

# Department for Education and Skills

## Academies Evaluation

### Annual Report

November 2003



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# 1 Introduction

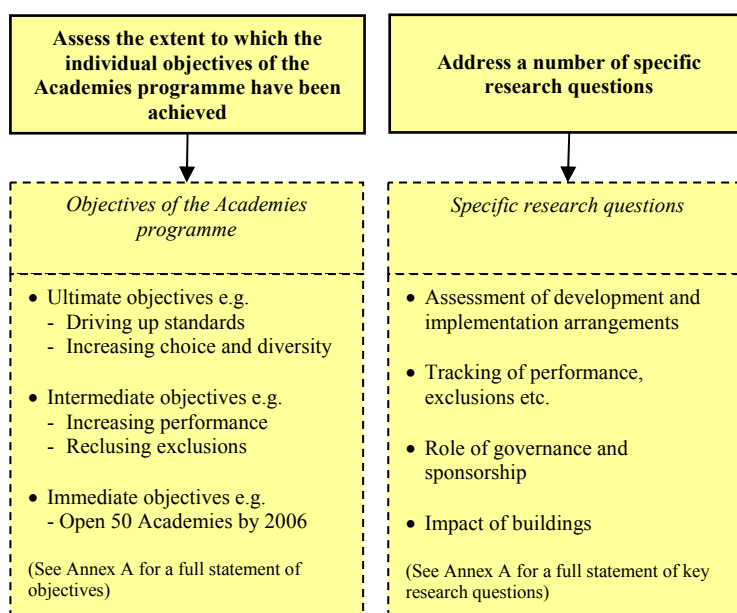
## Background

- 1.1 The Academies initiative was launched by the Department for Education and Skills (DfES) in March 2000 as part of the *Transforming Secondary Education* agenda. Academies form a key part of the Department's drive to raise educational standards through increasing diversity in education. Academies are independent, non-fee paying schools, and generally located in areas of socio-economic disadvantage. Private sponsors contribute up to 20% of funding for the initial capital investment, with the remaining capital and revenue costs being met by the Department.
- 1.2 Although they need to comply with the requirements applicable to maintained schools, Academies have the managerial autonomy to adopt innovative approaches to teaching and learning. This is reflected, for example, in the flexibilities they have with respect to curriculum development, timetabling and governance. The first 3 Academies in the UK were opened in September 2002, and the second *tranche* of nine Academies opened in September 2003. The Department intends that there should be more than 50 Academies by 2006, of which around 20 will be located in London.

## Terms of reference

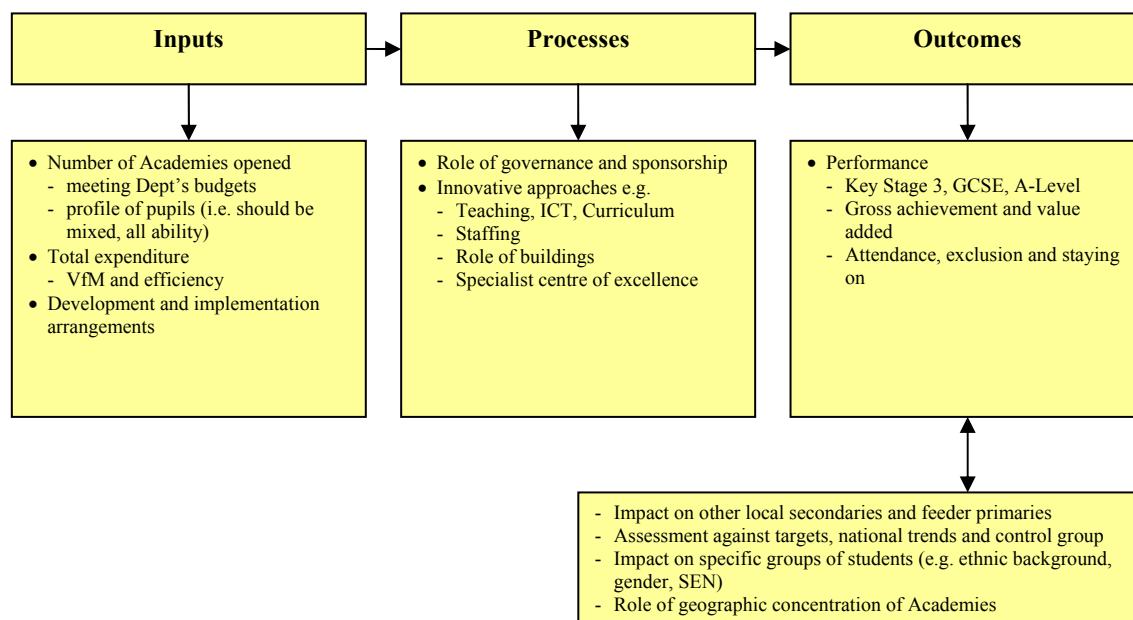
- 1.3 In February 2003, PricewaterhouseCoopers (PwC), in association with the University of York, were commissioned by the Department to conduct an independent evaluation of the Academies initiative. The aim of the evaluation is to assess the overall effectiveness initiative, in terms of its contribution to educational standards and other related outcomes.
- 1.4 More specifically, the evaluation aims to assess the extent to which the *objectives of the Academies programme*, set by the Department, have been achieved. In addition, the evaluation aims to address a number of *specific research questions* identified by the Department. An illustration of these specific objectives of the evaluation is provided in the Figure overleaf, and further detail is provided in Annex A to this Report.

### A summary of the Department's Terms of Reference



1.5 The objectives of the evaluation as outlined above are quite complex, embracing a wide range of diverse and challenging issues and research questions. In our view, and based on discussions with the Department, it is helpful to understand them in terms of the three standard evaluation categories of inputs, processes and outcomes, as illustrated in the Figure below.

### A simple framework for the Department's Terms of Reference



## Scope of Report

- 1.6 This is the first Annual Report to be produced as part of the 5-year evaluation of the Academies initiative. The main purpose of the Report is to outline the progress made with the evaluation to date, and to summarise some of the emerging, and preliminary findings.
- 1.7 It is important to note at the outset that it is too early at this stage to provide any firm answers to the specific research questions identified in the Terms of Reference. In particular, it is too early to provide an evidence-based assessment, even a preliminary one, of the overall effectiveness of the initiative. This is because the initiative as a whole is still in its relative infancy, and the data required to make such an assessment are currently not available.<sup>1</sup> In addition, and with the agreement of the Department, the study team's efforts in the first year of the evaluation have been in relation to background and design-related research.
- 1.8 The present Report therefore should be treated as a background, preparatory document which sets the scene for the main primary research to be conducted in later years, but comes at too early a stage to address the specific research questions identified by the Department. Notwithstanding this, it is envisaged that preliminary, indicative findings in relation to the impact of the Academies initiative will begin to emerge from mid-2004 onwards.<sup>2</sup> The research conducted during the first year will ensure that such findings have a robust intellectual and methodological basis, and can be generated very quickly, as soon as the data become available.

## Structure of Report

- 1.9 The structure of this Annual Report is as follows:
- Section 2: Progress to date;
  - Section 3: Literature review;
  - Section 4: Establishing a baseline for Academies; and
  - Section 5: Conclusions and way forward.
- 1.10 In addition, the Report contains five Annexes, all of which provide more detailed information for reference, and are as follows:
- Annex A: Terms of reference for evaluation;

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<sup>1</sup> For example, even in relation to the 3 Academies which opened in 2002, the first batch of pupil-level performance data for pupils who sat GCSEs in the summer of 2003, are not due to become available until January 2004.

<sup>2</sup> This will be based on an analysis of pupil-level performance data for the 3 Academies which opened in 2002, along with quantitative and qualitative data from the first set of fieldwork visits to be conducted early in 2004.

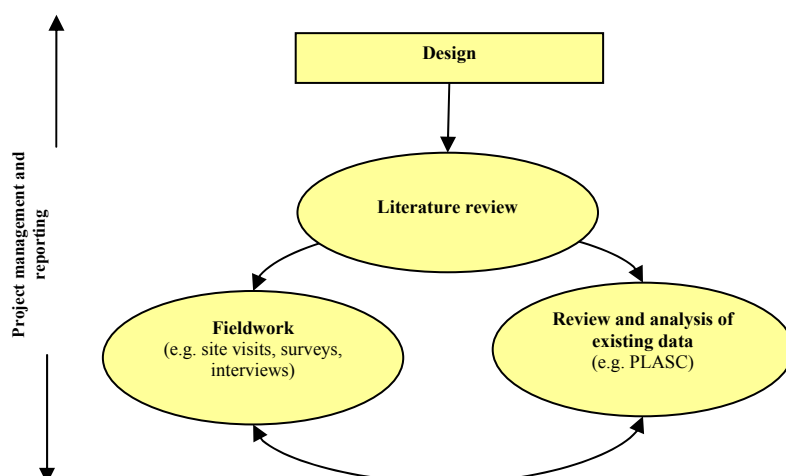
- Annex B: School improvement and educational innovations: a review of the literature;
- Annex C: Assessing value added in education: a review of the technical literature;
- Annex D: Predecessor baseline data; and
- Annex E: Survey instruments and fieldwork schedule.

## 2 Progress to date

### Overview of approach

- 2.1 An overview of the main research activities to be used in each year of the evaluation is provided in the Figure below. This section describes the progress which has been made in relation to each of these activities.

#### Key stages in the evaluation



### Design

- 2.2 Significant effort has been spent during the first year of the evaluation in designing the research methodology and research instruments. Amongst the key design-related activities are the following:

- An initial development of the approach to be adopted to the **fieldwork**, e.g. agreement of approach in relation to tracking pupils over the course of the evaluation, the number of fieldwork visits to be conducted and, within these, the number of surveys / interviews to be conducted in each. The main outcomes of this work were set out in detail in our Implementation Paper (April 2003);
- Development of **research instruments**, in terms of separate topic lists to be used in each of the interviews undertaken as part of the site visits, and 3 questionnaires to be administered, respectively, to pupils, parents and teachers. All research instruments are provided at Annex E to this Report;
- Development of an **e-portal** facility to be used by the fieldwork team for inputting, managing and analysing the fieldwork data and, in principle, to be used by the Department in managing the evaluation process. A meeting to discuss the use of the e-portal in the research was held on 10th November 2003;

- Development of thinking in relation to the **technical approach to multivariate modelling** to be used in the estimation of educational value added (presented in our Technical Paper, June 2003); and
- Working closely with the Department to refine the specification of the research activities to ensure that it was consistent with **Star Chamber** requirements. Star Chamber approval for the research to proceed was given in October 2003.

## Literature review

2.3 Two major literature reviews have been conducted during the first year of the evaluation:

- The first discusses the findings from existing **national and international studies on innovation and school effectiveness**; and
- The second provides a methodological critique of **technical studies** which have used multivariate modelling techniques to estimate educational value added.

2.4 These literature reviews are presented in full in Annexes B and C to this Report.<sup>3</sup> In addition, a regular trawl has been undertaken by the study team of local and national press articles relating to Academies. These have been included for reference in a single document, referred to by the study team as **AcademEdia**, containing 164 separate articles.

## Review and analysis of existing data

2.5 The study team have developed a large-scale, quantitative database on Academies, their predecessors and other schools in England. There are two main elements to this database:

- **School-level data**; drawn from existing published sources and relating to, for example, academic performance of predecessors over the 1990s, pupil numbers etc; and
- **Pupil-level data**; the Department provided the study team, in the autumn of 2003, with some centrally-held, pupil-level data from the National Pupil Database. This was drawn from PLASC and contained information on, for example, Key Stage 3 results in all predecessors (along with all other schools in England), and prior attainment (Key Stage 2) for pupils who sat their GCSEs in Academies or their predecessors in 2003.

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<sup>3</sup> Note that a Literature Review Summary Paper was prepared in July 2003. This summarised some of the early messages from our work, in order to provide the Department with an indication of the kind of messages which would be likely to emerge from the main literature reviews.

- 2.6 An initial analysis of this information has been presented and discussed in Section 4 of this Report, and more detailed school-by-school data are provided in Annex D to the Report.

## Fieldwork

- 2.7 No actual fieldwork has been conducted to date. The first round of fieldwork visits to 12 Academies and 3 predecessors will take place early in 2004.<sup>4</sup> However, a number of preparatory fieldwork activities have been undertaken, in particular:
- Two **fieldwork briefing sessions** have been held for the study team's fieldworkers, one in May 2003 and one in October 2003. The purpose of these sessions was to provide background information on the Academies initiative to the wider fieldwork team, and set out precisely what fieldworkers were expected to do as part of the site visits. A representative from the Department attended the October briefing session; and
  - The development of a **background information template** for each Academy. This is a single source of useful information in relation to each Academy, e.g. contact names / numbers for headteachers, sponsors and governors, performance information relating to predecessor schools etc. It will be used primarily by the fieldwork team as the single repository of background information before, during and after the fieldwork visits. Twelve such templates for the twelve Academies which are currently open, partially populated, have been sent to the Department under separate cover for review.

## Project management and reporting

- 2.8 Since the Implementation Paper was submitted in April 2003, **working group meetings** have been held between the study team and the Department approximately every six weeks. After each of these meetings the study team have produced **Progress Reports**, summarising progress to date and the key agreed actions. Five such reports have been produced to date.
- 2.9 In addition to the Progress Reports and other correspondences, the following main reports have been generated during the first 10 months of the evaluation:
- **Implementation Paper (April 2003)**; this further developed the methodological approach outlined in the original proposal for the assignment, and discussed in detail a range of issues relating to sampling, fieldwork, and quantitative data analysis;

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<sup>4</sup> The joint decision not to undertake any fieldwork during 2003 was based primarily on a desire to minimise, for new Academies the burden associated with participating in the research. For reference, we have included, in Annex E, details of the 12 Academies and 3 predecessor schools to be visited in 2004.

- **Technical paper (June 2003)**; this discussed a range of technical and methodological issues relating to the quantification of educational value added;
- **Literature review summary (August 2003)**; this provided an early indication of the high-level findings from the literature reviews; and
- **Annual Report (November 2003)**; the current Report, providing a summary of all of the main developments and activities since the beginning of the evaluation.

## 3 Literature review

### Introduction

3.1 An important part of the evaluation has involved conducting in-depth reviews of existing literature. In line with the Department's original Terms of Reference, the literature review has focused on two key areas as follows:

- **Evaluation findings on school change, innovation and effectiveness;** this provides an overview of the findings from international studies which have examined the role of factors such as sponsorship, leadership, staff selection and school buildings, all of which represent important elements of the Academies initiative (see Annex B); and
- **Technical approaches to modelling value added in education;** this examines existing evaluation studies which have involved multivariate modelling of school and pupil performance. The focus is on the technical approaches used in the literature to estimate educational value added, and on drawing lessons from these studies for the technical approaches to be used in the Academies evaluation (see Annex C).

3.2 In the Annexes to this Report we have provided complete reviews of the literature in each of these areas. The purpose of this Section is to summarise the key findings from all of the literature in-so-far as they are relevant for the Academies initiative, and the evaluation being undertaken. The Section is structured under the following headings:

- Sponsorship;
- Choice, markets and school selection;
- School buildings and design;
- The experience of Charter schools in the US;
- Innovation;
- Leadership;
- Teachers and support staff;
- Community involvement; and
- Technical and modelling issues.

## Sponsorship

- 3.3 One of the most important defining features of Academies relates to the involvement of the sponsor in, for example, the provision of funding, curriculum development, and recruitment and retention of staff. This is consistent with a broader policy thrust in the UK of allowing schools additional financial and operation freedoms via the introduction of ‘quasi-markets’ in education. It also reflects broader DfES strategies relating to partnership arrangements between schools (e.g. Beacon Schools and more recently Federations), and between schools and the wider community (e.g. other education institutions – AimHigher; business - Specialist Schools; and the community - Extended Schools).
- 3.4 There is an extensive literature, largely North American, which examines the benefits of, and potential limitations to, private sector involvement in educational provision. Broadly speaking, three main types of sponsorship have been examined:
- **Sponsorship as ‘commerce’**; i.e. sponsorship directed at capturing the ‘hearts and minds’ of school children as potential consumers, and for which there is strong motivation for potential commercial gain. The direct marketing of food and soft drinks in schools is a good example of this type;
  - **Sponsorship as ‘gift’**; i.e. sponsorship that is intended to provide small-scale support to schools in money or kind, with no expectation of financial commercial gain or benefit from the sponsor or business partner; and
  - **Sponsorship as ‘returnship’**; i.e. sponsorship which is viewed in terms of sponsors seeking to invest in schools as a way of putting back into the community.
- 3.5 Our review has examined the key features of each of these models and draws out some of the relevant implications, including:
- **The clear benefits of private sector involvement**; in principle, private sector involvement can bring clear benefits to educational provision. Examples of such benefits include bolstering the school’s physical infrastructure, provision of services (e.g. legal, managerial), providing support and training for professional development, and enhancing the curriculum and the market focus of learning. Such benefits are most evident when the motivation for private sector involvement can be described as ‘purely’ philanthropic, i.e. the second two forms of private sector involvement outlined above;
  - **Understanding and managing the potential downsides of private sector involvement**; however, the literature also provides some evidence to suggest that in order to secure these benefits, the parameters for private sector involvement need to be clearly understood by all stakeholders at the

outset. Indeed, if this is not the case, it is possible for private sector involvement to have some downsides including:

- *Funding substitution*; private sector injection of cash has sometimes been used as a substitute for mainstream public funding;
- *Crude marketing and brand promotion*; the research demonstrates a widespread aversion amongst stakeholders towards private companies advertising goods or services, directly or indirectly, within a school environment;
- *Detrimental impact on teacher workload*; there is also evidence for a need to balance workload factors associated with partnership work, to ensure that time and resources spent in developing business partnerships are not taken from core teaching and school leadership duties;
- **Shifting the parameters of engagement towards long-term education – business partnerships**; there is a discernable move internationally towards engaging businesses and private sponsors in shared responsibilities which involve long-term commitments, rather than facilitating occasional ‘forays’ by business into the educational ‘space’. Related to this is an increased recognition of the ‘win-win’ in education-business partnerships, i.e. that business partners have the potential to bring a wide range of benefits to schools, and that schools, in turn, can bring a range of benefits to businesses; and
- **Understanding the ‘rules of engagement’**; the international experience highlights the need to balance the input of the sponsor with the overall leadership of the school. In particular, there needs to be a recognition of the importance of the role of the principal and the staff in creating the vision and working with the sponsor / business partner to achieve the overall aims of the school.

## Choice, markets and school selection

3.6 The last three decades have been an era of unprecedented change in the UK education system, with a myriad of reforms designed to counteract the perceived failure of the system. The underlying objective behind many of these reforms was to create a ‘quasi-market’ in the provision of publicly-funded education. This was done through, for example, delegating financial management and the appointment of staff to the governing bodies of schools, granting more choice for pupils and parents, and introducing more accountability into the education process (through the inspection regime introduced in the 1988 Education Reform Act). Academies are one of the most recent manifestations of this on-going policy with the requirement of obtaining private sponsorship, and being allowed to select 10% of pupils based on aptitude.

3.7 These UK developments are consistent with similar developments in, for example, Australia, New Zealand and the US (e.g. state sponsored voucher programmes and the development of Charter schools are two good examples). Enhancing choice, specialisation and diversity are all seen, therefore, as key policy imperatives, and as ways in which the state can respond to the needs of different students and their communities. Such moves have generated a significant research literature on the impact of ‘quasi-markets’. Amongst the key findings to emerge are the following:

- **Evidence on the net effect of ‘quasi-markets’ is finely balanced;** for example, in one US study on Charter schools it was found that every educational district reported impacts from Charter schools and made a series of corresponding changes in district operations and / or the district educational system. Specifically, nearly half of the district leaders perceived that Charter schools had negatively impacted on their budget. On the positive side, however, the introduction of Charter schools meant that districts and other non-Charter schools were becoming more customer services orientated, increasing their marketing and public relations efforts through increased communications with parents;
- **Some evidence of a detrimental impact on social stratification and diversity;** there are significant concerns in the research literature about the extent to which ‘quasi-markets’ can contribute to the development of a two-tier system which results in an increase in stratification of students by social class. For example, some studies have suggested that middle class families tend to be more proactive in seeking what they consider to be the best school for their children, and they can use their ‘cultural capital’ to secure school places. Such concerns have already been expressed in relation to Academies, and addressing this issue is an important priority for the evaluation;
- **Wide range of factors influencing parental choice;** in choosing schools, the research suggests that parents tend to be influenced most by geographical and social factors, e.g. proximity and discipline, and the general reputation of the school, than by educational considerations, e.g. the curriculum and teaching methods. However the evidence also suggests that some parents tended to rely on rather limited and second-hand information about the schools concerned. Within the context of Academies, we will examine how enrolment patterns, and the associated performance, change in predecessor and neighbouring schools. We will also explore the extent to which parents, who did not see the predecessor school as an option for their children, see the new Academy as a viable option; and
- **Impact of open markets on teaching and educational management;** the evidence shows that competing in the marketplace can absorb headteacher and teacher time into non-teaching activities associated with marketing and profiling the school to prospective pupils and their parents.

## School buildings and design

- 3.8 Innovative design is a central feature of Academies. Academies will have either total new builds or major refurbishments. More widely, Government has pledged substantial funds over the next 15 years to completely rebuild and renovate all secondary schools in England through the *Building Schools for the Future* initiative. Understanding the international evidence is important in terms of assessing the benefits of good Academy design, and also in terms of informing policy makers more generally of the likely potential impacts of capital spend on pupil attainment.
- 3.9 Since the late 1990s the Department has commissioned some significant research work in this area, part of which has involved reviewing the relevant international evidence.<sup>5</sup> Amongst the key findings to emerge from the existing literature are:
- **Design as a factor in re-shaping the ‘grammar’ of secondary schooling;** many of the challenges associated with innovative school design require re-thinking, in the words of one leading researcher, the 'grammar' of secondary schooling. Traditional curricular, pedagogical and social arrangements for secondary schools represent enduring ways of how teachers teach and students learn in secondary schools. These traditional approaches have historically been powerful influences in defining school spaces and their uses, and have been used as benchmarks for costing and planning new schools. The recent literature provides evidence of significant new thinking, which places discussion of school design issues firmly in the context of new visions about the form and content of education;
  - **Considerable qualitative evidence on the link between good design and school performance;** the school improvement literature provides some clear evidence of a positive relationship between school design and pupil performance, although this has to be seen within the context of a wide range of other factors which also impact on performance (e.g. leadership, teaching quality etc); and
  - **Emerging quantitative evidence for the UK;** within a UK context, there is some evidence from the Department’s *Building Performance* research of a positive and statistically significant relationship between capital investment and pupil performance. The most important positive evidence is in relation to suitability-related spending, i.e. investment which is focused directly on facilitating the teaching of the curriculum, e.g. ICT suites, science laboratories etc.

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<sup>5</sup> See, for example, *Building Performance: an empirical assessment of the relationship between schools capital investment and pupil performance*, Research Report RR242, January 2000; *Building better performance: an empirical assessment of the learning and other impacts of schools capital investment*, Research Report RR407, March 2003. Both reports prepared by PwC on behalf of DfES and available on the DfES website.

## The experience of Charter schools in the US

3.10 Charter schools in the US are quite a close parallel to Academies in the UK. Charter schools have been running for over a decade. As such, there is a significant amount of evaluation evidence containing, in our view, some interesting messages for Academies:

- **Significant evidence of innovative use of new technologies in Charter schools;** the Charter school movement has given rise to an extended use of technology as part of the mainstream curriculum. Perhaps the most ambitious example of this is ‘e-Charter’, which provide a range of distance learning models for pupils who would otherwise not be in school, or whose parents choose to supplement existing programmes and courses by accessing e-courses. Although these programmes are not without their critics, they represent one of a number of examples from the Charter school programme, of how web-based learning options can be used to expand curricular options and extend more flexible learning approaches to young people;
- **The limitations of autonomy in generating innovation in teaching and learning;** in principle, greater autonomy should have freed up school managers and teachers in Charter schools to do radical and innovative things, particularly in relation to curriculum development. The experience from Charter schools has been, however, that they have only had a modest impact on curricular innovations. In particular, when public schools were converted to Charter schools, they seemed to have difficulty breaking free from established models of teaching and learning;
- **Stakeholder feedback generally high;** existing evaluations of Charter schools provide very positive survey-based feedback from teachers, parents and pupils. It will be interesting to compare these US data with similar data for Academies in the UK, and to assess how satisfaction levels change in relation to Academies over the five years of the evaluation; and
- **The importance of a rigorous accountability framework;** Charter schools are required to engage in a rigorous accountability process, which is managed by ‘authorising’ bodies (e.g. local government agencies, higher education institutions, or other special Chartering agencies), and involves formal applications, pre-contract negotiations, ongoing monitoring and regular contract renewal. In relation to Academies, the authorising role is currently being performed by the Department, raising the question of the extent to which this role is sustainable in the longer term, as the initiative develops and increases in scale.

## Innovation

3.11 It is expected that Academies will become exemplars of best practice in relation to innovation in teaching and learning. The wider evidence on innovation in teaching and learning raises a number of specific issues which are relevant for Academies:

- **Innovation means different things in different contexts and settings;** the definition of innovation in schools is contested and local; what appears innovative in one setting might be quite conventional in another;
- **Existing schools' structures, policies and practices influence innovation and change;** the so-called 'grammar' of schools, along with the requirement to participate in national curricula and external examinations have, in other contexts, exerted a powerful force in constraining schools' capacity for innovation;
- **Greater flexibility and autonomy do not automatically ensure innovation;** when given additional flexibility and greater autonomy, some schools actually return to 'traditional' values and implement a curriculum with a strong emphasis on 'back to basics';
- **Innovation in secondary schools requires an understanding of the unique needs of young adolescents;** innovation in secondary schools is increasingly requiring schools to be more responsive to the needs, interests, learning styles and local contexts of young adolescents. There is strong evidence to suggest that traditional pedagogies and curricula alienate some students from school, and are a contributing factor in students' disengagement from education; and
- **Innovation and change requires time, support and active involvement;** innovation takes time, and is most successful when the principal, staff and community share the vision and actively participate in the processes for defining and implementing the innovation.

## Leadership

3.12 Strong leadership is widely recognised as one of the key drivers which will underpin the success of the Academies initiative. Wider policy developments in the UK have stressed the importance of effective leadership in schools as being one of the key drivers of change for achieving better pupil performance. This has been reflected, for example, in the allocation of substantial resources to the Leadership Incentive Grant and setting up the National College for School Leadership. Such UK developments are consistent with a clear focus on the role of leadership in school improvement in the national and international research literature. Amongst the key 'high level' findings in this literature are the following:

- **Effective leadership is a prerequisite for effective schools;** leadership is generally recognised as a key factor in stimulating school effectiveness, and implementing major systemic change;
- **The importance of learning-focused leadership;** the evidence suggests that effective leaders have a clear focus on learning outcomes, and have a strong belief that all students can be successful learners. They are intuitive about what is important to teachers, students and the community and make careful judgements about what is needed to achieve the schools' goals; and
- **High impact of collaborative leadership models;** the evidence suggests clearly positive impacts from leadership models which involve teachers and middle managers.

## Teachers and support staff

- 3.13 Academies will recruit new teachers to new schools, and will have increased flexibilities generally in relation to recruitment and retention. There is increasing evidence that shortages in the teaching workforce in the UK are not solely due to the financial incentives (or disincentives) associated with teaching. More particularly, especially in many of the areas where Academies are located, there is evidence to suggest that issues such as pupil behaviour and lack of resources are instrumental in the high attrition rates from teaching. It is therefore unclear as to whether Academies will assist the wider agenda of school collaboration (e.g. Federations and Beacon Schools) or, actually, act as a constraint on the collaboration agenda by increasing competition between schools for a limited supply of teachers and support staff.
- 3.14 The role of teachers and support staff in new schools has been researched extensively, and amongst the key findings are the following:
- **Teachers and teaching ‘under the spotlight’ in new schools;** studies of new schools indicate that unions, politicians, the wider community, neighbouring schools and educational researchers all take an interest in examining what is happening in new schools. Teachers in the new schools have often, therefore, found themselves under significant pressure as outsiders look in;
  - **Evidence of attrition in enthusiasm and innovation in new schools;** new schools often begin with a strong sense of purpose, high levels of collegiality, dedication, motivation and staff morale. Over time, evidence from other countries suggests that this can wane. Linked to this, the wider evidence suggests that new schools have often seen teachers investing a good deal of their own time in the early stages of school development, but that this is not sustainable in the longer term;
  - **Critical success factors for sustaining high quality teaching standards in new schools;** amongst the factors which the literature identifies are the following:

- Careful selection, by headteachers, of teachers to the new school;
- Commitment to appraisal, feedback and ongoing professional development for teachers;
- Maintaining a focus on teaching – i.e. guarding against overly burdensome administrative responsibilities; and
- Promoting collaboration and sharing of good practice between teachers.

## Community involvement

3.15 A central part of the vision for Academies relates to their role in the wider community. There is a significant international research literature in this area, and amongst the key relevant findings are the following:

- **Community participation in school life as a prerequisite for school improvement;** there is a significant amount of evidence, particularly from the US and Australia, to suggest that active participation by parents and the wider community in schools, can be one of the key drivers of school improvement; and
- **Moving towards new models of the school as a ‘learning community’;** in much of the recent literature there is a clear move towards redefining the school as a ‘community of learners’, which includes pupils, teachers, parents, members of the wider community. The focus, therefore, is not only on the attainment of pupils, but also on the role of the school in encouraging learning and collaboration amongst a wider group of stakeholders. This concept is consistent with the ethos underpinning the Academies initiative, and it will be important for the evaluation to assess the extent to which the reality ‘on the ground’ is consistent with it.

## Technical and modelling issues

3.16 We have conducted an extensive review and critique of the technical literature which has involved multivariate modelling of value added in education (see Annex C). The main purpose of this review was to identify the lessons which could be learned for the methodological approaches to be adopted in relation to the Academies evaluation. Amongst the key high-level findings are the following:

- **Level of data analysis;** the existing literature shows that there are some merits in analysing school-level data, particularly from a descriptive point of view. However, in terms of estimating value added, the evidence shows that analysis of school-level data can lead to biased coefficient estimates. Therefore, value added analysis based on *pupil*-level data is much preferred;

- **Subject-level aggregation of pupil performance measures;** existing studies have shown that there can be significant variation in the school-level impact on performance of pupils in individual subject areas. In the evaluation of Academies, therefore, we need to examine the impact on aggregate-level performance, *and* the performance of pupils in individual subject areas;
- **Addressing endogeneity issues;** many existing studies have produced biased parameter estimates because the performance of the school is likely to have an impact on some of the key explanatory variables (e.g. quality of teaching staff, school resources). This creates an ‘endogeneity’ problem, since the direction of causation between dependent and independent variables in the model can, in principle, run ‘both ways’. In order to eliminate the endogeneity problem in the analysis of Academies, the multivariate models need to concentrate on pupil progress from KS2 to GCSE, with scope for a supplementary analysis of progress from KS2 to KS3;
- **Benchmarking school-level impacts;** in existing pupil-based, multi-level models of value added, the estimated size of the school effect, i.e. the impact of factors that affect all children who attend the same school, averages at around 10%, but can be as high as 25%. This provides a useful benchmark against which the impact of the school-level Academy effect can be assessed;
- **Choice of modelling technique;** in the existing literature, three main technical approaches have been used to model the value added impact on educational attainment, namely (a) multi-level models, (b) Ordinary Least Squares (OLS), and (c) non-parametric approaches. The main advantages and disadvantages of each of these methods are outlined in the Table overleaf. In terms of the evaluation of Academies, the multi-level and OLS approaches have significant advantages over non-parametric approaches. In addition, our analysis of the evidence suggests that multi-level modelling will also have some significant advantages over OLS in the evaluation of Academies (e.g. it explicitly recognises the hierarchical nature of the data);

### Relative advantages and disadvantages of alternative estimation procedures

Technique	Advantages	Disadvantages
Multi-level models	<ul style="list-style-type: none"> <li>• Acknowledge explicitly the hierarchical nature of the data.</li> <li>• Parameter estimates (of fixed effect coefficients) are unbiased.</li> </ul>	<ul style="list-style-type: none"> <li>• Estimates of school-level random effects are biased if a shrinkage factor is used.</li> <li>• Iterative Generalised Least Squares procedure can be instable in some circumstances.</li> </ul>
Ordinary Least Squares	<ul style="list-style-type: none"> <li>• Parameter estimates (of fixed effect coefficients) are unbiased.</li> </ul>	<ul style="list-style-type: none"> <li>• Standard error of parameter estimates is generally underestimated, and may therefore lead to a more optimistic view about statistical significance of parameters; underestimation of standard errors is greater, the greater is the intra-school correlation between value added residuals, and the greater is the number of pupils per school</li> </ul>
Non-parametric approaches	<ul style="list-style-type: none"> <li>• Does not require an explicit model to be formulated or parameters to be estimated.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil progress has been shown to depend upon several systematic factors, such as gender and disadvantage. It is therefore important to take these into account when comparing pupils and schools. Under a non-parametric approach, it is difficult to simultaneously control for several explanatory factors, and test their statistical significance.</li> </ul>

- **Explanatory variables;** existing studies have included a wide range of pupil-level and school-level variables:
  - **Pupil-level:** e.g. prior attainment in English, Maths and Science, gender, SEN, EAL, FSM, previous junior school (if available), measures of socio-economic disadvantage;
  - **School-level:** e.g. range of context variables (e.g. % entitled to FSM, average KS2 pupil intake, average class size, expenditure per pupil), participation in policy initiatives such as EAZ, EiC;
- In terms of the evaluation of Academies, we need to develop a parsimonious model which includes these, and other, pupil and school-level variables as explanatory variables;
- **Control groups;** Propensity Score Matching can, in principle, be used if it is possible to select other schools which have a similar probability of becoming an Academy (e.g. schools from similar socio-economic circumstances, or with similar levels of prior attainment for its pupil

intake). A value added regression-adjusted conditional difference-in-differences matching estimator provides an alternative approach that is valid under weaker assumptions than Propensity Score Matching. The control group for use in the analysis of value added of Academies should be selected using Propensity Score Matching based on average KS2 intake scores, and the existing DfES list of possible Academies. A value added regression-adjusted conditional difference-in-differences matching estimator can provide a complementary approach to generating a benchmark against which the progress of the Academies can be compared; and

- **Functional form;** the estimates of value added may vary with the precise functional form chosen for the educational production function. Possible functional forms, all of which have been used in the existing literature, include a logistic, Cobb-Douglas, translog or logarithmic-reciprocal form. There are advantages and disadvantages associated with using each of these functional forms. Generally speaking, the logistic function is suited to examination performance where there is an upper and lower limit to pupil performance. The logarithmic-reciprocal function can closely approximate the logistic function using simpler estimation procedures. In terms of the evaluation of Academies, this implies that it will be wise to test a range of possible functional forms to assess the sensitivity of the results to the choice of functional form.

## 4 Establishing a baseline for Academies

### Introduction

4.1 A key part of the evaluation process involves understanding the baseline position of the new Academies and their predecessor schools, in particular in relation to factors such as pupil performance at GCSE and KS3, the prior attainment level of their pupil intake at KS2, special educational needs, and pupil absences. Establishing the baseline position of the new Academies and their predecessor schools will help facilitate the following important evaluation tasks:

- **Understanding the constituency;** planned and existing Academies represent a growing and high-profile group of schools that seek to make positive educational progress compared to their initial baseline position. Understanding the nature of this baseline position will help to identify both the common features of the constituency of schools and pupil intake that come within the Academy programme, and the extent of the diversity of circumstances that exist within this group. This, in turn, will assist in the evaluation of the challenges which Academies face in tackling the circumstances associated with their initial baseline position;
- **Assessing impact and additionality;** an evaluation of the impact of Academies over time in making educational progress needs to be clearly related to the baseline position of the schools when, and before, they opened. The principle of additionality means that their educational progress must be assessed relative to the benchmark of their baseline position, as well as taking account of other national trends which may have been impacting on all schools over time; and
- **Establishing control groups;** control groups of schools, which will be used in the technical modelling work, need to have pupils with broadly similar characteristics to those which Academies inherit. Establishing the baseline position of the Academies and their immediate predecessor schools is the main route to determining the choice of an appropriate control group of schools.

4.2 The monitoring and profiling of Academies and their predecessor schools will be a continuing task during the evaluation process. At this stage, we have conducted an initial profiling exercise, based on:

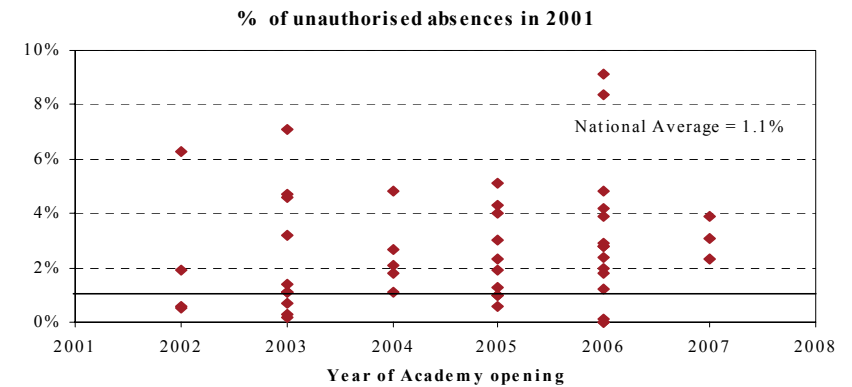
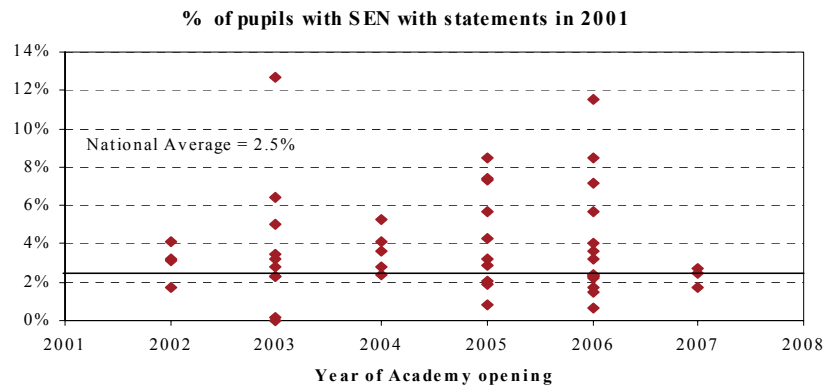
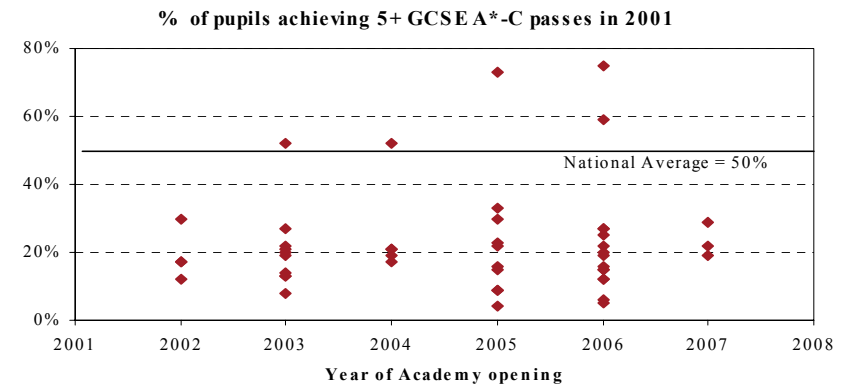
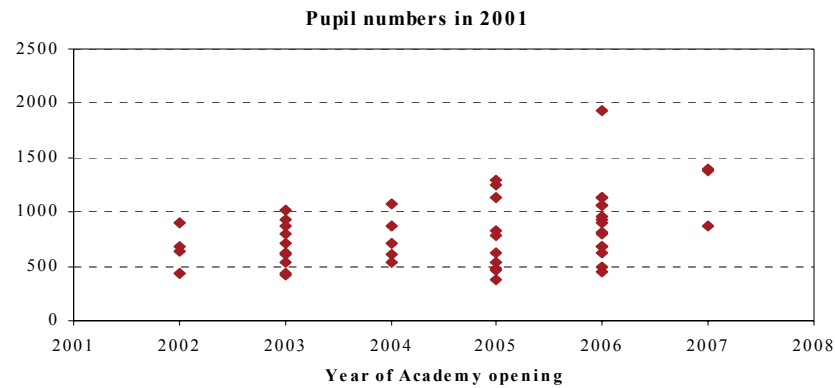
- **School-level data;** including data on school-level pupil performance, absences and special educational needs; and
- **Pupil-level data;** including pupil-matched KS2 prior attainment data from the National Pupil Dataset for pupils who took GCSEs in 2003 in Academies or predecessor schools in 2003.

- 4.3 The main purpose of this Section in the Annual Report is to summarise the key findings from the quantitative baselining work which has been conducted to date as part of the evaluation, and to set out the implications for the evaluation moving forward. All of the ‘raw’ data, upon which the analysis is based, are set out in detail, on a school-by-school basis, in Annex D of the Report.

### Summary of key findings

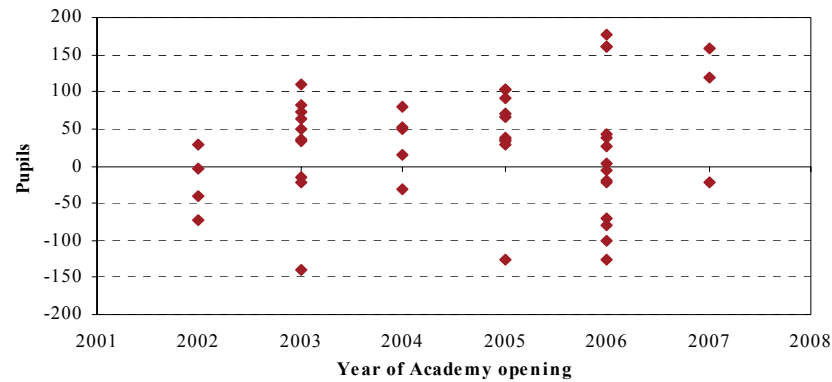
- 4.4 Amongst the key findings to emerge from this initial profiling exercise are the following (data are presented in the three sets of Figures overleaf):
- **Diversity within the predecessor group**; i.e. there is quite a wide spread in relation to all of the indicators examined. For example, of the Academies which opened this year, there is a fairly even spread of GCSE performance between 10% and 30% (of pupils achieving A\*-C), and one predecessor which actually performs better than the national average, at more than 50%. Similarly large ranges are also evident in relation to other key indicators, for example, unauthorised absences, and SEN;
  - **Not all predecessor schools have been under-performing**; a small number of higher performing schools, such as Dixons City Technology College in Bradford and Haberdashers’ Aske’s Hatcham College in Lewisham, are included within the predecessor group for a few planned Academies;
  - **Improvement in performance in several predecessors, though deteriorations in others**; some predecessor schools have shown significant improvements in educational performance in recent years. However, several other predecessor schools have had significant deteriorations in their educational performance in recent years, with many mixed results elsewhere;
  - **Some predecessors have been contracting, whilst others have been expanding**; it is quite finely balanced in terms of the number of predecessors in which enrolments are increasing, and the number in which enrolments are decreasing;
  - **Pupil prior attainment at KS2 is significantly below the national average in most predecessor schools**; e.g. all existing Academies, as well as those to be opened next year, have KS2 results for their current GCSE pupils below or equal to the national average; and
  - **Current Academies have a more challenging pupil intake**; KS2 performance amongst current GCSE pupils in existing Academies is generally, and significantly, lower compared to those Academies which are due to open next year and thereafter.

### Levels of performance and other indicators

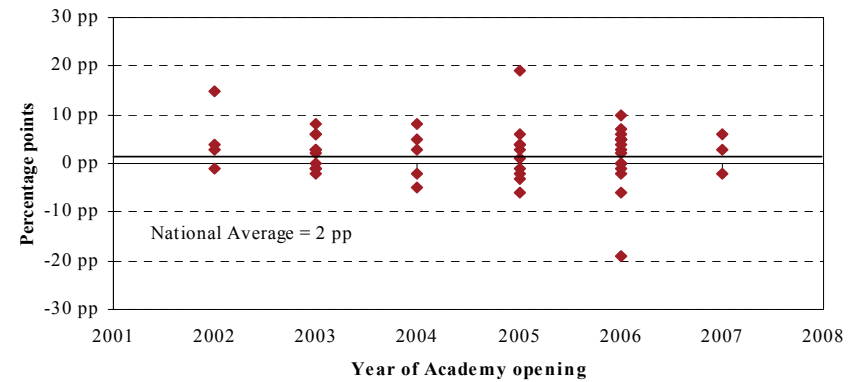


### Changes in performance and other indicators

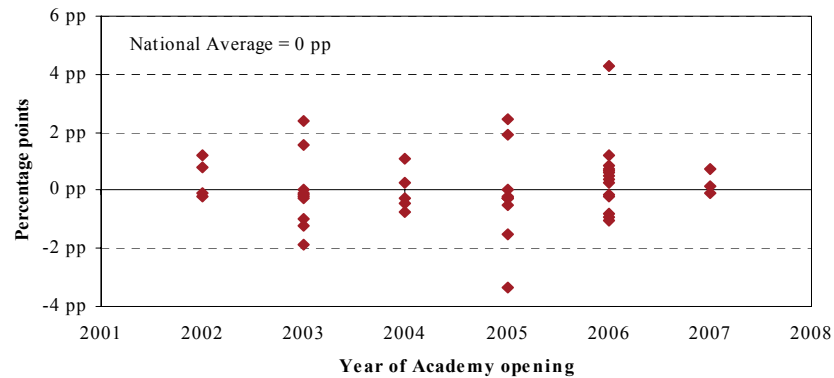
*Change in pupil numbers (1999 - 2001)*



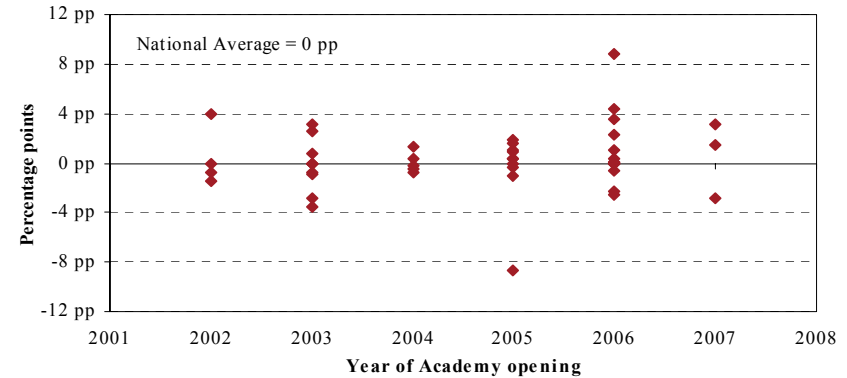
*Change in % of pupils achieving 5+ GCSE A\*-C passes (1999 - 2001)*



*Change in % of pupils with SEN with statements (1999 - 2001)*

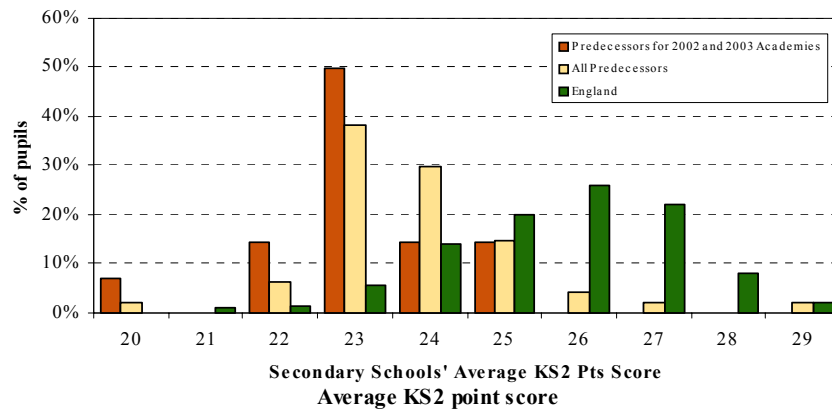


*Change in % of unauthorised absences (1999 - 2001)*

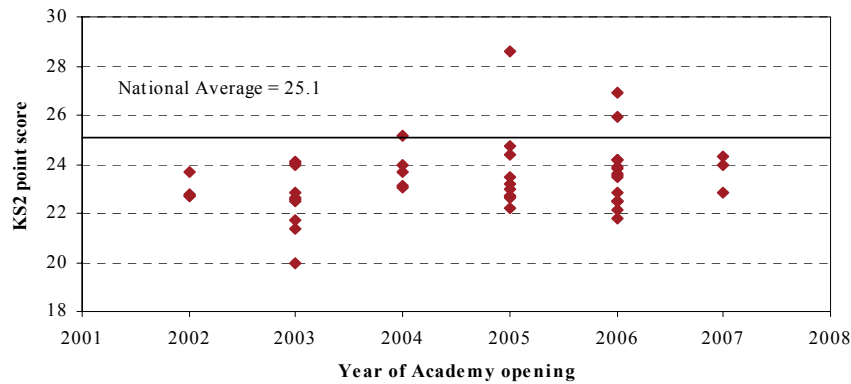
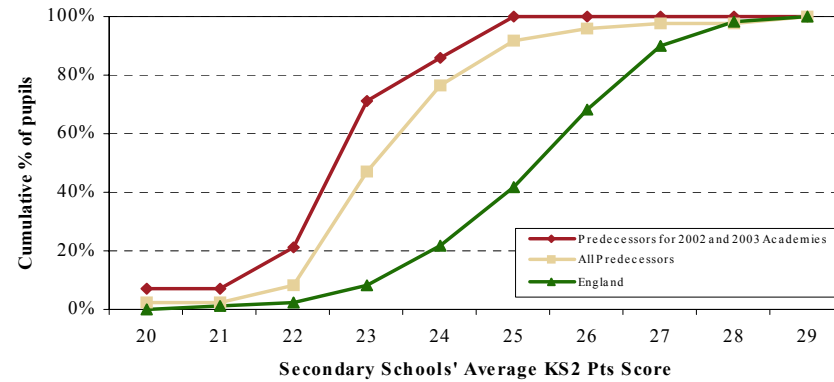


### Pupil prior attainment (Key Stage 2)

Prior attainment - absolute distribution



Prior attainment - cumulative distribution



\* Note: all figures relate to KS2 results for pupils who took GCSEs in 2003 in either Academies or predecessors. This means that the KS2 tests were those which were sat in 1998.

## Implications for further evaluation work

- 4.5 There are a number of implications of this initial profiling exercise for the evaluation moving forward:
- The need to **monitor** how each open Academy or predecessor school's profile changes in each subsequent Annual Report;
  - The need for **fieldworkers** to fully understand profiles of predecessors when visiting open Academies and predecessor schools;
  - The need to recognise both **common features** and **some degree of diversity** in the constituency of Academies and their predecessor schools;
  - As noted above, a predominant feature of most predecessor schools is the relatively low KS2 prior attainment level of their pupil intake. As recommended in the technical part of our literature review, KS2 prior attainment level could form a key variable for the **selection of the control groups**; and
  - In order to take the pupil prior attainment levels into account, alongside other relevant variables, **value added modelling** based upon the pupil-level database that has been constructed can form the basis of the next stage of the evaluation process.

## 5 Conclusions and way forward

### Conclusions

- 5.1 This Report has provided an overview of the key findings emerging during 2003 from the evaluation of the Academies initiative. As recognised at the outset, it is too early at this stage in the evaluation to provide a judgement, even a preliminary one, about the overall effectiveness of the initiative. In this context, this Report needs to be considered as a background, preparatory document, which paves the way for the substantive research activities to be undertaken in later years. In particular, the research undertaken this year (particularly the design of research instruments, literature reviews, and development of school and pupil-level databases) will ensure that the subsequent work has a firm conceptual basis, and can generate results in a timely and policy-relevant manner.

### Way forward

- 5.2 The study team are keen to agree with the Department the precise nature of the research activities to be undertaken during 2004. At this stage, however, it is expected that the first half of 2004 will be an extremely busy period for the evaluation. The fieldwork / site visits will begin, and detailed value added analysis will be undertaken of the first *tranche* of performance data for the first 3 Academies. The Table overleaf highlights these and some of the other main research activities which, in the view of the study team, need to be undertaken during 2004. The study team are keen to refine this schedule with the Department in late December / early January, as part of the overall discussion of this Annual Report.

### Summary of key research activities in 2004

Stage	Activities	Timing
Design	<ul style="list-style-type: none"> <li>Some additional work to be undertaken in relation to fine-tuning the research design, e.g. specification of models used in quantitative modelling, measuring innovation, and methods used to report on and disseminate good practice.</li> </ul>	January 2004
Analysis of existing data	<ul style="list-style-type: none"> <li>Further analysis of pupil-level and school-level data associated with predecessor schools (similar to that presented in Section 4 of this Report).</li> <li>Value added modelling of pupil performance in the three Academies which opened in September 2002, based on pupil-level performance data becoming available in January 2004.</li> </ul>	January – April 2004
Fieldwork	<ul style="list-style-type: none"> <li>Conduct 15 site visits (12 Academies and 3 predecessor schools) before the end of the academic year 2003/2004</li> <li>Piloting electronic stakeholder data collection using e-portal</li> </ul>	January – July 2004
Project management and reporting	<ul style="list-style-type: none"> <li>Ongoing contact with officials in the Department, including meetings every, say, 6 weeks, and the associated Progress Reports.</li> <li>Second Annual Report to be produced in December 2004.</li> <li>Report on initial value added analysis, along with early feedback on the fieldwork visits, to be submitted by end April 2004</li> <li>Other reports / papers on particular issues to be submitted to the Department as required.</li> </ul>	Ongoing through to December 2004