22	66	83	+17
23	94	100	+6
Average variation			+11.6

Secondary schools

Percentage of pupils achieving core subject indicator at the end of key stage 4

School	2003	2005	Variation +/-
1	43	45	+2
2	43	53	+8
3	23	28	+5
4	43	53	+10
5	46	48	+2
6	37	41	+4
7	44	37	+3
8	28	35	+7
9	38	44	+6
10	36	37	+1
11	53	48	-5
12	59	55	-4
13	32	35	+3
14	26	42	+6
15	39	46	+7
16	56	63	+7
Average variation			+3.9

Appendix 3

Achievement in a primary school

Pupils' achievement

School 1

Percentage of grades awarded before and after moving into improved buildings

Inspection	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
1998	0	50	45	5	0
2004	41	55	4	0	0

Grades awarded for each subject before and after moving into improved buildings

Subject	1998 inspection		2004 inspection	
	KS1	KS2	KS1	KS2
Welsh	Good	Good	Very good	Very good
English	N/A	Satisfactory	N/A	Good
Mathematics	Good	Good	Very good	Very good
Science	Good	Good	Very good	Very good
History	Good	Good	Very good	Very good
Religious education	Good	Satisfactory	Good	Good
Geography	Good	Satisfactory	Very good	Good
Information technology	Very good	Very good	Very good	Very good
Art	Very good	Very good	Very good	Very good
Music	Good	Good	Very good	Very good
Physical education	Good	Good	Good	Good
Design and technology	Good	Good	Very good	Very good