

Government and Public Sector

Department of Education

School and pupil performance data

Final report

November 2008



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Glossary

ACORN	A Classification of Regional Neighbourhoods
AEP	Alternative Education Provision
ALC	Area Learning Communities
ALIS	Advanced Level Information System
ALTA	Adaptive Learning and Teaching Assessment
C2K	Classroom 2000
CASS	Curriculum Advisory and Support Services
CATS	Credit Accumulation and Transfer Scheme
CCEA	Council for the Curriculum, Examination and Assessment
CCMS	Council for Catholic Maintained Schools
CEM	Centre for Evaluation and Monitoring
CMG	Comhairle na Gaelscolaíochta
CTF	Common Transfer File
CVA	Contextual Value-Added
DE	Department of Education
EMS	Education Management System
EOTAS	Education Other Than At School
ESA	Education Skills Authority
ETI	Education and Training Inspectorate
FE	Further Education
FSM	Free School Meals
FFT	Fischer Family Trust
GBA	Governing Body Association
IDACI	Income Deprivation Affecting Children Index
InCas	Interactive Computerised Assessment System
MIDYIS	Middle Years Information System
MIS	Management Information System
MLE	Managed Learning Environment
NICIE	North of Ireland Council for Integrated Education
NFER	National Foundation for Education Research
NIMDM	North of Ireland Multiple Deprivation Index
NISRA	North of Ireland Statistics and Research Agency
PIPS	Performance Indicators in Primary Schools
PQH	Professional Qualification for Headship
QCA	Qualifications and Curriculum Authority
RTU	Regional Training Unit
SDA	Single Design Authority
SEN	Special Education Needs
SIF	Schools Interoperability Framework
SIMS	Schools Information Management System
SIP	School Improvement Partner
SPSS	Statistical Package for the Social Sciences
ULN	Unique Learner Number
UPN	Unique Pupil Number
VA	Value-Added

XGEA
YELLIS

Cross-Government Enterprise Architecture
Year Eleven Information System

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Executive summary

The research evidence demonstrates that the effective use of data is critical to raising standards in schools...

1. There is broad agreement in the literature that the effective use of data is vital to school improvement. Recent research in England (DfES, 2005), for example, found that the effective use of data can promote better teaching and learning through:
 - Identifying pupils' achievements and setting of targets;
 - Challenging the expectations of staff, pupils, and parents;
 - Monitoring the effectiveness of initiatives and strategies;
 - Evidence-based discussions with the Inspectorate, local education authorities and governors;
 - Easing transitions and transfers both between and within schools; and
 - The more effective allocation of staff and resources.¹

The Department of Education has placed the effective use of data at the heart of school improvement policy...

2. The effective use of data is also a key theme in the Department of Education's recently completed consultation on its school improvement document, *Every School a Good School*², which emphasises that raising attainment is primarily the responsibility of the school and presents the principles on which school improvement should be based, including:
 - A strong focus on pupils as individuals;
 - School accountability and self-evaluation; and
 - The availability and effective use of data at system, school and individual teacher level.
3. The use of data will also be an important foundation to other, forthcoming, school improvement policies such as the Department's soon-to-be published Literacy and Numeracy Strategy.

In spite of this, there are a number of areas where data provision and exploitation within the education system requires further attention...

4. Despite agreement that the effective use of data is essential for success, *Every School a Good School* raises a number of areas where data provision and exploitation in schools requires further attention. These include:
 - The absence of a generally accepted range of performance indicators which can be used to provide an informed picture of a school's performance and how this compares to other schools;
 - The need for a more robust means of assessing social deprivation which also includes a "value-added" measurement;

¹ *Schools' Use of Data in Teaching and Learning* (DfES, 2005)

² *Every School a Good School* (DE, 2008)

- The need for a shared source of data easily accessible and which schools and others can use to compare performance between groups of schools and in various subjects within schools;
- The need to support schools in making more effective use of data within schools to monitor the performance and progression of individual pupils and classes, set priorities, to develop teaching strategies and to encourage and motivate pupils; and
- The dissemination of research evidence and good practice to schools.

Within this context, the Department of Education commissioned PwC to undertake a review of school and pupil performance data in the north of Ireland...

5. PricewaterhouseCoopers was commissioned in August 2008 by the Department of Education to undertake a review of school and pupil performance data. This review has seven key objectives. These are to:

- Review the range of quantifiable performance indicators and the Management Information System (MIS) facilities within C2K and Departmental systems, assess their appropriateness and make recommendations as to how the presentation and analysis of this data can be improved (both at individual school level and across schools);
- Examine the range of qualitative measures identified in the Department's consultation document on school improvement policy *Every School a Good School* and assess how these can be assessed at school level and across schools;
- Identify any gaps in data and recommend how these can be addressed;
- Review the data available on a school's C2K system regarding the performance of individual pupils and make recommendations for development;
- Consider the various options for determining 'value-added' and make recommendations for how these measures should be framed and presented to schools. If a pilot project is recommended, details should be included of how this might be designed and managed; and
- Examine the range of training that will be required for school managers, teachers, governors and staff in the Education and Skills Authority.

This review involved an extensive exercise of desk research and stakeholder engagement...

6. This review has been informed by an inclusive and holistic approach to engaging with key stakeholders in the education sector. In September and October 2008, we reviewed the existing literature relating to these seven key objectives and completed in-depth interviews with the key stakeholders in the education system in the north of Ireland. We also consulted with the Department, the Inspectorate, and the Project Steering Group established to guide the process of this research.

Key stakeholders consulted as part of this review included...

- School leaders
- Representatives from relevant branches of the Department of Education
- The Education and Training Inspectorate
- C2k
- E-Schools

- ESA Implementation Team
- Council for the Curriculum, Examinations and Assessment
- Council for Catholic Maintained Schools
- The Regional Training Unit
- The Education and Library Boards
- The Fischer Family Trust

The education sector in the north of Ireland can be characterised as “data rich and information poor” ...

7. Over the last number of years, substantial investment has been made in the ICT infrastructure for the education system. As a consequence of this investment, a large amount of data on school and pupil performance is held (in varying degrees) at school, Board and system-level.
8. However, a common theme emerging from our research is that the current system is “data rich and information poor” and is characterised by a high level of fragmentation, with several organisations responsible for various aspects of data generation and management. While the data required is largely available, greater consistency and consolidation are required in the capture and use of this data if school improvement is to be achieved.

The DfES research cited earlier concluded that the **actual use of data** in the classroom is more important in driving up standards than the actual technological infrastructure:

“Good practice emerged from the use to which the data was put rather than specific systems or tools. A recurrent theme was that data only becomes effective if it stimulates questions about the actual learning that is taking place and how it can be developed further”. (DfES, 2005)

9. While it is clear that ‘data for data’s sake’ is of no real benefit and that the emphasis on the use of data should be to focus teaching and learning on the specific needs of individual learners, we are not suggesting that the technical infrastructure and the means by which data is processed in our system are unimportant.
10. Rather, the development of C2K and eSchools and the forthcoming establishment of the Education and Skills Authority (ESA) provide a unique opportunity to draw together all the relevant strands of data development, generation, storage and dissemination to create a coherent yet flexible platform to underpin the objectives of *Every School a Good School*. Overall, greater communication and co-operation between all key stakeholders will be required to resolve the issues highlighted in this report.

Our review has identified a number of critical gaps in the existing data...

11. While it is clear that there is a significant amount of data available in the system as a whole, our research has identified a number of critical gaps in the existing data. These include:
 - **A lack of a suitable baseline measurement and longitudinal data** on individual pupil progress, which impacts on the ability of schools to assess the progress a pupil has made and on the capability to introduce a system-wide value-added measure of attainment;
 - School leaders would welcome increased detail in **Key Stage assessments and in the forthcoming Levels of Progression**, particularly between phases, in order to distinguish more clearly the actual level of individual pupil attainment;
 - The current lack of a consistent **Unique Pupil Reference** number to track pupil attainment from primary to post-primary and, indeed, further education;

- The development of **Area Learning Communities and the need to track pupil movement and attainment** between different settings;
- The need for further, and consistent **qualitative indicators to provide a more holistic view** of the achievements of individual young people and schools;
- The need to **improve on current measures of deprivation** and include other contextual data in the development of any value-added measure;
- The need to develop **additional measures of performance** to guard against the potential risk of perverse performance incentives and to ensure that measures are appropriate for different types of school, for example specific indicators for selective schools versus non-selective schools; and
- While the scope of this review relates to statutory education (primary and post-primary), it should be noted that issues arise in the **provision of MIS or otherwise in the pre-school phase**. These issues relate to the infrastructure, a lack of standardisation, the actual use of data in the setting and to the establishment of baseline information.

Recommendations: plugging the gaps in the existing data

Recommendation 1: develop a baseline measure and longitudinal data

- Consider the use of the planned CCEA transition form as a baseline measure and capture data electronically through C2K or E-schools.
- Explore the potential of the forthcoming DE 0-6 strategy to provide a baseline assessment in Year 1 or 2.
- Explore the opportunity to create a Pupil Portfolio through the use of an MLE or eSchools.

Recommendation 2: develop a Value-Added (VA) measure as soon as possible:

- Agree and develop a contextual value-added (CVA) measure for schools as soon as possible.
- Pilot the new CVA arrangements with schools to ascertain the optimum methodology, presentation and analysis of results, and resources required – drawing on the experiences of CVA elsewhere and value-added pilot lessons from elsewhere.
- Include an additional measure of multiple deprivation in the development of a CVA measure.
- Consider the level of detail required at a school-level in KS assessments and the forthcoming Levels of Progression.

Recommendation 3: standardise Unique Pupil Numbers:

- Resolve the administrative and process issues surrounding the management of the Common Transfer Form across the Education and Library Boards to enable the transfer of data from primary to post-primary.
- Continue to consider the linkages between UPNs and ULNs to facilitate transfers between the post-primary and FE phases.

Recommendation 4: track pupil movement and progress across ALCs:

- Further consideration should be given to the current issues experienced by ALCs and the potential use of the SIMS.net partnership exchange module to overcome some of these issues. If this module is adopted, we recommend it should be piloted and evaluated.³
- DE and C2K should work with the FE sector to explore the potential to exchange pupil information using the CTF process or SIF.

Recommendation 5: develop additional qualitative indicators:

- Develop and agree one suite of qualitative measures incorporating those indicators proposed in *Every School a Good School* and those already in use by the ETI. The additional qualitative indicators contained in this report should also be taken into consideration.
- Consider in more detail the use of a balanced scorecard approach to provide a more holistic indication of performance.
- Develop a communication strategy to engage with schools and teachers to publicise this new suite of indicators, foster support and demonstrate the value of qualitative measures for school self-evaluation and improvement.
- Facilitate the benchmarking of qualitative measures across comparable schools.
- Provide schools with guidance on the evidence required to support individual qualitative

³ Please note that this option will not apply to FE colleges.

measures.

Recommendation 6: supplement the use of existing deprivation measures:

- The FSM indicator should be supplemented by a multiple deprivation indicator to provide a more robust model of social deprivation. There should be a review of current north of Ireland socio-economic datasets (such as NISRA's MDM, IDACI or ACORN, for example).

Recommendation 7: provide additional measures of performance:

- Alternative measures of performance should be developed alongside existing measures such as 5A*-C (including English and Maths). An average point score, for example, would reduce the potential for perverse incentives
- Consideration should also be given to appropriateness of various measures for selective schools to ensure that the indicators selected reflect the standard of pupil performance that should be expected given the school intake. The system should also have the flexibility to assess the performance of pupils on a range of measures, for example, the number of A and/or B grades at A-level for selective schools.

The review has also identified a number of ways in which access to data could be improved...

12. Through the course of this research, a number of concerns were raised regarding the provision of data to users at all levels in the system. These are summarised below.

- **Access and timeliness:** several stakeholders noted that not all relevant parties in the sector have access to the necessary data, for example, DE school benchmarking reports are not necessarily routinely shared with schools by the Education and Library Boards. In addition, many stakeholders stated that data was not always delivered to schools and other relevant stakeholder organisations in the system in a timely fashion, whether in relation to the Bath dataset which is not available until the February following the June examinations, or in terms of availability of the schools census data;
- **Standardisation:** at present, schools do not receive the data they require in a standardised, easy to comprehend, yet flexible format; and
- **Data security** was raised by several participants. It was noted that, for example, Key Stage 1 and 2 assessment data is currently delivered by hand to DE on encrypted media.

Our recommendations: processing the data

Recommendation 8: improve access to, and timeliness of, data:

- Training on the effective use of eSchools should be promoted at all levels in the system.
- Schools, CCEA, C2k, ETI and CASS should be involved at the design stage of the eSchools reporting packs to ensure that the proposed system meets their needs.
- Reporting for schools should be based on a standard report pack provided by eSchools. ESchools could also provide access to local interim averages for schools until such time as the Bath dataset is available for national averages. This option also offers the potential to compare local results against the Bath dataset to identify any errors and inconsistencies in the validated data.
- The issue of yearly comparisons should be addressed to ensure that schools are working with the most up-to-date data.

Recommendation 9: increase standardisation while maintaining flexibility:

- The eSchools standard packs should provide a specified level of standardised data for schools whilst allowing sufficient flexibility for schools to undertake more tailored analysis for their specific needs.

Recommendation 10: enhance data security:

- Consideration should be given to reviewing current data transfer methods in relation to security across the Department, Boards, CCEA and schools. Systems should be reviewed against Government best practice and new BECTA guidelines for data security within schools.

We have also found that data could be generated in a more efficient and accurate way...

13. There was a general view amongst participants in this research that a large proportion of the

data required by the education sector is already in existence, however this data is fragmented and duplicated across a number of different systems.

14. The advent of eSchools provides an opportunity to pull the information together and reduce the amount of duplication across the system. ESchools will make use of data from sources such as schools' MIS and financial systems, FMS, Boards' Education Management Systems and teachers' payroll and personnel databases. This data will be stored centrally and information will be updated through agreed replication processes. Issues raised in relation to the current means of generating school and pupil performance data are highlighted below.
- Stakeholders raised a number of concerns regarding the **quality of data** provided by schools through the school MIS system, for example data entered incorrectly or not captured automatically and a lack of consistency in the adoption and use of pupil performance data and individual MIS modules across primary and post-primary schools;
 - Specific problems were identified with a number of **data entry procedures** including the entry of various (e.g. vocational) examinations in terms of points equivalences, the banding of results in grade bands, and inconsistencies in the categorisation of ethnicity and special educational needs;
 - **A wide range of diagnostic tests** (such as InCAS, ALTA, CATS, Yellis, and ALIS) are currently used by primary and post-primary schools. This variety of testing methods may create issues in relation to variable indicators being used and the automated capture of assessment in SIMS.net for internal school-based reporting;
 - **Communications between the key stakeholders** could be improved to promote a **more systematic approach** to the use of data at all levels; and
 - Teaching principals and principals in small schools require a **greater amount of administrative support** to assist with data entry and generation.

Recommendations: generating data more effectively and efficiently

Recommendation 11: develop a more strategic and joined-up approach:

- A Project Board should be given an oversight role in the form of a standing committee to advise on the effective use of data strategy and implementation. This Board should include representatives of all key stakeholders i.e. ESA, eSchools, C2K, CCEA, ETI, CASS, RTU and school leaders.
- DE and ESA should work to ensure that there is good communication and co-operation between eSchools, C2K, CCEA, ETI and CASS in order to maximise the use of pupil performance data within schools.

Recommendation 12: strengthen validation:

- The importance of the quality of school data should be promoted across the system. ESchools provides an opportunity to highlight data inconsistencies in the information stored in schools and eSchools on a regular basis.

Recommendation 13: establish a Single Design Authority:

- A Single Design Authority should be designated to address inconsistencies in data entry and validation, by, for example, standardising look-up tables and business rules. Where possible data definitions should be based on recognised government standards (such as Govtalk).
- This Authority (perhaps ESA) should review the QCA equivalence data and mandate equivalence scores and rules of application. It should also consider other issues highlighted in this report such as school enrolment banding and difficulties in processing vocational exam results.

Recommendation 14: exploit existing modules in SIMS.net:

- The Department should require ESA to work with C2K to identify and document the available SIMS.net modules and the benefits that they can provide across primary and post-primary schools. This could include capturing suspensions and exclusions data in a standard format or promoting the use of SIMS for developing School Development Plans.

Recommendation 15: investigate the use of diagnostic tests:

- While schools should evidently retain the right to purchase the commercial packages of their choice and with the proviso that such tests are for the use of schools only and not the system, there are a

- number of recommendations which we believe could benefit the system.
- C2k should continue working to consider a method of capturing InCAS results for primary schools for use for internal school reporting only.
 - ESA should also raise awareness of diagnostic assessment tools which have been centrally procured, such as ALTA and InCAS.
 - ESA should work with C2K to undertake a cross-sectoral school survey to ascertain the type of indicators currently in use and the indicators which could be most beneficial to schools if stored in SIMS.net for school-based reporting. Consideration should also be given to uploading this data to Assessment Manager to enable longitudinal tracking.
 - All schools should be encouraged to use Assessment Manager for Key Stage assessments and in-school diagnostic tests such as InCAS.
- Recommendation 16: address the potential administrative burden on principals:**
- DE and ESA should explore a range of models of providing support to school leaders in order to make the data entry, generation and analysis processes more efficient. These could include, for example, 'travelling bursars' working across a number of schools or additional support from CASS.

And there are some critical success factors for the implementation of a new 'information rich' system...

15. Stakeholders and the findings of our desk research also highlighted a number of critical success factors which should underpin the implementation of measures to enhance the use of data in the education sector. These include:
- The **feasibility of collection** should be a key consideration in the identification and development of any new indicators and care should be taken not to place undue burdens on schools;
 - A **focus on school improvement**: stakeholders were keen to avoid the potential for perverse incentives that may arise from the banding of examination grades, suggesting for example that if A*-C is the accepted measure at GCSE, it may encourage a focus on D students to the detriment, for example, of B students;
 - The capacity to **develop pupil tracking and value-added measures** will depend on the development of a **robust baseline measure**;
 - **Training and support**: the majority of stakeholders stated that there were significant training and support needs across the system, from Initial Teacher Training to the classroom, and including principals, governors, ESA, ELBs (CASS) and the Inspectorate. Many schools will require additional support in terms of inputting, generating and analysing data, especially in smaller primaries and in schools where the principal has substantial teaching commitments; and
 - **Communication of the benefits of the effective use of data** to drive school improvement will be key to gaining the support of teachers, principals and all other interested parties in the implementation of our recommendations.

How should this data be used? Our recommendations...

Recommendation 17: providing sufficient training and support:

- An in-depth training needs analysis should be undertaken across the sectors. This analysis should encompass the training needs of teachers, school leaders, governors, administrators and policy-makers.
- Provision of training at system and school level. At school-level, this should include every aspect of the data process from input to the use of data to inform teaching and learning and tracking individual pupil progress. The use of data should also be an integral part of Initial Teacher Training and mandatory in RTU courses such as Induction into Headship.
- Consideration should also be given to providing a combination of other forms of support, whether on-line, by telephone, remote access or field support.

Recommendation 18: implementation of a communications strategy:

- An extensive communications strategy should be developed to promote the benefits of more widespread and in-depth use of data and to alert schools to the functionality and capability of new IT systems and the support available to them. This will be essential to ensure buy-in to these new ways of working. Any communications strategy should focus on the importance of school improvements and the benefits that the strategic analysis of data can bring and consider the potential sensitivities that some school personnel may have regarding greater transparency in the system.
- This communications strategy should also encompass the dissemination of best practice in the use of data.

1 Introduction

Background

1.1 The research evidence clearly demonstrates the importance of the effective use of data in raising attainment. While many schools demonstrate excellent practice in the use of data, there is a pressing need to continue to improve the way in which data are used for monitoring and evaluation and to inform strategy at both the classroom- and the school-levels. This is particularly vital if the Department is to succeed in its on-going drive to reduce the gap in attainment between the highest and lowest achievers in the education system.^{4, 5}

1.2 The *Chief Inspector's Report 2004-06* (ETI, 2007) highlights both the growing importance of data in effective self-evaluation for schools and the variation in practice:

"There are significant differences in the achievements of individual schools, not all of which can be related to the levels of advantage or disadvantage among the pupils, or to their prior attainments. Inspection evidence shows that some schools, both selective and non-selective, do considerably better than others in ensuring that the pupils make the best possible progress. Schools need to develop more effective methods to evaluate how well they improve the learning outcomes for individual pupils and use this information better to address under-achievement". (p23)

"Improvements are needed in the strategies used to track individual children's progress, particularly in aspects of literacy and numeracy. Principals and teachers need to use this information better to improve further the standards achieved, particularly by boys, and more generally in English". (p59)

1.3 OfSTED also emphasises that the analysis of pupil-level data and comparison with external benchmarks are hallmarks of effective schools (OfSTED, 2003). It states that such schools monitor the data collected in order to ensure that interventions are timely and appropriate.

1.4 In recent years, the Inspectorate has been focusing increasingly on the quality of leadership and management across all phases, and in particular, on "the capacity of organisation[s] to evaluate and improve the quality of their work". It is now a key function of school leadership to use data effectively to drive up standards and set the strategic vision for their school but there is still much room for improvement, as illustrated by Table 1.1.

Nursery	Leadership and management remain good or very good in well over half of all pre-school centres. Most have made a start to self-evaluation and self-improvement and a minority, mainly in the statutory sector, have developed very effective approaches.
Primary	There has been an increase to just under 50% in the proportion of primary schools with good or very good leadership and management. The effectiveness of monitoring and evaluation procedures has also improved overall, with good practice evident in nearly one quarter of schools.
Post-primary	In the third of post-primary schools where leadership and management is good or very good, principals and senior management are making better use of data and benchmarking to inform the School Development Planning (SDP) process and the actions to bring about improvement.

1.5 In 2007, the Department of Education commissioned PwC to undertake research into levels of

⁴ For example, in the Student Achievement in the north of Ireland: Results in Science, Mathematics and Reading among 15-year-olds from the OECD PISA 2006 Study, the north of Ireland had a wider spread of attainment than any other participating country.

⁵ Furthermore, according to the *Every School a Good School* consultation document, only 37% of socially disadvantaged pupils achieve a Level 2 qualification and there is a 12% percentage point gap between the performance of girls and boys obtaining 5 GCSEs at A*-C – to the detriment of boys.

literacy and numeracy⁶ in light of Audit Office and the Public Accounts Committee reports on educational attainment in the north of Ireland. This research highlighted the central role of data in raising standards as well as some of the barriers to effective collection and analysis experienced by schools.

1.6 There was a general consensus amongst participants in this research (including literacy and numeracy co-ordinators) that the effective use of data to map and assess pupil progress should underpin any drive to raise standards: at the school, regional and national level. Our research also found that awareness of the data and how the data are read, understood and used varies considerably within individual schools and between schools. There was a perception that many teachers, and particularly school leaders, may not fully understand the potential of the data available to them. Overall, the key issues in regard to performance data that emerged were as follows:

- Timing of data provision;
- Reliability;
- Availability of data; and
- Access to data.

1.7 The Department's *Every School a Good School* school improvement strategy emphasises the importance of the use of data for teachers and principals in self-evaluation and school development planning and for the system as a whole. The development of C2K and eSchools and the forthcoming establishment of the Education and Skills Authority (ESA) provide a unique opportunity to draw together all the relevant strands of data development, generation, storage and dissemination to create a coherent yet flexible platform to underpin the objectives of *Every School a Good School*.

1.8 However, despite the increase in the amount of pupil and school data available, there remains an absence of a coherent and focused school and pupil data strategy, and therein lies the challenge; to use the wealth of information available to promote the effective use of data for school and pupil improvement. A data rich school only becomes information rich when that data is systematically collected and disseminated to staff in an easily digestible format.⁷

1.9 Furthermore, research elsewhere has shown that, while there is some commonality, phases of education experience distinct challenges which should be taken into account in the development of any new data strategy.

Table 1.2: Challenges to the use of data (DfES, 2005)⁸	
Primary schools	<ul style="list-style-type: none"> • Lack of time, particularly time to update and analyse the data • Difficulties in applying data to classroom situations • Limitations of data, i.e. that the data collected/recorded was too narrow/academic or did not accommodate individual needs • ICT-related issues, e.g. insufficient resources or restricted access.
Post-primary schools	<ul style="list-style-type: none"> • Similar issues to primary schools • Insufficient trust in, and timeliness of, the data
Special schools	<ul style="list-style-type: none"> • Data systems that do not accommodate the complex needs of individual pupils • Insufficient comparable data (year-on-year or with similar schools).

⁶ *Literacy and Numeracy of Pupils in the north of Ireland and Good Practice in Literacy and Numeracy in British and Irish Cities* available /www.deni.gov.uk/index/32-statisticsandresearch_pg/32_statistics_and_research-research_pg/32_stats_and_research_researchreports_pg.htm

⁷ *Releasing Potential, Raising Attainment: Managing Data in Secondary Schools* (DfES, 2002).

⁸ *Schools' Use of Data in Teaching and Learning* (DfES, 2005).

Terms of reference

1.10 The Terms of Reference for this review are presented in Table 1.3 below.

Table 1.3: School and Pupil Performance Data -Terms of Reference

- Review the range of quantifiable performance indicators and the Management Information System (MIS) facilities within C2K and Departmental systems, assess their appropriateness and make recommendations as to how the presentation and analysis of this data can be improved (both at individual school level and across schools);
- Examine the range of qualitative measures identified in the Department's consultation document on school improvement policy 'Every School a Good School' and assess how these can be assessed at school level and across schools;
- Identify any gaps in data and recommend how these can be addressed;
- Review the data available on a school's C2K system regarding the performance of individual pupils and make recommendations for development;
- Consider the various options for determining 'value-added' and make recommendations for how these measures should be framed and presented to schools. If a pilot project is recommended, details should be included of how this might be designed and managed; and
- Examine the range of training that will be required for school managers, teachers, governors and staff in the Education and Skills Authority.

Overview of our approach

1.11 Our approach for this project was underpinned by extensive desk research and stakeholder engagement. These two key phases of our methodology are presented in more detail below.

Desk research

1.12 This stage of the project involved a review of existing strategies and processes currently in place in the north of Ireland, across England, Scotland and Wales and beyond, and an examination of areas of best practice which could be applied to. This analysis included an exploration of the quantifiable performance indicators and the existing and planned facilities within C2K and the Departmental systems, including a review of the data available on schools' C2K system in relation to the performance of individual pupils' performance and an overall examination of any gaps in the data. This phase also included an extensive review of developments in school use of data elsewhere, including the use of RAISEonline and the Fischer Family Trust in England and Wales. A full list of the documents reviewed has been provided in Appendix 2.

Stakeholder engagement

1.13 Depth interviews were undertaken with key stakeholders in the education system, including:

- Representatives from relevant branches of the Department of Education;
- The Education and Training Inspectorate;
- C2k;
- E-Schools;
- ESA Implementation Team;
- The Council for the Curriculum, Examinations and Assessment;
- The Council for Catholic Maintained Schools;
- The Regional Training Unit;
- The Education and Library Boards;
- NICIE;
- Comhairle na Gaelscolaíochta;
- The Governing Body Association;
- A sample of school leaders; and
- The Fischer Family Trust.

1.14 This review was also informed by discussions held with the Project Board for this study. The key findings and recommendations from our research and consultation are presented in the sections which follow. The remainder of the report is structured as follows:

- Review of quantifiable performance indicators in MIS in C2K and DE systems;
- Review of data available on individual pupil performance;
- Identification of gaps, if any, in data;
- Review of data processing arrangements;
- Assessment of qualitative indicators in *Every School a Good School*;
- Consideration of value-added options;
- Identification of training needs; and
- Conclusions and recommendation.

1.15 In addition, there are two Appendices:

- Appendix A: Membership of the Steering Group; and
- Appendix B: Bibliography.

2 Review of quantifiable performance indicators in MIS in C2K and DE systems

Objective 1: review the range of quantifiable performance indicators and the Management Information System(MIS) facilities within C2K and Departmental systems, assess their appropriateness and make recommendations as to how the presentation and analysis of this data can be improved (both at an individual school level and across schools).

Overview

- 2.1 A range of quantifiable performance indicators is currently in place across the education system in the north of Ireland. These indicators are made available to managing authorities, supporting agencies and the Department. The indicators tend to be anonymised and aggregated, and are used to give an indication of trends across schools and groups of schools, and, critically, to help the Department inform future policy.
- 2.2 Likewise, a variety of quantifiable performance indicators are available at individual school level. These indicators can be provided at a pupil level and may also be aggregated to a school level. This information can be used by the school to identify areas for improvement and future priorities and also by teachers to assess group and individual pupils' learning needs and, therefore, to inform school teaching strategies.
- 2.3 The following paragraphs outline current MIS systems at school and Departmental levels.

MIS systems within primary and post-primary schools

- 2.4 The most recent MIS system in north of Ireland schools was implemented over a two-year period. The new software, SIMS.net, procured via a licensing agreement with Capita Education Services, is an integrated suite of MIS tools designed to reduce workload and provide the information necessary for schools to improve performance and support the entire range of business processes associated with the management and administration of schools.
- 2.5 MIS services were introduced initially to the 300 smallest primary schools. The conversion of all other schools to SIMS.net was completed in March 2006. This service is now provided to all 1,200 schools in the north of Ireland. As part of this provision, a recent initiative has been successful in implementing a hosted SIMS.net solution for 44 of the smallest primary schools that may not have originally warranted a locally installed SIMS solution. SIMS.net, if used to its full potential, is capable of providing a range of quantifiable, qualitative, contextual and value-added indicators at school level, teacher level and individual pupil level.

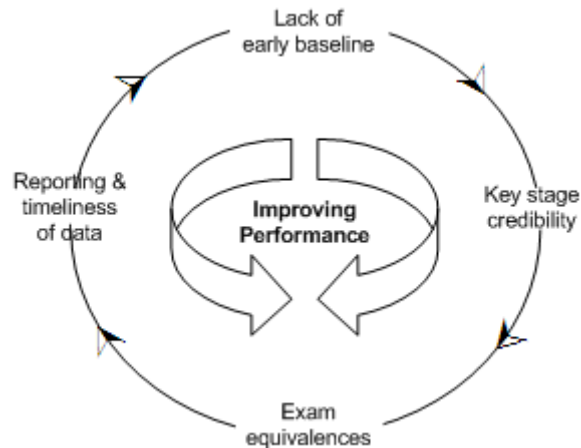
Departmental systems

- 2.6 The Department currently acts as a 'clearing house' for the amalgamation and dissemination of information for reporting and statistical analysis from a number of data sources including but not limited to: school MIS systems, CCEA, Education and Library Boards, the Education and Training Inspectorate and the University of Bath. The Department uses the SPSS software package for its major statistical analysis and reporting requirements. Once created, the data and associated reports are, for the most part, disseminated across managing authorities and supporting agencies to support and enhance school-based services.

The **eSchools Data Warehousing project** is designed to improve DE and ESA access to information held on C2k MIS systems. When it is launched in 2009, it will deliver:

- Accurate data provided to ESA and DE back-office processing engines to support the relevant business process;
- Outputs from ESA systems fed back to update C2k MIS systems as appropriate; and
- Business intelligence to support decision-making through regular reporting of relevant, benchmarked information to schools, the ESA and DE.

Key findings



The lack of an established early baseline

- 2.7 Stakeholders reported that there is a lack of guidance and consistency in terms of capturing and recording an early baseline of a child's background and development needs at nursery or Year 1 across statutory and non-statutory nurseries and pre-schools. The first information captured and reported centrally is in Year 4. There is also a lack of guidance and consistency on the early capture of a child's SEN requirements at pre-school or Year 1 level.
- 2.8 While the remit of this research relates to primary and post-primary pupil and school data, many respondents raised the issue of transferring data on a child between nursery and primary phases.

"We know these problems are going to emerge. Why wait until the age of seven to start dealing with them? The problems are already embedded by the time they reach school". (Stakeholder respondent)

- 2.9 A roll-out of laptops to nursery schools is currently under way. Under this scheme, nursery schools will be provided with e-mail and secure internet as a minimum. In addition, CCEA is currently completing the development of a paper-based transfer form for nursery to primary transfer and the Department of Education is developing a 0-6 strategy. Both the CCEA form and the DE strategy could provide an opportunity to review and standardise requirements relating to the capture and recording of baseline information on a child at nursery or Year 1 level.
- 2.10 It is recognised that there are, however, major issues in collecting data on pre-school children in a uniform and efficient way, mainly due to the 'mixed economy' model of pre-school provision in which a third of children attend settings in the private and voluntary sectors.

The validity and credibility of Key Stage 1, 2 and 3 assessments

- 2.11 Key Stage 1 and Key Stage 2 assessments are undertaken in Year 4 and Year 7 respectively. The assessments are teacher-based assessments, which can be backed up with the use of optional assessment units. The process employs an assessment booklet which is marked by the teacher to highlight a set of scores for literacy and numeracy. The assessment booklets are collated by CCEA and the results are scanned in using Optical Mark Readers (OMR). The scores are anonymised and aggregated to a school level before being hand-delivered to the Department for statistical analysis and reporting purposes. CCEA moderates Key Stage 1 and 2 assessment processes internally every three years.

"We don't have individual information for children until they do the transfer test. If they don't do it, we won't get information until KS3". (Stakeholder respondent)

- 2.12 The validity and credibility of Key Stage 1 and 2 assessments have been called into question by a number of key stakeholders. Among the issues identified are the perceived high scoring across schools at Key Stage 1 and that insufficient detail is generated. It was reported that many post-primary schools do not believe that Key Stage 2 assessments reflect a pupil's actual ability and that some schools reassess pupils using commercially available tools such as NfER or CATS. Furthermore, it has been noted that Key Stage 1 and 2 assessments are currently encrypted and hand-delivered to the Department. This is not in line with current Government guidelines on data security.
- 2.13 A number of stakeholders have also reported a lack of performance data in Irish across Irish-medium schools at primary level. This can result in a child completing seven years of Irish-medium education without competency levels being recorded.
- 2.14 Key Stage 3 assessments are undertaken in Year 10. The assessments are again teacher-based assessments and use actual electronic test units across literacy, Maths and, optionally, Science. Key Stage 3 assessments are generally captured and retrieved electronically by CCEA. Key Stage 3 results are recorded by the school at pupil level and then anonymised and aggregated before being sent to the Department.
- 2.15 The credibility of Key Stage 3 assessments was queried by some participants in this review, particularly in relation to the skills being assessed. While Key Stage 3 can provide test units in English, Irish, Maths and Science, currently only English and Maths are mandated for testing.

"At Key Stage 1 and 2, the picture is effectively the same as it has been since 1996-97". (Stakeholder respondent)

- 2.16 It should be noted, however, that, DE statistics demonstrate a correlation between attainment at Key Stage 3 and GCSE. Key Stage 3 also provides some value-added information in terms of the Unique Pupil Number and ethnicity.

Differences in exam banding and equivalences for Key Stage 4 and 5

- 2.17 There are a number of different examination bodies across Key Stage 4 and 5, with the result that a number of sources and models are used for the calculation of exam equivalences, particularly in relation to vocational exams. School MIS systems and the Department use the Qualifications and Curriculum Authority (QCA) model but there are some exceptions, leading to some ambiguity in how equivalences are applied across the Department, ETI and schools.

2.18 Reporting is provided over a number of result bands e.g. 5 A* to E at GCSE. There are issues with how this banding and how inclusion and exclusion rules are applied. In addition, some schools report that the current bandings do not fully reflect a school's performance. Examples of areas where inclusion and exclusion rules are not applied uniformly include:

- Examination types;
- Statements of SEN; and
- Repeats and retakes.

Reporting of data to schools and timeliness of data

2.19 The Department currently issues a number of reports to the Education and Library Boards illustrating individual school performance against other schools in similar circumstances. These reports give an indication of school performance measured against other similar schools and are presented in a scattergram format. A number of school principals consulted as part of this research thought that this information should be shared with schools to provide easily accessible benchmarking data. At present, many principals source the necessary data directly from the CCEA website.

2.20 The Department can also provide reports which compare performance against national averages. This information is based on a dataset of national exam results and averages which is prepared and distributed by Bath University (known as the Bath dataset). This information is not provided to the Department for processing until February of the year following the June examinations and is viewed by many stakeholders as being out-of-date.

Recommendations

2.21 The following paragraphs present our main recommendations under each of the headings discussed above, namely:

- The lack of an established early baseline;
- The validity and credibility of Key Stage 1, 2 and 3 assessments;
- Differences in exam banding and equivalences for Key Stage 4 and 5; and
- Reporting of data to schools and timeliness of data.

A lack of an established early baseline

2.22 The Department should establish a process to identify the data and reporting requirements required to establish an early baseline for nursery or Year 1 pupils. An opportunity exists to build on a current initiative for a 0-6 strategy under development by the Department of Education to create a baseline in Year 1 or Year 2 of primary school.

2.23 While there are evident difficulties with standardising the use of data across pre-school provision, consideration should be given to facilitating the transfer of data from feeder nurseries to primary schools. At present, there are two options which could be considered:

- The introduction of SIMS to nursery schools and adoption of the Common Transfer Form (CTF) methodology for automating transfer information; and
- The provision of an electronic form to allow the capture of baseline of nursery pupils with the ability to use the CTF schema for automating the transfer of pupil information to primary schools.

Validity and credibility of Key Stage 1, 2 and 3 assessments

2.24 In light of the delivery of the new curriculum framework and Levels of Progression, the

Department in conjunction with CCEA should consider reviewing the current Key Stage 1 and 2 assessment processes, with a view to providing increased granularity (or detail) and removing or mandating the use of assessment units. Likewise, in light of the delivery of the new curriculum framework and progression levels, the Department in conjunction with CCEA should consider reviewing Key Stage 3 assessment processes, in order to provide increased granularity and removing or mandating the use of electronic test units.

- 2.25 As part of the process of reviewing Key Stage 1, 2 and 3, consideration should also be given to providing new assessment material in electronic form to enable the automated capture of progression levels. This would also provide an opportunity to store progressions levels at individual pupil level on school MIS systems for school-based longitudinal reporting.

Differences in exam banding and equivalences for Key Stage 4 and 5

- 2.26 The Department should consider establishing a Single Design Authority (perhaps ESA) responsible, in this instance, for reviewing the QCA equivalence points and the current exceptions and exclusion rule sets. A standard document or template detailing the acceptable equivalences and how exceptions and inclusions should be applied should be agreed, produced and distributed across schools, managing authorities, supporting agencies and the Department. This information should also be agreed and provided to the school MIS provider, to enable school MIS solutions to apply standard equivalence points automatically.
- 2.27 As part of the eSchools delivery, an initial pack of 50 standard reports is to be made available to schools, managing authorities, supporting agencies and DE. The reporting pack to be provided to schools is currently under development and it has been suggested that this may be based on a set of reports designed by the Western Education and Library Board, known as the 'Spring Pack'. Consideration should be given to enabling report data to be downloaded in Excel format to allow schools to undertake additional analysis, for example, the proportion of pupils gaining grades A-B at A-level in selective schools.
- 2.28 The Department should appoint a group of stakeholders to help better inform eSchools of the user reporting requirements at school level. The group should consist of, at a minimum, eSchools, C2k, CCEA, ETI, CASS and primary and post-primary school representatives. In addition, the group should review feedback tools and seek to develop a standard set of Assessment Manager templates for primary and post-primary schools.

Reporting of data to schools and timeliness of data

- 2.29 The Department should require ESA to liaise with Bath University to explore whether scope exists to enable the Bath dataset to be delivered at least three months earlier than at present. In addition, with the delivery of eSchools in April 2009, schools will transfer exam results automatically to the data warehouse as they are collated. This provides an opportunity to use the eSchools results for localised comparison and reporting until such time as the Bath Dataset becomes available. This would also allow the generation of exception reports to highlight any differences between school-supplied results and the Bath data set.

3 Review of data available on individual pupil performance

Objective 2: review the data available on a school's C2K management information system regarding the performance of individual pupils and make recommendations for development.

Overview

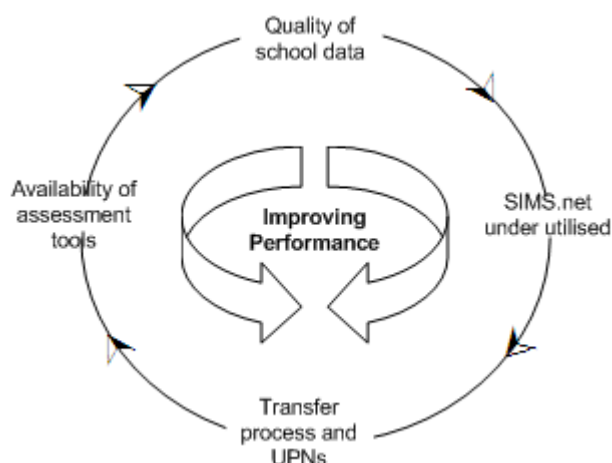
3.1 SIMS.net has been deployed across every school in the north of Ireland. This product has been licensed on a province-wide basis and includes a number of core modules as part of its functionality. The table below provides a summary of the modules currently provided by SIMS and FMS.

Table 3.1: Core modules in SIMS and FMS		
Core modules in SIMS		Core modules in FMS
Academic Management	Profiles	Chart Of Accounts
Assessment Manager	Registration	General Ledger
Attendance	Reporting	Budget Allocation
Examinations Organiser	SEN	Purchase Ordering/Delivery Recording
Timetable, Options, Cover	Student Tracking & Academic Record	Accounts Payable
DE and Exam Returns	System Manager	Accounts Receivable
Performance Analysis	Document Management	Personnel Links
Personnel	Education Maintenance Allowance	Budget Planning
Behaviour Management		Equipment Register
Admissions		Report Writing

3.2 As can be seen from the table above, SIMS.net can be used extensively within schools for administrative and management purposes. SIMS.net is also capable of providing a wealth of information at a quantitative, qualitative, value-added and contextual level for pupils. The key modules specific to pupil performance management include:

- Admissions;
- Registration;
- SEN;
- Attendance;
- Timetable;
- Profiles;
- Assessment Manager;
- Student tracking and academic record;
- Current DE returns module; and
- Reporting.

Key findings



The quality of school-based data

3.3 A number of issues associated with the timely entry of pupil data and the quality of the data entered across primary and post-primary schools have been reported by stakeholders. These issues can impact on the timely delivery of census material to the Department, resulting in a relatively large proportion of schools missing the October deadline for census returns. As an illustration, the following issues have been reported by the Department:

- Some schools do not make their annual census returns in time and sometimes not until early December; and
- There is some anecdotal evidence of schools submitting inaccurate data in order to meet deadlines.

3.4 The Statistics Branch within the Department currently runs a series of hard and soft checks against the census returns in order to validate the data from schools. Hard checks identify data that is so incorrect that it cannot be loaded into the Department for analysis purposes. Soft checks identify data that can be loaded but that should be reviewed and corrected if necessary. When soft check errors are recorded, the Department reviews the data and makes any necessary changes before uploading the data to Departmental systems. It also informs the school of the problem and requests that the school makes the necessary correction on its local school-based MIS solution. Some schools may not apply the suggested changes, resulting in problems recurring the following year.

“Once schools started to use the data and value the data, they spend a lot more effort in entering the information.” (Stakeholder participant)

SIMS.net is not used to its full potential across education sectors

3.5 During the course of the stakeholder engagement, it became clear that the take up and use of the various SIMS.net modules can vary from school to school and across school type and sector. What has also become evident is that schools which use SIMS to its full potential can gain significant benefits from the ability to set and target key performance indicators across the school, for both teachers and pupils. There are a number of reasons why the potential of SIMS has not been fully realised and exploited by many schools:

- Training on SIMS.net has primarily been delivered using a ‘train the trainer’ approach. This can sometimes result in the training remaining restricted to key school staff. Staff may not

- have the time to train colleagues and can sometimes move or leave schools, resulting in a potential reduction in capacity in the 'home' school;
 - There appears to be a general lack of knowledge regarding the full range of SIMS.net modules currently available and the functionality and breadth of information that these can provide;
 - Smaller schools and nursery schools spend a significant proportion of their budgets on teaching rather than administrative staff. This can be restrictive in terms of the number of hours available for entering and reviewing school data;
 - A number of the SIMS.net modules can be complex to configure and keep up-to-date; and
 - Some schools, especially primary schools, simply prefer to maintain paper-based records.
- 3.6 One of the key modules available in SIMS is the Assessment Manager suite, which has the ability to provide detailed assessment tracking information at pupil level for school-based reporting and analysis. At the moment, only 50% to 60% of post-primary schools are reported to use the SIMS Assessment Manager suite to a large extent, and the number of primary schools using the assessment suite is thought to be in the region of 15%. It should, however, be noted that C2k is currently in the process of rolling out revised Assessment Manager training for primary schools.
- 3.7 A recent pilot of a new SIMS.net Pupil Profile module has also just been completed by C2k and CCEA. This provides schools with the ability to build pupil profiles using standard templates from comment banks supplied by CCEA in literacy, numeracy and ICT. The templates also allow the storage of standard school-based comments. During the pilot, issues have been identified in relation to the consistency of the training provided and potential formatting issues with the SIMS.net profiling software which should be addressed if the rollout of Pupil Profiles is to continue. Teachers, however, should be encouraged to use these comments as prompts only and edit them accordingly to best reflect individual pupil performance.
- "The comment banks are supposed to be a support to teachers. You don't have to use them. So if you're a teacher, you have many years experience in school and you know what you would like to say qualitatively, you can continue to do so". (Stakeholder respondent)*
- 3.8 While some issues with the use of SIMS were identified by some participants in this research, it was also noted that the Inspectorate and the Using Schools Information and Data (USID) group held a very well-attended series of workshops for post-primary school leaders during 2008 and are planning similar events for primary schools in 2009.

Issues with the transfer process and use of UPNs

- 3.9 As of September 2008, Unique Pupil Numbers should now be established within the primary and post-primary sectors. There are currently electronic transfer methods in place for moving pupil data, including UPNs between schools in the same sector e.g. primary to primary and post-primary to post-primary. The process uses the Common Transfer Form (CTF) data schema to move data between schools.
- 3.10 The leaver or intake school can send or request a CTF file containing pupil details. Once the CTF file is generated by SIMS.net, it is forwarded to the requesting school using a secure electronic transfer process. As part of this process, an e-mail is forwarded to the receiving or requesting school informing the school that a CTF file is ready for download. When the file is received, pupil details can be imported directly into SIMS.net.
- 3.11 There are currently no procedures and methodologies in place to facilitate the transfer of pupil information including UPNs between primary and post-primary schools. This is primarily due to a lack of agreement between C2k and the Boards on the optimum way in which to automate the process fully. There are unresolved issues relating to the ways in which information is recorded and processed and how transfer data could be delivered automatically to schools.

The use of multiple assessment tools and scoring methodologies

3.12 There are several commercial assessment tools currently used by schools: this variety can create issues in relation to the use of different indicators and the ability to capture the results automatically and upload to SIMS.net Assessment Manager for internal school-based reporting. It should be noted that these tools are used for school-based assessments only and they are not intended to be used as transfer tests or as comparison tools for school performance. The list below presents some of the more commonly used assessment tools currently in use across the education sector.

- InCAS
- Alta
- NFER
- CATS
- ALIS
- Yellis
- Midyis
- ALPS

3.13 InCAS is a personalised diagnostic reading assessment tool designed to supply an indication of a pupil's reading level which can be measured against age-based equivalences. It also provides assessment information for numeracy. The Department is rolling out InCAS in primary schools, with a view to deploying it across the primary sector for Years 4 to 7 by 2010. As part of this process, DE will ask schools to provide parents with access to the InCAS results.

3.14 The results from InCAS are not designed to act as transfer tests nor to be used to measure school performance. InCAS results can however be returned electronically to the school, and a pilot has been successful in automatically uploading InCAS results directly into SIMS.net for school-based analysis and longitudinal reporting.

3.15 Another tool that is available free of charge, but, reportedly, not widely used is ALTA. ALTA is an adaptive online assessment tool for maths and can be used for pupils aged between five and 14. However, some stakeholders suggested that many schools are unaware of the availability and capability of ALTA.

Recommendations

3.16 The paragraphs which follow present our recommendations under the headings employed above, namely:

- The quality of school-based data;
- SIMS.net is not used to its full potential across all education sectors;
- Issues with the transfer process and use of UPNs; and
- The amount and type of assessment tools available to schools.

The quality of school-based data

3.17 The introduction of eSchools offers the opportunity to review the quality of data received from schools. As part of the eSchools process, data will be hard and soft checked with checks similar to those normally carried out by the Department. Any issues identified will be reported to schools on a regular basis for schools to action.

3.18 With the full delivery of eSchools (and the implementation of the recommendations contained in this report), the benefits of readily available, accurate and up-to-date information should become more evident to schools.

3.19 The Department should request ESA to communicate the benefits that eSchools will undoubtedly deliver not only to the Department but to individual schools and the wider education sector. In addition, the Department and ESA should work with schools to address any concerns relating to the use of this data in practice.

SIMS.net is not used to its full potential across education sectors

3.20 Consideration should be given to additional targeted training for teachers and administrative staff in relation to the use of key SIMS.net modules including but not limited to:

- Assessment Manager;
- SEN module;
- Pupil profiling; and
- Timetabling.

3.21 Consideration should also be given to providing roaming support to smaller schools for aspects of school administration including SIMS.net. This support could be provided remotely using the current C2k Wide Area Network or through 'travelling bursars' for example.

3.22 Consideration should be given to additional training for trainee and new teachers to highlight the information available to them through school MIS systems and how to make effective use of available data to target educational needs. Existing training programmes available through, for example, INSET and RTU programmes, should be reviewed to assess the potential for promoting the benefits of a more effective use of data.

3.23 ESA, C2k, CCEA, RTU and CASS must work together to provide a co-ordinated approach to providing best practice guidance and training in the effective use of school data to monitor and track curriculum progress. This work should be overseen by a standing committee on the use of data, the membership of which should be drawn from all key stakeholders in the process.

3.24 A key priority will be the identification of training needs at a school (including school governors) and Board level to assess capability and confidence in the practical applications of data. The proposed stakeholder should have strategic oversight of this process and should not only contribute to this assessment but also monitor progress in the delivery of the training thus identified.

Issues with the transfer process and use of UPNs

3.25 The Department should request ESAIT to work with C2k and the Boards in order to fully understand the issues in relation to the transfer process and the use of the Common Transfer Format. An opportunity exists to extend the work currently underway between C2k and the Western Board in attempting to find a full resolution to the transfer process between primary and post-primary schools.

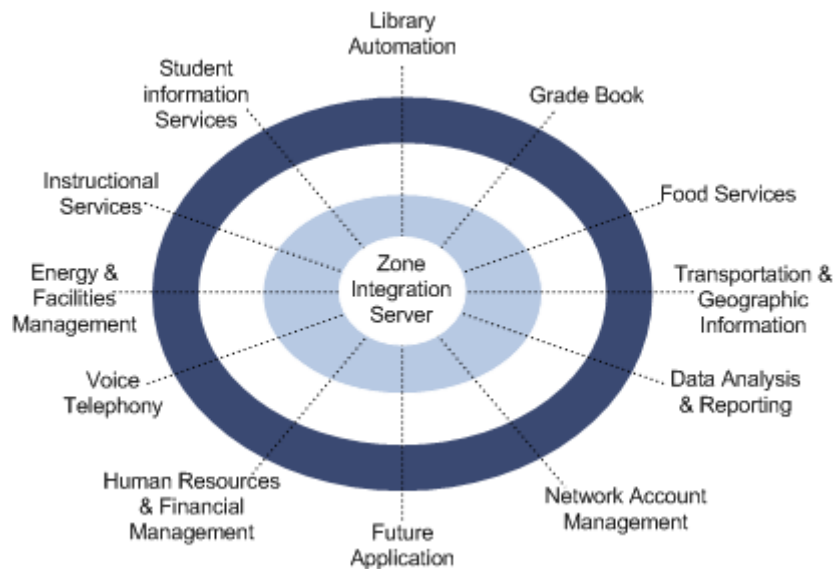
3.26 Until a fully automated solution is achievable, the Department should consider extending the current processes and procedures for transfer between schools of a similar sector and adopting this methodology for transfer between primary and post-primary schools. It should be noted that this will have an administrative impact on both primary and post-primary schools as schools will have to request or initiate the transfer process.

3.27 The Department should also consider setting up a working group to assess the opportunities presented by adopting and using the Schools Interoperability Framework (SIF). This has the potential to replace the current CTF format and provide enhanced file transfer processes. A SIF has the capability to automate the movement of data between the Department, managing

authorities, and supporting agencies and schools seamlessly. The benefits of a SIF, as published by Becta⁹, include:

- The provision of interoperability standards and governance arrangements, focusing initially on schools' Management Information Systems (MIS);
- Enabling diverse applications within the education sector to interact and share data efficiently, reliably and securely, regardless of the platform hosting the applications; and
- Facilitating better management and accessibility of data within and between schools (horizontal reporting) as well as between schools and other interested parties such as local authorities and government agencies (vertical reporting).

Figure 3.1: A School Interoperability Framework



The use of multiple assessment tools and scoring methodologies

3.28 The Department should request ESA and CCEA to initiate a school survey across all sectors to investigate the amount and type of assessment tools currently in use across schools. The survey should seek to highlight which assessment tools schools view as most beneficial and the rationale for their choice of tool. In addition, the survey should seek to ascertain if the automatic capture and recording of assessment results for school use only would be of benefit to schools for longitudinal reporting. An electronic survey could be undertaken through the current C2k-exchange service, for example.

3.29 The Department should request ESA to work with C2k to implement a method of capturing InCAS results and uploading them into SIMS.net for primary school-based reporting and analysis. This should be done in parallel to the provision of Assessment Manager for primary schools. A successful pilot to capture InCAS results and upload into SIMS.net has already

⁹ www.becta.org.uk

been undertaken by C2k using SIF.

- 3.30 ESA, in conjunction with C2k, should review the results from the school survey and, where necessary, provide templates and scripts to enable the automated upload of assessment results into Assessment Manager for the provision of longitudinal data. In addition, ESA should advise schools that ALTA is currently freely available to all schools and educate teachers on its use and benefits.

4 Identification of gaps, if any, in data

Objective 3: identify any gaps in data and recommend how these can be addressed.

Overview

4.1 This section seeks to identify any potential gaps in the information available in relation to school and pupil performance across the Department, managing authorities, associated agencies and schools. The identified gaps have also been reviewed against the future provision of eSchools to assess whether these gaps will continue to persist following the full implementation of eSchools and whether potential solutions can be identified.

Key findings



The ability to provide longitudinal data

4.2 There is currently a lack of longitudinal data available at school and pupil level across the educational system in the north of Ireland. While the delivery of eSchools is capable of providing longitudinal data at a school level, there is, however, at present, no identified means of providing pupil-based longitudinal data within or across educational phases in order to allow the tracking of pupil performance and achievement. There are a number of factors that will directly affect the capability to collect and report on longitudinal data. These include:

- A lack of an initial baseline at nursery or Year 1;
- Key Stage results for 1 and 2 aggregated at school level;
- Sims.net is not used to its full potential;
- No current systems in place for the provision of a Pupil Portfolio;
- Potential issues around data protection laws and the Freedom of Information Act; and
- A lack of agreement on the current transfer process and UPNs.

Inconsistent standards and process rules for data

4.3 The demand for educational data has grown in order to help inform policy development across the Department, managing authorities, and supporting agencies. This demand for data has led to a constantly evolving and largely un-coordinated approach to the collection of data and the

ways in which it should be defined and recognised across the system. The lack of commonality in data in terms of indicators, banding and data elements, can lead to differing interpretations of data which, in turn, can undermine the data-driven decision making process.

"An awful lot of this is clarity about what you're trying to get. That should drive report design and support materials and not the other way round". (Stakeholder respondent)

4.4 As part of its initial planning and development process, the eSchools project has identified a number of data elements that can differ in terms of definition and interpretation across the system. These include but are not limited to:

- Definition:
 - Home language codes;
 - Guardian relationship codes;
 - Reasons for leaving codes;
 - Address type codes;
 - Special needs codes; and
 - Suspension and exclusion codes.
- Interpretation:
 - Free School Meal banding;
 - School enrolment banding; and
 - Exam equivalences.

4.5 Another issue highlighted by the eSchools project is that of data primacy. There is uncertainty in relation to who is ultimately responsible for making changes to common data, and whether these changes are communicated in a timely and inclusive fashion across the system. Examples of current data primacy issues between the Boards and schools include:

- FSM status;
- Special Educational Needs; and
- Suspensions and expulsions.

The need for clear guidance and support for Area Learning Communities

4.6 Recent developments across England, Scotland and Wales have focused greater attention on the 14-19 continuum in post-primary and further education, particularly in skills and applied and general qualifications. As a result of this, a number of post-primary schools and Further Education Colleges across the north of Ireland have come together to form 'Area Learning Communities'.

4.7 Some stakeholders have identified a lack of a co-ordinated approach to the establishment and support of Area Learning Communities. The Department's current advice is that pupil data should be collated and returned by the pupils' 'home' school. The schools involved in the ALCs need to be able to track and exchange data related to pupil needs, performance and attainment across the ALC. There is currently a lack of advice on how this can be achieved, and, as a result, a number of schools and FE colleges could potentially claim joint credit for exam results. It should be noted, however, that the Western Education and Library Board is currently piloting an approach to sharing data across its ALCs. There is also an issue surrounding the potential low level of comprehension amongst schools in regard to the interpretation of course data from another school. Difficulties may arise, for example, for a 'home' school in interpreting examination results from a vocational course undertaken by one of its pupils at another school.

Gaps in the data

4.8 Through the eSchool planning and development process and stakeholder feedback during this

review, a number of potential gaps have been identified, relating, in the main, to quantitative, contextual and qualitative information at a school level.

- 4.9 However, it should be noted that several stakeholders stated that, in the main, the required data was largely available and that the main gaps reside in the processing and use of data.

"The data is there. It's what's done with it where there are gaps". (Stakeholder respondent)

"There are systems in place but not everyone uses them". (Stakeholder respondent)

"I do believe that all the data is accurate and that it is there. The problem is for someone to find the time to pick up the data and investigate it". (Stakeholder respondent)

- 4.10 Specific gaps are listed below:

- Some stakeholders suggested that the use and banding of Free School Meals by itself is not viewed as an exact measure of social deprivation. There are other socio-economic databases available which could be used in conjunction with FSM banding. It should also be noted that a weakness inherent in banding is the fact that a school may be positioned close to either the upper or lower parameters of a band. In some cases, this might skew the validity of comparisons with schools' performance in the same band;
- School Development Plans are, at present, created manually by schools in handwritten form or in Microsoft word and forwarded to the Department and Boards;
- Pupil turnover is not reported in a way which reflects the extent to which pupils are leaving and joining schools other than at the start of the school year. Currently this is only collected at post-primary level but it is not validated;
- The ability to report centrally on the school transfer process and the percentage of choice allocation across schools is currently not within the scope of the eSchools project. The information is, however, held at Board level;
- The ability to report on the condition of school buildings is currently not within the scope of the eSchools project. This information is, however, held at Board level;
- An inability to fully track pupils centrally when they are transferred into AEP and EOTAS;
- An inability to report centrally on the number of courses offered at post-primary and FE level and to analyse these courses by group to highlight potential duplications and under- or over-subscriptions; and
- There are currently on going discussions as to how eSchools can provide detail on schools committed expenditure in terms of accounts payable and salaries.

- 4.11 Table 4.1 highlights the quantitative data currently available at both a system and a school level and provides an indication of the data sources.

Table 4.1: Availability of quantitative data			
Aggregated performance data - primary		Aggregated performance data – post-primary	
Data	Potential source	Data	Potential source
% of pupils at expected level KS1 and KS2 (English and Maths)	eSchools/SDP	% of pupils at Level 5 or above KS3 (Eng and Maths)	eSchools
Average KS1 and KS2 results	eSchools/DE	% of pupils achieving Level 6 or above KS3 (Eng and Maths)	eSchools
Levels of Progression, including English, IT, and Maths	TBC	% of pupils obtaining 5 GCSEs A*-C (or vocational equivalent)	eSchools
		% of pupils obtaining 5 GCSEs A*-C including English and Maths (or vocational equivalent)	eSchools
		% of pupils obtaining GCSE A*-C in English	eSchools
		% of pupils obtaining GCSE A*-C in Maths	eSchools
		% of pupils obtaining 7 GCSEs A*-B (selective schools) including English and Maths	eSchools
		Average GCSE Points Score per pupil (overall and FSME/Non-FSME; EAL).	eSchools
		AS levels	eSchools
		% of pupils obtaining Level 3 qualifications	eSchools
Aggregated quantifiable data		School-based quantifiable data	
Data	Potential source	Data	Potential source
Current and historic enrolment	eSchools	Pupil teacher ratio	eSchools
Pupil turnover	eSchools	Average class size in primary schools	eSchools
Socio-economic profile	eSchools	Number of composite classes in primary school	eSchools
% of pupils in care	eSchools	Teacher pupil contact time (post primary)	eSchools
% of traveller children	eSchools	Number of school development and Baker days	eSchools
% of service personnel children	eSchools	Percentage of teachers engaging in CPD	eSchools/teachers' payroll
% of children with EAL	eSchools	Teachers days lost due to illness	eSchools/teachers payroll
Levels of special education needs	eSchools	Ratio of substitute days per teacher	eSchools
Staff turnover, age, absence etc	eSchools/teachers payroll	Pupil attendance rates	eSchools
Percentage of intake with school named as first preference.	eSchools/Boards	Suspensions and expulsions and pupils transferred into AEP/ EOTAS provision	eSchools/Boards

Recommendations

4.12 The following paragraphs present our recommendations under each of the following headings:

- The ability to provide longitudinal data;
- Inconsistent standards and process rules for data;
- The need for clear guidance and support for Area Learning Communities; and
- Gaps in the data.

Ability to provide longitudinal data

4.13 The Department should review the issues currently preventing the recording and reporting of longitudinal data. A number of the identified issues are covered by previous recommendations in this report including:

- The establishment of an early baseline;
- Key Stage 1 and 2 results are not always recorded at pupil level;
- The transfer of UPNs across sectors; and
- SIMS.net not being used to its full potential.¹⁰

4.14 The Department should consider establishing a cross-body working group to review the benefits, options and issues regarding the establishment of a Pupil Portfolio. In simplest terms, a Pupil Portfolio could contain longitudinal assessment and attainment details for pupils centrally, identified by their UPN. In more complex terms, the Pupil Portfolio could also be used to store examples of work and contextual information related to the pupil's progression.

4.15 There are a number of options in terms of the existing data infrastructure and services which could facilitate the introduction of a Pupil Portfolio. These include:

- The use of a central managed learning platform to allow the capture and reporting of a Pupil Portfolio; and
- An extension of the current eSchools remit to allow the capture and reporting of a Pupil Portfolio.

4.16 In order to address any potential issues related to data protection and disclosure obligations, the following factors should be observed:

- Data protection legislation should not create a barrier to sensible use and sharing of data, as long as broad principles of fair and lawful processing are followed and that these comply with the requirements of other data protection principles i.e. relevant permissions are sought from individuals to permit data sharing and agreed business protocols are adhered to;
- The framework of data protection regulation does introduce additional requirements for sensitive data (e.g. health or disability-related information) and information relating to minors. Any sharing of this information should ensure compliance with these requirements; and
- Compliance with disclosure obligations is dictated by a number of regulations, notably subject access rights under the Data Protection Act and disclosure obligations under the Freedom of Information Act. To be process- and cost-efficient, any data sharing framework will need to have clearly identified burdens and responsibilities in respect of disclosure obligations.

Inconsistent standards and process rules for data

4.17 The Department should establish a Single Design Authority (perhaps ESA) with responsibility for designing, maintaining and distributing of common schemas and data sets. Any such data sets should if possible be based on current government standards such as 'e-GIF'.

¹⁰ Please see Sections 2 and 3 of this report for a fuller consideration of these issues.

4.18 The establishment of an SDA would also allow standard business process rules to be designed for areas that are currently open to interpretation, for example exam equivalences, Free School Meal bands and school enrolment bands. The establishment of ESA provides an opportunity to establish a co-ordinated and 'joined up' approach to the use of data and infrastructure services throughout the education sector.

The need for clear guidance and support for Area Learning Communities

4.19 The Department should consider establishing a cross-sector working group to clearly identify and attempt to resolve the issues faced by Area Learning Community schools, including FE colleges. This group should work with C2k and the proposed new SDA (see recommendation above) to consider the infrastructure and service options available to assist ALCs in tracking and recording pupil movement and performance data.

4.20 Some of these issues relating to ALCs may be addressed through SIMS.net. The Department should consider working with C2k to establish a pilot of the SIMS.net Partnership Exchange module, a recent addition to SIMS.net which uses the SIF framework to enable the exchange and tracking of information across partnered schools. This could also have potential for extension into the FE sector using the SIF as a framework for the exchange of information and linking of UPNs and Unique Learner Numbers (ULNs) used across FE Colleges.

Identified gaps in data

4.21 The Department should consider using other socio-economic databases available which could be used in conjunction with FSM banding. Potential datasets could include:

- ACORN data set: a geo-demographic database available across England, Scotland and Wales containing a number of indicators to allow the identification of various deprivation indicators. This dataset is the basis of the methodology employed by the Fischer Family Trust in England and Wales.¹¹ The data used by Fischer Family Trust is not used at pupil level but is aggregated to a school level;
- NS-Sec: supplied locally by NISRA. This dataset is among a number of datasets supplied by NISRA; and
- IDACI: which has been used in some preliminary research work into social deprivation and educational attainment by DE.

4.22 An evaluation of these datasets should be undertaken to identify which, if any, could provide the most relevant and up-to-date socio-economic information and to ascertain whether any additional data items could be used to provide value-added and contextual information for reporting purposes.

4.23 There are a number of options which could be deployed to enable the electronic collection of School Development Plans (SDPs) which could include information on the type of courses provided through the timetable module. While targets within SDPs are intended to inform individual school improvement policies rather than system-level, there are benefits to holding this data in SIMS, including the potential to make available targets throughout the school at, for example, Key Stage level. The Department should therefore review and evaluate the options available and seek to adopt a method to collect and record School Development Plans electronically in order to facilitate circulation. These include:

¹¹ Please see Section 7 (value-added options) of this report for a more detailed consideration of the Family Fischer Trust data collection and analysis methodology.

- The use of C2k exchange or eSchools to capture and store School Development Plans in electronic format and forward to Department and Boards;
 - Consultation with C2k and Capita to explore whether the information could be extracted from SIMS and forwarded to the Department and Boards; and
 - The use of a third party product, for example wholeschool.tv to capture School Development Plans. This would require consultation with C2k, eSchools and Capita in order to make the data available to SIMS.net and eSchools and Capita to integrate the plans into SIMS.net and make the data available to the Department and Boards.
- 4.24 The focus of the School Development Plan should, however, remain at the school level and be used by the principal to develop and monitor PRSD targets throughout the school.
- 4.25 We have noted that there is no validated reporting on pupil turnover across primary and post-primary schools. The adoption of a UPN and the development of a standard transfer process should provide an option for capturing this data as part of the eSchools project.
- 4.26 The condition and suitability of school buildings is assessed and recorded by the Boards. This information is not currently made widely available nor is it within the scope of eSchools's remit. The Department, ESA and the stakeholder group should consider in more detail the relevance and importance of enabling eSchools to capture and store automatically information relating to the condition of school buildings.
- 4.27 As part of the recommended transfer review process, the seamless exchange of transfer preferences between schools and the Boards should be taken into consideration. This, in conjunction with eSchools, could provide a method of reporting centrally the allocation of preference places across schools.
- 4.28 The Department, in conjunction with C2k and eSchools, should evaluate the SIMS.net personnel.net module with a view to providing better personnel recording and reporting at a school level. This could also provide committed costs in terms of salaries to eSchools. The on-going development of the new teachers' payroll system could facilitate this process.
- 4.29 The review of the use of the SIF framework may also offer opportunities to develop a seamless transfer method for suspensions and expulsions between schools and the Boards and also the ability to move and track pupils transferred into AEP/EOTAS.

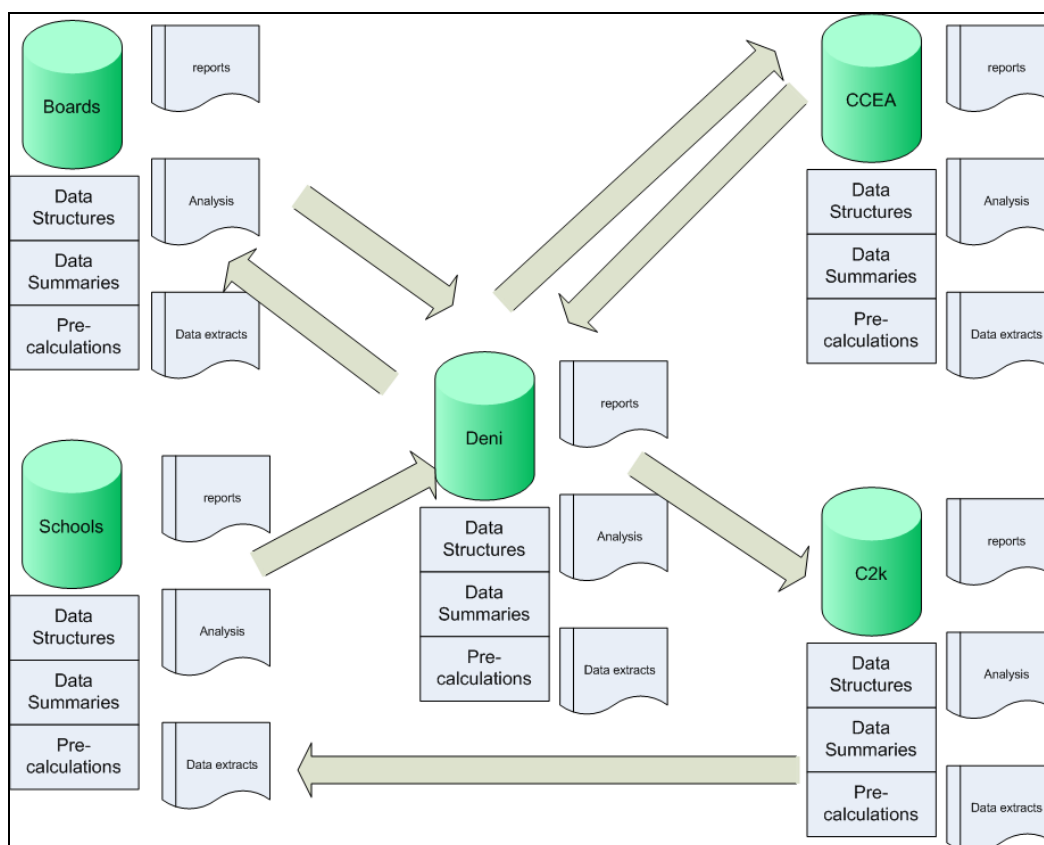
5 Review of data processing arrangements

Objective 4: examine the arrangements in place for data processing and make recommendations for improvement

Overview

5.1 The diagram below presents a high-level illustration of the main data processing arrangements in place across the education system in the north of Ireland.

Figure 5.1: Overview of current processes



Key processes “as is”

5.2 The current “as is” process for reporting on school and pupil performance is complex and rather fragmented and involves a relatively high level of input from various organisations including C2k, schools, CCEA, the Department and the Boards. Issues with incorrect data and data received in a less than timely fashion can also add to the complexity of the current process. This section of the report highlights some of the key processes underpinning the collection and reporting of school and pupil performance data.

Current data processes	
<p>DE returns: schools are expected to produce a census return to DE in early October.</p>	<p>The school runs an extract routine to extract the data from SIMS.net and a report is produced showing a number of errors and warnings associated with the extracted data. As part of the extract routine schools must enter additional data which is not available from SIMS.net. The school reviews the report, and must fix the reported errors before the data can be forwarded to the Department. The data can still be sent if warnings exist. Once all the errors are corrected, the school forwards the return using a secure electronic transfer process (Webex). The Department receives the information and runs a series of hard and soft checks against the data. If problems are identified the school is contacted and the correction is made by the Department before importing the data into Department systems. Schools are informed of the error and are advised to correct their data within SIMS.net. The schools are also expected to provide leavers data in early October. This process is similar in nature to the census return.</p>
<p>Key Stage 1 & 2: Key Stage 1 & 2 assessments are teacher-based assessments that can be corroborated using optional assessment units.</p>	<p>CCEA distributes assessment forms to schools, which are designed to enable scanning of results by using Optical Mark Reading. After a moderation process the schools manually fill in the assessment forms. Forms are then returned to CCEA for automatic scoring using OMR reader. The data is aggregated, encrypted and burned to disk for hand delivery to the Department. The Department then uploads the data into internal systems.</p>
<p>Key Stage 3: Key Stage 3 assessments are a mix of teacher assessments and test units in English, Maths and, optionally, Science.</p>	<p>Schools are expected to extract pupil information and forward it electronically to CCEA in early March. CCEA reviews the file and sends a report back to schools electronically. Schools check the report and confirm that the data is correct. The teacher-assessed outcomes are then processed and forwarded to CCEA electronically, usually by the third week in May. CCEA then processes the assessment outcomes and the results from the test units and returns the assessment to schools by the first week in October.</p>
<p>Key Stage 4 & 5: Key Stage 4 & 5 tests are provided by a number of examination bodies.</p>	<p>Schools receive exam papers (dates can vary) and run the exams in a secure and controlled environment. The exam papers are returned to the examination body for assessment and marking. The examination body returns the results to schools in paper form and electronically. Schools check the report and confirm that the data is correct. The majority of the electronic results can be uploaded into SIMS.net. Exam results are forwarded to the Department as a result of the school census return in September.</p>
<p>Post-primary Inspectorate reports: prior to inspection, schools are expected to provide a number of reports including the school prospectus and a report on exam results.</p>	<p>C2k writes a series of macros to append national averages and extract exam information from SIMS.net for previous years. The macro is tested and if correct is forwarded to schools electronically. Some schools require assistance to run the macros and reports from C2k. Macros are run and the data is produced, mostly from within SIMS.net. This data is not available through standard reports.</p>
<p>School-based assessments: there are number of assessment modules available to primary and post-primary schools.</p>	<p>The school makes arrangements to perform assessments. The assessment can be in paper or electronic format. The school carries out the assessment and the results are returned to the assessment body for analysis. Results are assessed and analysed before being returning to schools - the detail of the analysis can vary depending on the assessment body. Many schools analyse their own results due to the restrictive costs of external analysis.</p> <p>Post-primary schools may choose to enter the results into SIMS.net for additional statistical analysis and longitudinal reporting through SIMS.net and Assessment Manager. Currently only CATS is capable of being uploaded automatically into SIMS.net. The majority of primary schools do not currently input assessment results into SIMS.net for analysis purposes and longitudinal reporting through Assessment Manager. A pilot has been run to fully automate the upload of InCAS results to SIMS.net for analysis and reporting purposes.</p>

Current data processes

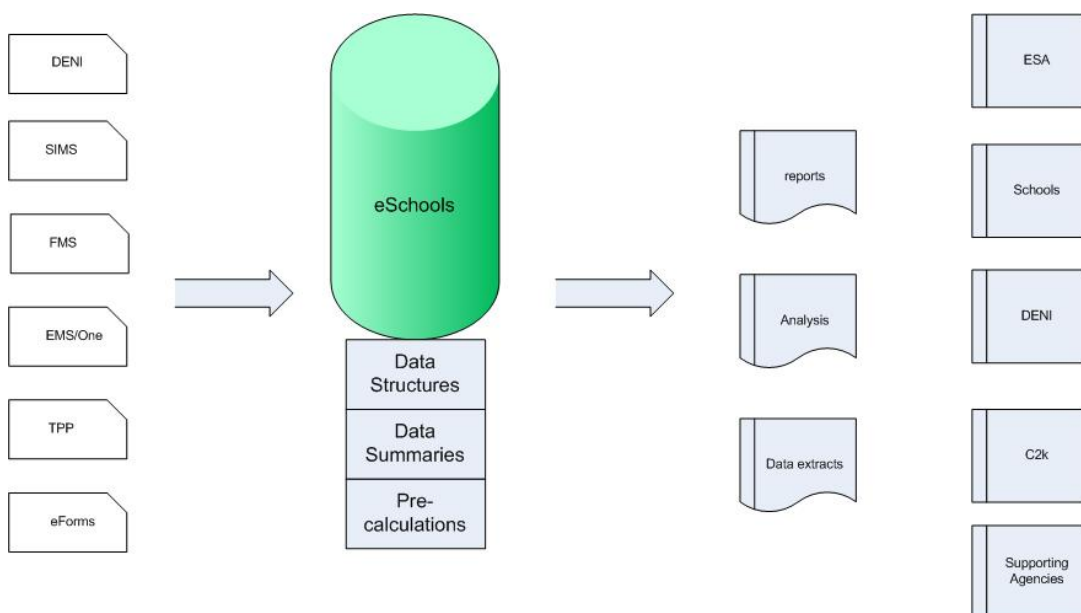
Bath dataset: DE receives a copy of the Bath dataset in February the following year. This data is analysed against local and national averages.

Bath University collates the data from national exam bodies, amalgamates it and provide national averages. This information is then forwarded to the Department in early February. The Department run a series of analyses and reports, and the analysis is sent to C2k, Boards and other interested bodies. These results are not currently sent directly to schools.

The implementation of eSchools

- 5.3 The eSchools project is scheduled for Phase 1 delivery in April 2009. As part of Phase 1, a central data warehouse will be established to capture and build on school census information. In addition to the census information, eSchools will provide a scheduled upload from schools on a regular basis. The upload is scheduled to harvest data automatically from SIMS.net and forward it to the data warehouse.
- 5.4 The data collected from SIMS.net will be analysed and a series of hard and soft checks will be performed. This will produce a report highlighting errors and warnings. This information can then be viewed by schools to allow corrections to be made. Schools will be asked to review the information and make any changes necessary in SIMS.net to correct the data. The corrected data will be collected automatically from SIMS.net and sent to the data warehouse. This process is an iterative process and will continue until the end of the calendar month.
- 5.5 At the end of the calendar month, the data for each school will be reviewed against the current hard and soft check information. If no errors exist, the information will be automatically loaded into a live data set to produce a rolling update on the last census return. If problems still persist, the school will be informed and a further attempt to retrieve the information will be undertaken at the end of the following calendar month.
- 5.6 It is important to note that the data uploaded from SIMS.net will not include details on school-based assessments such as InCAS, Alta, NfER, Cats, and Yellis. This information will continue to be held in schools for school-based reporting purposes only. Figure 5.2 illustrates the ways in which the implementation of eSchools will streamline current data processes.

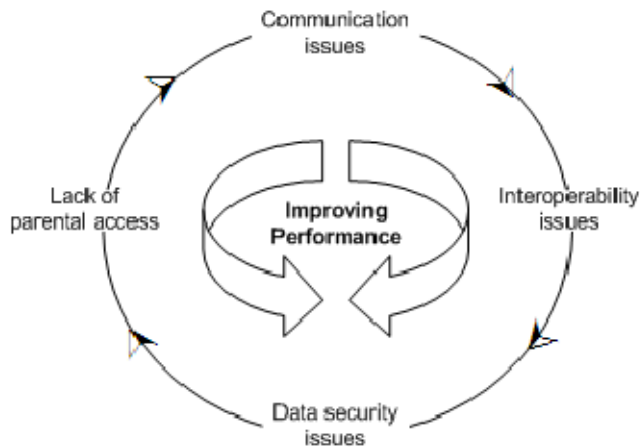
Figure 5.2: Overview of processes following the implementation of eSchools



5.7 The following paragraphs highlight the improvements that eSchools will bring to the current processes.

- **DE returns:** the physical process of doing DE returns should remain the same. ESchools, however, should help speed up the process as the data in schools will be checked on a regular basis. In addition, eSchools will provide updated data, potentially on a monthly basis. It is feasible that, at some point, the annual DE returns may no longer be required and that an updated picture would allow monthly census returns to be completed. This, however, is outside the current scope of eSchools and may require policy, legislative and contractual changes. Consideration could also be given to the reintroduction of an average daily enrolment calculation in order to provide an additional measure of pupil turnover during the school year;
- **Key Stage 1, 2 and 3:** as part of this review, an opportunity has been identified to review Key Stage 1, 2 and 3 assessments. These assessments could be delivered and captured electronically, allowing the assessments to be uploaded to the Department for aggregated school-based reporting. It would also allow the data to be uploaded at pupil level into SIMS.net to enable individual schools to capture the data longitudinally and undertake comparative analysis, for example between different peer groups, through Assessment Manager;
- **Key Stage 4 & 5:** the physical process of returning and marking exams is likely to remain unchanged. Creating a SDA to resolve issues with exam equivalences and exceptions and inclusions should however speed up the process and make it more inclusive. In addition, eSchools will allow schools to download the reporting dataset related to banding analysis by grades in Excel format. This would allow schools to run their own banding analysis reports;
- **Post-primary Inspectorate reports:** given that the majority of this information will now be held in eSchools, the Inspectorate should be able to run these reports on a more regular basis, without the need of intervention from C2k or schools. In addition, the recommended options provided in relation to the electronic submission of School Development Plans could provide missing data in terms of courses provided and so on;
- **School-based assessments:** eSchools will not have an impact on school-based assessments, including InCAS. These assessments are for school use only and there are no plans to upload the results to eSchools for analysis purposes. There is, however, an opportunity to allow the electronic capture and storing of InCAS and other assessments in SIMS.net for school use. This could provide schools with longitudinal data on pupils for comparative analysis using Assessment Manager. If the data were to be uploaded to eSchools, it may provide useful information to identify system-wide problems, however, clear parameters for the dissemination of this data in this way would need to be established to avoid the potential risk that InCAS may be viewed as some form of 'transfer test'; and
- **Bath dataset:** the deployment of eSchools will not affect how the Bath dataset is handled. There is however an opportunity to use eSchools to build a local set of exam results and equivalences at the end of a calendar month. This could then be compared against the Bath dataset to highlight errors and inconsistencies.

Key findings



Communication issues

5.8 A number of stakeholders have raised the issue of the lack of clarity around the roles and responsibilities of key organisations i.e. C2k, CCEA and CASS in delivering services to schools. The main concern raised related to some uncertainty regarding roles and responsibilities in relation to curriculum delivery and delivery of school-facing services. Several stakeholders considered that this led to duplication of effort, with the potential for gaps in the information gathered and ultimately fractured services delivered across schools and Board areas. It was, however, acknowledged that the establishment of the single Education and Skills Authority should help reduce these weaknesses in the current provision.

Interoperability issues

5.9 The data infrastructure and services deployed across the Department, managing authorities and supporting agencies are essentially diverse. The current infrastructure and services in place have led to islands of information, duplication of effort and a general lack of interoperability. An opportunity exists to address these issues with the establishment of the Education and Skills Authority.

5.10 There are currently a number of established contracts across C2k that are set to expire over the coming year. Contract negotiations are currently ongoing with a view to extending these services which currently include School MIS systems, Wide Area Network services for all schools and Local Area Network services for post-primary schools and special schools.

Data security issues

5.11 Stakeholder feedback and the review process has highlighted some potential issues with data security, with, for example, data being hand delivered to the Department on encrypted CD/DVD disks. Recent Government guidelines in relation to the use of removable media for the transfer of information state:

- Where transfer must occur, this should be through secure electronic transfer so that discs are phased out where possible; and
- Where data have to be put on to removable media such as discs or laptops, the information transferred should be minimised and encryption used.

Lack of parental access

- 5.12 As part of the *Every School a Good School* strategy, there is a requirement for schools to participate in a “high level of parent and community involvement and support”. A number of schools and ALCs are making considerable effort in involving parents and the local communities. This can however cause administrative burdens to schools and, indeed, parents. There are a number of alternative options available to provide greater collaboration between schools, parents and the community using digital platforms such as the Internet, email and text.
- 5.13 Our research has demonstrated that elsewhere in England, Scotland and Wales and in the USA for example, efforts are being made to increase levels of parental engagement through the use of technology. In Montgomery County, Maryland, parents can access a range of services online, including payment services, and can provide their views on their children’s school in anonymised electronic surveys. In relation to contact by text, approximately 1,000 schools in England, Scotland and Wales, for example, use the Groupcall Messenger system to improve communications with parents and to monitor and reduce truancy. This system allows parents to reply to SMS messages from the school by text.
- 5.14 However, a recent survey of parents commissioned by Becta revealed that while two-thirds of parents would like to receive information on their children’s performance through text messaging or the Internet, only 8% of parents currently do so.¹²

Recommendations

5.15 The following paragraphs present our recommendations in terms of:

- Communication issues;
- Interoperability issues;
- Data security issues; and
- Lack of parental access.

Communication issues

5.16 The establishment of the single Education and Skills Authority should help resolve the current issue surrounding the perceived lack of clarity around some roles and responsibilities of key organisations such as C2k, CCEA and the Boards in delivering services to schools. Until such time as ESA becomes established the Department should consider working with CCEA, C2k and the Boards to help co-ordinate the services offered to the schools.

Interoperability issues

5.17 The establishment of ESA will provide the opportunity to develop a joined-up approach to the delivery of education services. Technology can be a significant enabler for effecting change and providing such cohesive services. In the past, the integration of multiple systems usually meant bringing systems together into a single platform. This is no longer the case: integration can now be achieved using more cost-effective measures such as “middleware” or “web services” to provide a bridge between technically diverse platforms.

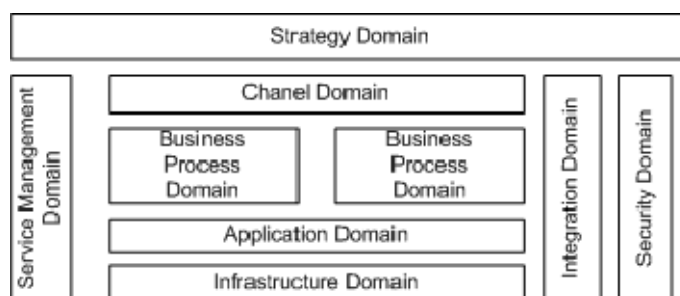
5.18 There are a number of on-going cross-government initiatives both internationally and nationally to establish standards for interoperability within departments and cross-government. One such initiative in England, Scotland and Wales is the cross-Government Enterprise Architecture (xGEA). This is a fundamental element of the *Transformational Government - Enabled by Technology* strategy which was published in November 2005. A core part of the strategy was to create a standard Enterprise Architecture reference model which would help align existing and

¹² *Poll of Parents* (Becta, 2008)

emerging technical architectures across Government services.

- 5.19 In addition a relatively new initiative in England has led to the creation of an Information Standards Board (ISB) for education, skills and children's services in England (ECCS). This Board is intended to act as the system-wide authority for all information and data standards. Its mission is to:
- Facilitate information sharing across the system;
 - Agree information standards to aid front line delivery;
 - Improve efficiency; and
 - Reduce costs and minimise bureaucracy.
- 5.20 The Department in conjunction with ESA should consider establishing an education enterprise architecture model which builds on the current xGEA framework. In addition the Department in conjunction with ESA should consider establishing a Single Design Authority or a similar body to the ISB in England in terms of remit.
- 5.21 The current contract extensions in relation to school MIS systems, Wide Area Network services and Local Area Network services to post-primary schools, provides a unique opportunity to build on the current services offered within SIMS.net and across the existing Wide Area Network. The Department should work with C2k and the contract providers to identify and exploit the opportunities provided. Figure 5.3 provides an overview of the current xGEA enterprise architecture model.

Figure 5.3 The xGEA Enterprise Architecture Model



Security issues

- 5.22 Cross-government data security is currently under review in the north of Ireland. In addition, Becta is currently reviewing its guidance on data protection for schools. The Department should review its current procedures in relation to access to data and the transfer of data on media to ensure it complies with the latest data security recommendations. In addition, the Department should work with the support agencies to ensure that systems and schools are compliant with Becta guidelines.

Lack of parental access

- 5.23 With the extension of the current C2k contracts, there are a number of opportunities available to provide parental access to school-based data relating to their children. The Department should consider working with C2k to run a pilot of SIMS.net Learning Gateway. This would allow schools to provide secure and authenticated parental access to information made available by the school administrator.
- 5.24 In addition, the Department should also consider a number of options regarding the provision of

communication with parents and the local community using mobile communications such as SMS and MMS messaging services. There are a number of products available offering such services and indeed, SIMS.net contains a "Group Call" module which enables transmission of SMS messages to parents.

6 Assessment of qualitative indicators in *Every School a Good School*

Objective 5: examine the range of qualitative measures identified in the Department's consultation document on school improvement policy *Every School a Good School* and assess how these can be assessed at school level and across schools.

Overview

- 6.1 This section of our report discusses the quality indicators proposed in the school improvement document *Every School a Good School*, and examines the ways in which these can be assessed both within and between schools.
- 6.2 *Every School a Good School*¹³ is the Department of Education's new pupil-centred school improvement policy currently under consultation. The underpinning principle of the policy is that 'improvement and raising achievement is, above all, the responsibility of the school'. Self-evaluation and self-improvement are central to the policy and central to school improvement.
- 6.3 The document proposes a number of quality indicators to help schools determine pupil and school progress. The rationale behind these measures is the need to assess the breadth and depth of the entire educational experience provided by the school. It is anticipated that these measures will also ensure 'educational accountability and aid schools with the self-evaluation process.'
- 6.4 The quality measures outlined in *Every School a Good School* are presented in Table 6.1.

Table 6.1: *Every School a Good School* Quality Indicators

- Performance in assessments and public examinations.
- Breadth and balance of curriculum.
- Quality of the school development plan and the targets for improvement.
- Outcomes of inspection.
- Quality of schools' financial management.
- Outcomes of staff, parent and student surveys.
- Quality of accommodation.
- Range and uptake of extra-curricular activities on offer.
- View of governors/parents/complaints against a school.
- Any collaborative arrangements with other schools or colleges.
- Pupil and staff attendance.
- Level of suspensions and expulsions.

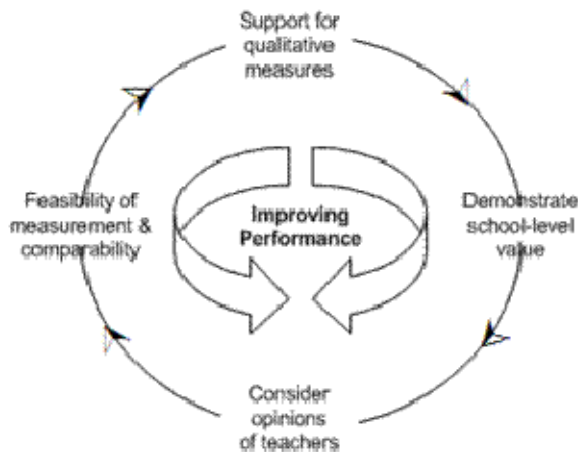
Source: *Every School a Good School* (DE, 2008)

- 6.5 While the development of an effective data strategy is crucial, *Every School a Good School* recognises that this strategy should not focus solely on quantitative data. Instead, school and pupil performance information should encompass all aspects of school life. The quality indicators provide a more holistic view of the range of factors which determine school and pupil progress.

¹³ *Every School a Good School* (DE, 2008).

Key findings

- 6.6 The following section outlines key findings relating to the development and use of qualitative indicators from the stakeholder consultation phase and from the desk research undertaken as part of our research. The diagram below illustrates the main themes emerging from this analysis.



Widespread support for qualitative measures

- 6.7 The stakeholder engagement phase of this review confirmed widespread support for the introduction of qualitative measures, with many participants recognising the benefits of assessing the qualitative aspects of the school experience for pupils. Stakeholders were also aware of the indicators employed by ETI for schools' self-assessment.

"Identify schools performing well and provide a more holistic approach". (Stakeholder respondent)

"There is a need to have both quantitative and qualitative data". (Stakeholder respondent)

"Quantitative and qualitative data can provide 'added value' for schools and the system". (Stakeholder respondent)

- 6.8 The current literature also emphasises the need for qualitative data and notes the risk that more quantitative measures of performance can be given greater significance than other less easily measured aspects of education (CES, 2003).¹⁴
- 6.9 Indeed, in October 2008, DCSF and OfSTED launched a consultation¹⁵ on a suite of indicators designed to assess a school's contribution to pupil well-being. While the consultation document recognises that "assessing accurately how well a school is promoting all aspects of its pupils' well-being is not straightforward", it emphasises the crucial role that schools play in promoting the well-being of its pupils and that:

"Schools are concerned with the development of the whole child and young person... pupils' self-confidence, social skills and resilience not only contribute to their achievement but are important in their own right". (DCSF & OfSTED, 2008)

- 6.10 This document does not suggest that schools should be held wholly responsible for such outcomes as parents and other agencies have a major part to play. Instead, it envisages that the consultation will result in a set of well-being indicators that can be benchmarked nationally

¹⁴ *Measuring and Managing Performance in Education*, (CES, 2003).

¹⁵ *Indicators of a School's Contribution to Well-Being* (DCSF & OfSTED, 2008).

and which can help inform school improvement planning.

Every School a Good School quality indicators

6.11 The table below presents the indicators from *Every School a Good School* and highlights where the information supporting these indicators is currently held. For the majority of the indicators, the supporting information can be found at school and system level. The challenge remains, however, in bringing all this information together.

Table 6.2: Access to <i>Every School a Good School</i> quality indicators	
Quality indicators	Availability
Performance in assessments and public exams	Available through SIMS and the Bath dataset (key Stage 1 & 2 the exception)
Breadth and balance of curriculum	School Development Plan
Development plans	To be uploaded to SIMS
Schools financial management	FMS module
Staff, parent and student surveys	Eforms through eSchools
Quality of accommodation	School estate – some ELBs use Manhattan
Range and uptake of extra-curricular activities	May be available through the SDP or extended schools
Collaborative arrangements	Eforms
Pupil and staff attendance	Personnel.net and SIMS
Level of suspensions and expulsions	Fragmented

6.12 The current eSchools remit includes the development of forms to capture electronically more qualitative information which may not otherwise be readily incorporated into SIMS.

Additional quality indicators

Qualitative indicators already in use in the north of Ireland education system

6.13 At present, the Education and Training Inspectorate (ETI) uses a range of qualitative indicators in the self-evaluation process. There are 20 ETI indicators, categorised into three broad areas: ethos; learning and teaching; and management. These indicators are accompanied by detailed guidance on their application and potential sources of evidence in the self-evaluation document *Together towards Improvement*.¹⁶

Table 6.3: Quality indicators in <i>Together towards Improvement</i> (ETI, nd)	
Ethos	<ul style="list-style-type: none"> • Climate of the school • Links with parents • Pastoral care
Learning and Teaching	<ul style="list-style-type: none"> • Planning for the curriculum • Learning • Teaching • Teachers' assessment of pupils' work • Implementation of the curriculum • Attainment • Assessment, recording and reporting
Management	<ul style="list-style-type: none"> • The effectiveness of the principal • The effectiveness of teachers with specific responsibilities • Monitoring and evaluation • Action to improve learning • Staff development • Staff deployment • Links with other schools and agencies • Accommodation • Resources

¹⁶ *Together towards Improvement* http://www.etini.gov.uk/together_towards_improve.pdf

6.14 The existence of two sets of qualitative indicators has the potential to create some confusion amongst school staff, which could impact upon level of use throughout the whole sector. It is therefore crucial to achieve consistency between the indicators and ensure these are endorsed by schools, the Department, ELBs, ESA and ETI, amongst other stakeholders.

Qualitative indicators in use elsewhere

6.15 Our desk research revealed examples of quality performance indicators used elsewhere, such as Scotland's *How Good is Our School?* initiative.¹⁷ In many cases, these indicators were found to have had a positive effect on staff morale. Examples of indicators employed in Scottish schools are presented in the table below.

Table 6.4: Examples of <i>How Good Is our School?</i> quality indicators	
Indicators	Assessment statement
Outcomes and success for all learners	School has a personal target setting week. Children choose a target and at the end of the week parents, the headteacher and child comment and give a 1 to 5 assessment grade.
Common vision	Two partnership officers are based in schools community offices. They run well-attended workshops for new parents. They also visit homes to support parents and carers.
Working with parents	Staff led a family learning week. It focused on numeracy and literacy skills of both parents and children.
Continuing professional development	Staff are fully engaged in identifying the aims and priorities for their own professional development. They evaluate the impact of professional development on learners' experiences and performance.

6.16 The current DCSF and OfSTED well-being consultation noted above proposes two types of indicators:

- Indicators relating to quantified outcomes over which schools can have significant influence; and
- Indicators based on the perceptions of pupils and parents, relating to *Every Child Matters* outcomes and the school's contributions to them.

6.17 The DCSF and OfSTED suggest that the first, quantified, indicators should include:

- The school's overall attendance rate for the most recent school year for which data are available;
- The percentage of persistent absentees - pupils who have missed more than 20% of sessions;
- The percentage of pupils doing at least two hours a week of high quality PE and sport;
- The take-up of school lunches;
- The rate of permanent exclusion; and
- Post-16 progression measures (participation in learning in the year after they left compulsory schooling).

6.18 In terms of indicators relating to the perceptions of pupils and parents, it is suggested that a number of measures are collected by survey. These include the extent to which the school:

- Promotes healthy eating;
- Promotes exercise and a healthy lifestyle and (for younger children) play;
- Discourages smoking, consumption of alcohol and use of illegal drugs and other harmful substances;

¹⁷ *Making it happen using performance indicators*, The Scottish Office.

- Gives good guidance on relationships and sexual health;
- Helps pupils to manage their feelings and be resilient;
- Promotes equality and counteracts discrimination;
- Provides a good range of additional activities;
- Gives pupils good opportunities to contribute to the local community;
- Helps people of different backgrounds to get on well, both in the school and in the wider community;
- Helps pupils gain the knowledge and skills they will need in the future;
- Offers the opportunity at 14 to access a range of curriculum choices; and
- Supports pupils to make choices that will help them progress towards a chosen career/subject of further study.

6.19 Indicators to be measured through pupil surveys include the extent to which students:

- Feel safe;
- Experience bullying;
- Know who to approach if they have a concern;
- Enjoy school;
- Are making good progress;
- Feel listened to; and
- Are able to influence decisions in the school.

6.20 Other measures cited in the literature include: the emotional health and well-being of pupils; outcomes such as a child’s engagement and motivation for learning; and relationships with peers and teachers. According to one source, these measures need to be reflected to understand pupils’ individual learning more fully (Duckworth, 2007).¹⁸

Stakeholder views on specific indicators

6.21 Participants in this review were consulted on the *Every School a Good School* quality indicators and potential additional indicators. As noted above, stakeholders were supportive of the concept of qualitative measures but suggested that care should be taken to ensure that these are interpreted in light of the general context of a school. It was highlighted, for example, that a high level of suspensions and expulsions may indicate a rigorous approach to tackling bad behaviour such as bullying rather than a failure on the part of the school.

6.22 A common theme was the importance of indicators relating to teachers’ views and experience. Specific indicators cited included: teacher views and opinions; morale and satisfaction levels; and uptake and access to CPD opportunities. CPD and teacher training measures were viewed as particularly important as teaching quality is at the core of school performance and improvement.

“Industrial relations are a critical factor and can have an important effect on performance”. (Stakeholder respondent)

“Attitudinal information is important especially from parents and teachers”. (Stakeholder respondent)

“We need to look at staff development [as a qualitative indicator]; schools must identify staff needs”. (Stakeholder respondent)

“We need to identify need, what teachers need, the skills and competencies and CPD opportunities”. (Stakeholder respondent)

6.23 A number of other indicators were identified by stakeholders, including ethos and leadership:

¹⁸ *What role for the 3R? Progress and attainment during primary school* (Duckworth, 2007).

"We would be very supportive of qualitative indicators. One other thing that we think would be important is the ethos. I think ethos has a big impact on performance". (Stakeholder respondent)

"I would be concerned about schools that have never created a leader. It demonstrates new thinking, and enriches the learning process".

6.24 Table 6.5 presents indicators suggested by stakeholders as having particular importance.

Table 6.5: Potential indicators emerging from the stakeholder engagement
<ul style="list-style-type: none"> • Parent teacher meetings; • Industrial relations; • Ethos of a school; • Absence including teacher absence; • School vision; • Leadership; • School estate; • Staff development; • Teacher turnover; • Destination of pupils transferring between phases; • Pupil suspensions; • Measurement of the number of children who exit schools, not just suspensions and expulsions; and • Pupil turnover.

6.25 Table 6.6 presents a combined list of potential qualitative indicators derived from *Every School a Good School, Together towards Improvement*, the current literature and the stakeholder engagement phase of this review. Table 6.6 illustrates the ways in which these indicators may contribute to three key characteristics of effective schools (in terms of the quality of leadership, teaching and learning, and of the school ethos).

Table 6.6: Qualitative indicators			
	Leadership	Teaching and learning	Ethos
Breadth and balance of curriculum, incorporating the school development plan	✓	✓	
Outcomes of inspection	✓		
Views of parents, including surveys and feedback	✓		✓
Links with parents, including activities and groups to engage with parents, and attendance at parent teacher meetings	✓		✓
Range and uptake of extra-curricular activities.	✓		✓
View of governors, including attendance at school meetings and events	✓		
Complaints against a school	✓		✓
Collaborative arrangements including links with other schools and agencies, including community and cross-community links	✓		✓
Staff development, including days for training, type of training and access to CPD opportunities, membership of subject associations, exam boards etc	✓	✓	
School industrial relations	✓	✓	✓
Teacher turnover	✓	✓	✓
Pupil mobility			✓
Views of staff through surveys and charter mark awards	✓	✓	✓
Views of students including health and well-being, motivation and attitudes to learning	✓	✓	✓
Ethos and vision of the school including pastoral care	✓		✓
Quality of financial management	✓		
School accommodation including fitness for purpose	✓		
Quality of leadership	✓		
Assessment of pupils' work		✓	

Measurement and comparability

- 6.26 Central to the consideration of qualitative indicators are the issues of measurement and comparability. The significance of qualitative indicators and the value they add to school and pupil data is widely accepted, however indicators must have the potential to be used and benchmarked across all schools across the sector regardless of size or circumstance. The development of indicators should also address the ease of data collection in support of these measures, for example, in historically problematic areas such as parental engagement.
- 6.27 The Scottish Office has published case studies of various approaches employed by schools to combine self-evaluation and performance management using performance indicators, based on *How Good is Our School?* Examples of data collection included combining exam performance with data on teachers' or parents' views to construct quality evidence.¹⁹

A balanced scorecard approach

- 6.28 During the stakeholder engagement phase and the steering group meetings held as part of this review, it was noted that there is a move towards a balanced scorecard approach in some parts of England, Scotland and Wales. The example below is drawn from a consultation undertaken by Swindon Borough Council to provide a more holistic picture of the performance of schools in its area.

Academic excellence: 'schools ensuring that every child achieves academically'	Outreach and engagement: 'schools working with each other, the community and other partners'
Pupil learning experience: 'schools engaging pupils who enjoy their education'	Resource management: 'schools using their human and financial resources efficiently'

- 6.29 The Council also provides sample measures for each objective, for example, the use of a staff recruitment and retention measurement under the resource management objective. The scorecard also incorporates value-added measures under the academic excellence objective.

Communication and engagement

- 6.30 While stakeholders were supportive of the introduction of quality indicators, some concerns emerged regarding the way in which these would be received by schools and whether the indicators would be used solely for self-evaluation. To avoid any risk that school leaders and teachers may view these indicators as an additional means of scrutiny, it will be important to communicate with schools and teachers and provide assurance that the inclusion of qualitative measures is for the benefit of all schools. Ensuring this message is conveyed effectively to schools will assist teachers to understand and support their use, and will contribute to the ultimate success of the new system.

Recommendations

- 6.31 The paragraphs which follow present our recommendations in relation to:
- Additional quality indicators;
 - Consistency of application and measurement;
 - Communication and engagement; and
 - Measurement and comparability.

¹⁹ *Making it happen using performance indicators* available at www.scotland.gov.uk/library/documents4/make-03.htm.

Additional quality indicators

6.32 A number of additional quality indicators have emerged through the desk research and the stakeholder interviews undertaken as part of this research. It is recommended that these indicators are consolidated (see Table 6.5), prioritised and addressed with school leaders to ensure that these measures are the most appropriate and relevant to them.

Consistency of application and measurement

6.33 The information provided by the quality measures will add considerable depth to the existing school and pupil data available. However the success of quality indicators will rely upon buy-in from those individuals who will have ultimate responsibility for their application. Consistency in the definition and use of the indicators will be important to ensure support at a school level.

6.34 It is recommended that ETI, ESA and the Department come to agreement on one set of indicators that can be used not only for self-evaluation, but to provide a more holistic overview of school performance. Consideration should also be given to further developments in the use of qualitative indicators elsewhere, including, for example, the balanced scorecard approach.

Communication and engagement

6.35 Once a single set of indicators have been agreed, an effective and inclusive communication strategy will be required in order to promote and disseminate the indicators to schools. This strategy should focus on the benefits of quality indicators for schools in assisting them in the process of performance assessment and improvement and should be supported by guidance on measurement and recording and by case studies of good practice. This strategy should also include provision for feedback from schools on the quality indicators and in particular the areas they feel would help reflect school performance.

Measurement and comparability

6.36 As noted above, the resolution of issues relating to measurement and comparability will be essential to the introduction and success of quality indicators. Although stakeholders were positive regarding the introduction of qualitative measure, concerns exist around the feasibility of the measurement of quality indicators.

6.37 It is therefore recommended that the agreed quality indicators are grouped to facilitate measurement and comparability. Indicators have the potential to be grouped under the phases to which they are most relevant. This strategy should allow primary and post-primary schools to collect and measure those indicators most relevant to their particular phase and the different levels of pupil development. There will however be a number of indicators spanning both phases such as development plans.

6.38 These indicators should be accompanied by guidance on measurement and examples of the evidence which should be provided to support the measurement decision. A number of statements for each indicator which reflect progress towards success could be developed, ranging from, for example, "more development required" to "excellent".

6.39 Schools should be provided with clear guidance and best practice examples for the collection of evidence to support the quality indicators. A common set of templates should be designed for use by all schools, with examples of information used to support their evidence. These templates could in turn be used to pull information into the MIS system. The Department should collaborate with eSchools, ESA, ETI and the school sectors to develop an appropriate format. It is recommended that ETI utilises its experience of the *Together towards Improvement* indicators to share best practice examples of qualitative data collection.

7 Consideration of value-added options

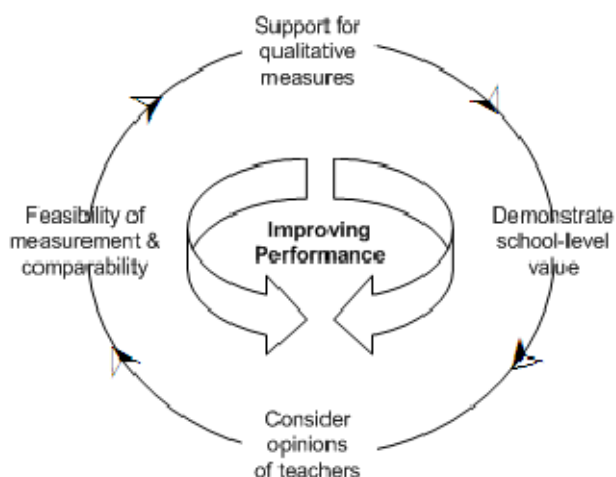
Objective 6: consider the various options for determining 'value-added' and make recommendations for how these measures should be framed and presented to schools. If a pilot project is recommended, details should be included of how this might be designed and managed.

Overview

- 7.1 A value-added indicator is a measure of pupil progress between two stages of education. It can be used to show the progress made by an individual or cohorts in comparison with the national average or against similar schools. Value-added also allows for the measurement of pupil performance in a manner which demonstrates school contribution to pupil progress and which can account for external factors such as social deprivation which may impact on pupil attainment. Value-added measures are used at a system-level in many American states and in England, Scotland and Wales.
- 7.2 While the north of Ireland does not have a system-wide measure of value-added, some schools use value-added indicators internally and have reported that such measures do provide useful data on a pupil's rate of progress.

Key findings

- 7.3 The following section outlines key findings from the stakeholder consultation and our extensive desk research examining various value-added models.



- 7.4 As with quality indicators, there was evidence from the stakeholder of widespread support for the introduction of value-added measures into education in the north of Ireland. There was a general consensus, however, a Contextual Value-Added model should be deployed, to take into consideration those factors outside school control.
- 7.5 The Regional Training Unit (RTU) has recently co-ordinated a pilot of ALPS, a commercial system of value-added between GCSE and A-level. The initial evaluation of ALPS with school principals in the north of Ireland was very positive:

"A value-added context is essential". (RTU evaluation participant)

"The information is essential both for the accountability of departments and the tracking of pupils". (RTU evaluation participant)

"Useful for focusing action at pupil, teacher, department and whole school levels". (RTU evaluation participant)

"Involvement of the student in his or her learning... the key issue in developing independent learning". (RTU evaluation participant)²⁰

- 7.6 Key benefits for principals participating in the RTU pilot included the ease of interpretation of the data, the timeliness of reporting and the data analysis service.

Table 7.1: the ALPS value-added system

An ALPS report provides a statistical analysis of an institution's results at A level and presents a school with an illustration of its' performance in relation to a national benchmark, based around graphs and colour-coded 'thermometer' charts. It demonstrates the overall performance of the school, the performance of each subject department, individual student performance and the quality of teaching and learning. The ALPS system also provides training in, for example, the strategic use of data to inform school improvement.

- 7.7 C2K has also undertaken work on value-added by providing performance analysis tools to post-primary schools based on cohort lines for all A-level subjects. These tools enable schools to review the performance of past pupils and to predict the performance of current pupils. In this approach, a progression line displays the line of best fit from points plotted - each student's GCSE average score is plotted against A level grade score for each A-level subject. A value-added line displays upper and lower quartiles and median A-level score for each group of students and students are grouped according to GCSE average score. A report by C2k on the take up of the tool found that while almost all schools welcomed the enhancements to examinations analyses, they have shown different levels of enthusiasm for making use of the Performance Analysis tools.

Simple Value-Added (VA) and Contextual Value-Added (CVA)

- 7.8 There are in general two commonly used models of value-added measures as defined in Table 7.2.

Table 7.2: Models of value-added measures

Value-added²¹

Progress made by an individual pupil, or group of pupils, between Key Stage 1 (the starting point) and Key Stage 4 (the end point).

Contextual value-added (CVA)²²

A version of VA which also takes into account school context factors and individual pupil context factors when comparing the progress made by a single pupil to the average progress made by 'similar pupils' in 'similar schools' across the country.

- 7.9 Simple value-added models account only for the prior attainment of pupils. Although prior attainment has been found to be the most powerful indicator of a pupil's progress²³, the simple 'median method' has a number of disadvantages. Specifically this method does not take account of the contextual factors that have an effect on pupil progress and can be particularly

²⁰ Source: presentation by the Director of RTU, Mr Tom Hesketh, at the ALPS Evaluation Meeting (May, 2008)

²¹ http://www.dcsf.gov.uk/performance/tables/primary_07/p3.shtml.

²² http://www.dcsf.gov.uk/performance/tables/primary_07/p3.shtml.

²³ *Educational Value-Added and Programme Evaluation*, (Mayston, 2006).

unstable for smaller schools²⁴, which is especially relevant for a north of Ireland context.

"It has to be contextualised to give a fuller picture". (Stakeholder respondent)

- 7.10 Value-added measures have been in use in the English education system for several years. In more recent times, there has been a shift from simple prior attainment value-added to more contextual value-added models. At present, the most commonly used approaches in England and Wales are those of RAISEonline and the Fischer Family Trust.
- 7.11 Coefficients are calculated for each factor included in the CVA methodology and represent the contribution that each factor makes to the CVA measures. For each factor, a coefficient measures the size of the factor's effect on CVA. The sum of all factors multiplied by their respective coefficients gives a prediction of the student's total point score. The difference between this prediction and the student's actual achievement is the student's CVA score.

Table 7.3: Fischer Family Trust²⁵

The Fischer Family Trust (FFT) is a non-profit organisation providing information and data to local authorities in England and Wales. Currently the FFT provide two models of value-added, the PA model and the SX model.²⁶ The PA model is that of prior attainment and the SX model equates to a contextual value-added model.

Table 7.4: RAISEonline

RAISEonline is a data analysis tool for use by schools, local authorities, School Improvement Partners (SIPs) and inspectors, introduced by OfSTED in 2006. RAISEonline enables schools to examine context, attainment and value-added data; explore hypotheses about pupil performance; analyse question level data for National, Optional and Progress tests; and set and moderate pupil targets. RAISEonline allows the interactive examination of data at the school, group, pupil and question level for pupils at Key Stages 1 to 4. Grouping and filtering features enable users to explore their own hypotheses. Where data is not centrally available, schools will be able to import it into the system themselves. RAISEonline provides the opportunity to look at contextual value added (CVA) progress to Key Stage 2, 3 and 4. Alongside this, the system will allow analysis of conversion information. It will be possible to import data for Optional and Progress tests, thus giving better tracking of pupil performance and progress over time.

Table 7.5: Centre for Evaluation and Monitoring (CEM)²⁷, Durham University

CEM provides indicator systems to school and colleges across England, Scotland and Wales. They are providers of monitoring systems such as ALIS, YELLIS, MIDYIS and PIPS. CEM also provide prior attainment value-added measures to schools based on the above systems.

- 7.12 The Welsh arrangement with the Fischer Family Trust in particular holds important lessons for the situation in the north of Ireland, due to the landscape of smaller schools and the type of assessment used in primary schools in Wales.
- 7.13 Value-added measures are used for a range of purposes within the English education system²⁸, including;
- Performance tables;
 - School improvement;
 - Self-evaluation and target setting;
 - School inspections;

²⁴ *School Value-added Measures in England*, (DfES 2006).

²⁵ www.fischertrust.org.

²⁶ FFT, http://www.fischertrust.org/dap_training_resources.aspx.

²⁷ <http://www.cemcentre.org>.

²⁸ *School Value-added Measures in England*, (DfES 2006).

- Selection for school initiatives; and
- Pupil estimates.

7.14 It should be noted that while, in England, school performance tables are published, some participants suggested that, if performance data was published, there may be a perverse incentive for schools to manipulate the statistics. The Departmental policy on the publication of school performance data, as presented in *Every School a Good School*, is as follows:

“While it is important to avoid a regime of over-accountability, the Department believes that pupils and parents have a right to have information in order to form a view on how an individual school compares to other schools. Once value added measures are available, ESA will be asked to introduce a reporting mechanism to show how schools perform against appropriate value-added benchmark targets”. P36 Every School a Good School (DE, 2008)

CVA indicators

7.15 As noted above, CVA models take into consideration not only pupil prior attainment, but certain contextual factors, such as gender, ethnicity, EAL and socio-economic indicators. There is a view that Contextual Value-Added offers a more accurate level of measurement for assessing the effect of a school on pupil progress.²⁹ However, there is a risk that a reliance on CVA alone may mask underachievement if too much emphasis is placed on, for example, social deprivation.

“I wouldn’t touch median method with a bargepole. But, equally, CVA alone is dangerous as well”. (Stakeholder respondent)

“So if you’ve got the combination of score, percentile rank and significance, and you present that correctly and help users to understand it, then it can be a lot more powerful and a lot less dangerous than they would have been on their own.” (Stakeholder respondent)

7.16 Table 7.6 illustrates the contextual factors involved in both models (RAISEonline and FTT) of Contextual Value-Added measures. For the most part, there are minimal differences between the two models.

Table 7.6: Contextual Value-Added Measures	
OfSTED RAISEonline Model	Fischer Family Trust SX Model
<ul style="list-style-type: none"> • Gender • SEN • Ethnicity • FSM • First language • Mobility • Age • In care • IDACI 	<ul style="list-style-type: none"> • Gender • SEN • Ethnicity • FSM • EAL • Mobility • Month of birth • ACORN (school level only)

7.17 Guidance issued by DfES (now DCSF) in 2006 contains a number of considerations which should be taken into account in an analysis of CVA, including the fact that CVA is a measure of progress over time and that CVA coefficients should not be considered in isolation.

‘It is important to remember that CVA is a measure of progress over a period of time from a given starting point and not a measure of absolute attainment. As such it often gives rise to counter-intuitive predictions. For example, one might expect older pupils in KS4 to attain better GCSE results, but the KS2-4 model predictions show that younger pupils make more progress. And this makes sense: younger pupils tend to

²⁹ *School Value-added Measures in England*, (DfES 2006).

have been further behind at KS2 and close the gap with their elder peers as they move up through school. The same can be true for other groups of pupils i.e. those for whom English is not their first language tend to make more progress at each successive key stage as the language barriers diminish...

When considering CVA it is important not to look at each coefficient in complete isolation. The model takes each factor into account simultaneously when calculating the coefficients so there will be elements of counter balance throughout, since some characteristics are closely associated with others. For example, the deprivation coefficient might appear relatively small, but part of the impact of deprivation may be accounted for within the effect of low prior attainment, since deprived pupils also tend to have below-average prior attainment. Other groups of pupils may have higher coefficients than expected, but their overall outcomes will depend on whether they have a predominance of other factors such as special needs, mobility or deprivation, which are accounted for separately'. (DfES, 2006)

Value-added measures for smaller schools

- 7.18 The north of Ireland has a higher proportion of smaller schools than elsewhere in England, Scotland and Wales.³⁰ There is a danger when calculating value-added scores that schools with a smaller number of pupils are not flagged as significant. It is important therefore that smaller schools are given particular consideration in the presentation and format of value-added to ensure that the progress of smaller cohorts is identified.
- 7.19 The work of the Fischer Family Trust in Wales provides important lessons for the north of Ireland in ensuring that smaller cohorts remain significant. There are two main options for reporting value-added for smaller schools: either including a shrinkage factor or extending the reporting period.
- 7.20 The shrinkage factor is essentially a score determined by the number of pupils in a school cohort. This is used in certain models to provide a better CVA score for schools with smaller pupil numbers.³¹ It should be noted, however, that a shrinkage factor can have repercussions for the modelling of value-added, potentially creating bias for pupil sub-groups as the national residual no longer sits at zero. This may result in, for example, a pupil of a particular ethnicity appearing to make more progress than he or she achieved in reality. This can relate not only to ethnicity but also to a range of other pupil factors.
- 7.21 The second option is to provide value-added scores for pupils and schools over an extended period of time, rather than focusing on results year-on-year. This option allows smaller cohorts to appear as significant. Furthermore reporting over a longer period of time allows schools to identify more relevant trends and patterns of achievement in a particular cohort.

"It's very easy to be swayed by the latest year's results, rather than taking a more balanced look over time". (Stakeholder respondent)

Value-added for primary schools

- 7.22 Key Stage 1 and Key Stage 2 assessments for primary school pupils are currently maintained at school level only. As discussed in a previous section of this report,³² pupil results are reported to CCEA, anonymised and aggregated to school level. There is therefore no system-level record of individual pupil attainment at KS1 or KS2.
- 7.23 At present, any value-added score would be calculated at a school-level only. While this is important in determining school effectiveness and performance, the true worth of value-added

³⁰ *Schools for the Future: a policy for sustainable schools* (DE, 2007).

³¹ *A technical guide to contextual value-added model* (DCSF, 2007).

³² See Chapter 2 for more detail on Key Stage assessment.

lies in the ability to identify individual pupil progression and intervene where necessary.

"My understanding is that whatever data is held in a school on the child is part of the formative record of progress and achievement and as such needs to be available". (Stakeholder respondent)

- 7.24 Various models of value-added also incorporate fine grades into their calculations, to improve accuracy for pupil attainment. However the current system of assessment in the north of Ireland or the proposed Lines of Progression will not permit the calculation of fine grades. The value-added model currently in use in Wales does not, however, use fine grades because Welsh assessments are based on teacher judgement. While fine grades improve accuracy to an extent, it is not imperative that schools use these granulated levels to calculate value-added.
- 7.25 The development of a pre-school transition form by CCEA and the forthcoming 0-6 strategy could provide the necessary baseline assessment to enable value-added in primary schools.

Multiple deprivation indexes

- 7.26 Numerous contextual value-added factors are said to have an effect on pupil educational achievement, not least socio-economic background. Table 7.6 illustrates the range of contextual factors taken into consideration by the FFT and RAISEonline when calculating contextual value-added models. As noted previously, there are minimal differences between the two models, however the difference is more pronounced in relation to the use of a multiple deprivation index.
- 7.27 As part of this review, stakeholders were asked to consider Free School Meals (FSM) and potential indicators of multiple deprivation. Whilst, overall, there was strong support for FSM, there were some confidence issues surrounding the accuracy of uptake measures. It should be noted, however, that FSM is widely used in the literature as a robust proxy for deprivation and that current measures are based on entitlement rather than uptake. Stakeholders supported the consideration of potential additional indicators of deprivation to ensure that the level of deprivation of a pupil's neighbourhood is also represented, given that a pupil's peer group will also have an impact on his or her levels of aspiration.
- 7.28 Supplementary indicators of multiple deprivation could include ACORN, IDACI and MDM. Each index uses postcodes to link to the socio-economic characteristics of an area. However, there are a number of issues which should be considered in any introduction of an index of multiple deprivation in value-added calculations.

Table 7.7: Potential multiple deprivation indexes		
ACORN (FFT)	MDM (NISRA)	IDACI
ACORN measures the socio-economic characteristic of households based on 2001 census data and is updated yearly via a range of factors. Each postcode in England, Scotland and Wales is given an ACORN group. The FFT model gives each school an ACORN figure based on its pupils, ACORN figures are not developed in value-added models for individual pupils.	MDM is a measure of multiple deprivation at the small area level based on the idea of distinct domains of deprivation which can be recognised and measured separately. The overall MDM is conceptualised as a weighted area level aggregation of these specific domains of deprivation. It is a combination of more specific forms of deprivation, which themselves can be more or less directly measurable.	The Income Deprivation Affecting Children Index (IDACI) gives the percentage of children in an area that were living, at the time of the 2001 Census, in 'income deprived families'. Income deprived families are defined as those in receipt of Income Support, Income-based Jobseeker's Allowance, Working Families' Tax Credit or Disabled Person's Tax Credit below a given threshold. An IDACI of 1 represents the most deprived areas (100% of the

		children living in income deprived families); 0 represents the least deprived area, with no children living in poverty. The national average is 0.14 i.e. nationally, 14% of children lived in deprived homes in 2001.
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7.29 At present, the Fischer Family Trust model uses an index of multiple deprivation at a school-level only, while the RAISEonline model uses this at both the school- and the pupil-level. The ACORN index can be used to link postcode to socio-economic factors to area within the north of Ireland. MDM³³, developed by NISRA, identifies small concentrations of multiple deprivation across the north of Ireland. It is based on the small area geography of Super Output Areas (SOAs). The NIMDM brings together 43 different indicators combined to create an overall measure. IDACI, a measure linked to deprivation and children, is currently in use in pilot form in DE research work.

7.30 The findings from our research show that while CVA models may use the multiple deprivation index at school and pupil level, careful consideration should be given to including an index at pupil level to ensure there is not an over-emphasis on this in explaining underperformance. Combining VA and CVA approaches may be one way of overcoming this.

Presentation and format of value-added scores

7.31 The presentation and format of value-added measures will be a key factor in the successful implementation of a value-added system. School leaders, teachers, governors, parents and the wider community require information which is easily accessible and can be interpreted to help inform teaching and learning.

“Present that [value-added data] correctly and help users to understand it, then it can be a lot more powerful and a lot less dangerous than they would have been on their own”. (Stakeholder respondent)

7.32 There remains some debate in England and elsewhere about the presentation of value-added results.³⁴ In Wales, for example, the Department for Education, Lifelong Learning and Skills (DELLS) stated in its recent consultation on secondary school performance measures that research with users on value-added measures found:

- Concerns with the level of understanding of value-added analyses;
- Duplication of provision, with some authorities commissioning separate analyses;
- A need for extended guidance to support better understanding and appropriate use of the data;
- A requirement to extend analyses to the wider points score to reflect extended provision;
- An identified need for indicators at a subject level and for pupils leaving without a recognised qualification; and
- Consideration of the timing of analyses to better support target setting and planning.³⁵

7.33 It is therefore likely that the implementation phase of the value-added measures will require significant consultation and engagement from schools on the most appropriate format for value-added results. The desk research found evidence that research into the best format and

³³ Using the NI Multiple Deprivation Measure, (NISRA).

³⁴ *School Value-added Measures in England*, (DfES, 2006).

³⁵ *Review of Secondary School Performance Measures (DELLS, 2007)*.

presentation of value-added is required to make the best use of such methods.³⁶

7.34 Key considerations include: the range of stakeholders that require sight of value-added measures; the optimum means of consulting these stakeholders on the best format for presentation; and the ease of accessibility and use of these formats.

7.35 A recent study of schools' use of data in teaching and learning³⁷ found that graphical presentation of data makes interpretation easier and allowed schools the ability to highlight specific pupils.

"Value-added is good at telling you what happened in the past, but it's about looking at that to look ahead". (NfER, 2005)

7.36 The format and presentation of the data should be given serious consideration if value-added measures are to be successful in helping school improvement in the north of Ireland.

"It's mechanics almost to churn this out and produce the analysis. The hard bit is presenting this and educating users in using it properly".

7.37 We are also aware that a number of schools in the north of Ireland are already using value-added measures to inform teaching and learning. Some schools have been using measures provided by the Centre for Evaluation and Monitoring (CEM) to develop value-added results to inform teaching and learning. These schools could provide valuable lessons on the appropriate presentation and formatting of value-added methods.

Implementing value-added measures

7.38 The recently published report on value-added measures across the OECD³⁸ presents a number of factors which should be taken into account in the development of a value-added system. These are grouped by eight phases and are provided in table 7.8.

Phase	Key activities
1: Setting policy objectives and school performance measures	<ul style="list-style-type: none"> ● Establishing whether schools' value-added scores will be classified into performance categories ● Deciding whether VA information is to be used as an in-school tool to develop school improvement models and the consequent impact on data and model choice ● Considering whether the measures will be published, and if so, in what format ● Integrating VA into existing evaluative structures such as inspection ● Selecting the appropriate variable type (i.e. continuous, categorical or dichotomous) for use in the modelling ● Reviewing existing student assessment to determine whether further forms of assessment should be developed ● Developing a framework to specify the assessments to be used ● Considering the potential impact of the measures to be used on subsequent school performance ● Ensuring that the scaling of measurements allows for meaningful interpretation over time
2. Presentation and use of value-added information	<ul style="list-style-type: none"> ● Developing the presentation of data through stakeholder engagement and through feedback from pilot schools ● If VA measures are to be published, deciding which measures should be presented and the supporting information required ● Providing guidelines on the interpretation of VA data and identifying, if appropriate, 'trigger points' for further action ● If using a three year moving average of VA results (as recommended by OECD),

³⁶ *Schools' Use of Statistics*, (NfER, 2005).

³⁷ *Ibid.*

³⁸ *Measuring Improvements in Learning Outcomes: Best Practices to Assess the Value-added of Schools* (OECD, 2008)

	considering the use of interim data
3. Data quality	<ul style="list-style-type: none"> Reviewing data systems in schools and in the wider sector to assess the capabilities for introducing VA Designing data and information systems to account for VA as required Identifying the pupils to be included in the VA data collection (i.e. whether pupils with special needs are to be excluded) and addressing the issue of pupil tracking between schools Analysing which socio-economic characteristics should be employed in the model Considering potential additional uses of the data and designing the system accordingly
4. Choosing an appropriate value-added model	<ul style="list-style-type: none"> Assessing the advantages and disadvantages of various value-added models Aligning model choice with policy objectives i.e. the form of the dependent variable and the categorisation of school scores Identifying the statistical and methodological criteria for analysing each model (i.e. variance, contextual data, potential bias, treatment of missing data, small schools scores, and stability of scores) Analysing the impact of different models under the intended use of the data in a pilot
5. Communication and stakeholder engagement strategies	<ul style="list-style-type: none"> Developing a stakeholder communication and engagement strategy to involve stakeholders in the establishment of the new model Locating the strategy within school improvement policy and describing the measures on which schools will be judged Producing guidelines for school use on the interpretation of VA measures and their use in school improvement
6. Training	<ul style="list-style-type: none"> Developing training programmes for specific users including principals, teachers, parents, the media and other educationalists
7. Pilot programme	<ul style="list-style-type: none"> Structuring the pilot to ensure that all aspects of VA modelling can be further developed including operational and communication issues (and analysis of models on a comprehensive dataset) Sampling on the basis of policy direction i.e. including schools in socially deprived communities in the pilot Assessing the outcomes of the pilot in terms of the actions undertaken as a result of the VA modelling
8. Ongoing development	<ul style="list-style-type: none"> Establishing a quality control system Adjusting the VA model as required to ensure best fit

Recommendations

7.39 The paragraphs which follow present our recommendations in relation to:

- Value-added and Contextual Value-Added;
- Value-added for smaller schools;
- Value-added for primary schools;
- Multiple deprivation indexes;
- Presentation and format of value-added; and
- Piloting value-added measures.

Value-added and Contextual Value-added

7.40 While there was widespread support for the implementation of a CVA model, we recommend that both a simple value-added and a CVA measure are introduced to provide a more complete understanding of performance and to avoid the risk that CVA alone might mask underachievement.

Value-added for smaller schools

7.41 With value-added, there is a risk that schools with a smaller cohort do not appear as significant. We recommend that the Department considers reporting value-added over an extended period of time, potentially three years. While there is scope to apply a shrinkage factor, we would recommend that such an approach is not adopted in order to maximise accuracy and consistency.

7.42 Presenting value-added measures over longer periods of time will also help in the identification

of trends and patterns for cohorts of pupils, which will be more relevant for informing teaching and learning.

Value-added for primary schools

- 7.43 A major area to be addressed in the introduction of a VA measure relates to the calculation of value-added measures for the primary sector. At present, Key Stage 1 and 2 attainment results are not stored by the system at an individual level but rather at a school level. Furthermore, it was reported that many primary schools store this data on a manual basis, impacting on the capacity to produce manual data. These factors form a barrier to the calculation of individual pupil value-added in primary schools.
- 7.44 We recommend that the Department considers storing and recording individual pupil Key Stage assessment data at a system level to enable the calculation of individual pupil value-added measures. We recognise that this may present some difficulties, but would suggest that the significance of value-added measures in school improvement requires this important shift in policy.

Multiple deprivation indexes

- 7.45 Despite evidence in the literature that FSM entitlement is a robust indicator of social deprivation, some stakeholders raised concerns regarding this measure and suggested that it should be supplemented by a more complex indicator of deprivation. We therefore recommend that an additional indication of deprivation is identified and used to supplement a new contextual value-added measure. We also recommend that value-added measures for pupils do not include the index of multiple deprivation at a pupil level. Instead, we suggest that a similar approach to that of the Fischer Family Trust model should be adopted. In the FFT model, the index, although recorded for each pupil, is then aggregated to school and reported in the school level value-added score. This would allow greater comparability and benchmarking with FFT outcomes in England and Wales, and would be particularly appropriate for north of Ireland schools with no obvious local counterparts for benchmarking purposes.

Presentation and format of value-added

- 7.46 The correct presentation and format of value-added models will ensure their ease of use in promoting school improvement. It is recommended that extensive consultation should be undertaken as part of a pilot of value-added measures in order to explore various presentation formats with users and potential users. This consultation would allow the Department to develop a value-added measure that is grounded in school and system support and practical application.
- 7.47 In addition, it is recommended that the Department should also seek to engage with those organisations, such as the Fischer Family Trust and the CEM Centre, that have been involved in the development of value-added measures elsewhere, in order to benefit from their 'lessons learnt'.
- 7.48 Clear guidance should also be provided to schools and other users on the interpretation of the results. It will be important to ensure score, percentile rank and significance levels are included with value-added results. It is anticipated that the format of value-added will include graphical presentations of school and pupil value-added results, allowing schools to view clearly their position in relation to the national average or, if required, in relation to schools within their comparable group. An additional consideration for the presentation of value-added results to schools should be the scope to allow schools to manipulate data into a format that will best suit their individual school needs.

Pilot approach

- 7.49 Given the number of considerations to be taken into account when introducing and developing a value-added model, we recommend that a value-added pilot is undertaken by the Department to ensure that any new model is a best fit for the north of Ireland context. The 2008 OECD report lists some of the factors which should be assessed and further developed in a value-added pilot, including:
- Operation and implementation issues;
 - Decisions concerning student assessments and the choice of the specific value-added model;
 - The development of stakeholder communication and engagement strategies; and
 - An assessment of how schools' value-added scores and other information are interpreted and utilised to meet stated policy objectives.
- 7.50 The OECD report also emphasises the importance of sampling for the pilot and the potential sensitivities around its implementation.

'It should be treated in the same manner as the live implementation of a system of value-added modelling to create a realistic and valid assessment. The method with which a sub-set of schools is selected or asked to join the pilot programme will vary between countries but it is important that a sample of schools participate that can properly inform a live implementation. This requires obtaining a sample of schools that is representative of the broader school population and can be effectively engaged in the process of assessing the implementation of value-added modelling. To encourage effective engagement in real-life pilot studies, some education systems have emphasised that the pilot study was not to be used as a tool of school accountability. In selecting a sub-set of schools it is worth considering that schools might feel less inclined to participate in a study that subjects them to additional accountability and performance measurement.' (OECD, 2008)

- 7.51 It is recommended that the pilot should be undertaken involving schools from both the primary and secondary phases. Issues remain regarding the storage of KS1 and KS2 data on an individual pupil basis, and these should be addressed in order to enable a selection of primary schools to be included in the value-added pilot.
- 7.52 The selection of schools to be included in the pilot should be representative of the broad range of school types in the north of Ireland. Table 7.9 presents a suggested sampling frame of schools to be included in the pilot.

Table 7.9: School sample characteristics	
Primary Schools	Post-Primary Schools
<ul style="list-style-type: none"> • Small rural • Small urban • Large urban • Large rural • Maintained • Controlled • Voluntary (maintained and non-maintained) • Grant maintained integrated schools • Irish medium schools • Schools in socially disadvantaged areas 	<ul style="list-style-type: none"> • Small rural • Small urban • Large urban • Large rural • Maintained • Controlled • Voluntary (maintained and non-maintained) • Grant maintained integrated schools • Irish medium schools • Schools in socially disadvantaged areas

- 7.53 The pilot study should be based on an initial set of indicators which have been identified through desk research and good practice elsewhere as having a significant influence on pupil attainment. Table 7.10 illustrates a potential initial list of indicators. It may be necessary during the pilot to add additional variables. Weightings should also be applied to these indicators according to their relative impact on attainment.

Table 7.10: Initial CVA indicators

- Prior attainment
- Gender
- SEN
- Ethnicity
- FSM
- First language
- Mobility
- Age
- Children in care
- MDM

- 7.54 It is recommended that schools in the pilot are provided with not only a CVA but also a value-added model based on prior attainment to understand further how these models can be used in conjunction to determine school effectiveness and provide pupil attainment estimates. As the OECD report states:

'It is not appropriate to make an a priori decision on which specific model to implement in an education system. The pilot stage should be considered as the time to assess the most appropriate value-added model to be used in the live implementation. Such an assessment should be made against a set of pre-determined criteria as discussed above. For a pilot programme to be optimally useful, a number of years of data will be needed to ascertain how the stability of schools' scores differs between different models'.
(OECD, 2008)

- 7.55 The pilot should also exploit the opportunity to trial various graphical presentations of value-added to help determine which is most effective in assisting schools to use the value-added results to inform teaching and learning.
- 7.56 The management of the pilot should be overseen by the standing committee on the use of data (as recommended previously) to ensure that all stakeholders are represented in the process.

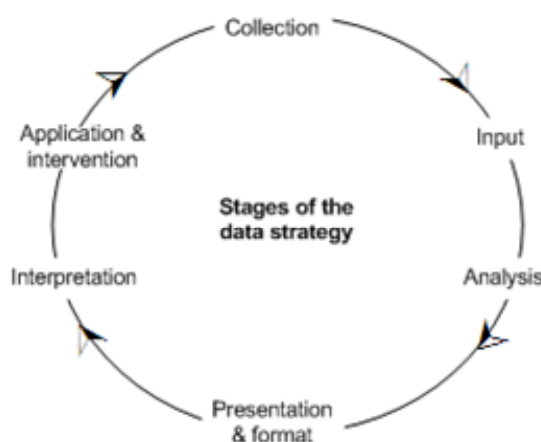
8 Identification of training needs

Objective 7: identify the range of training that will be required for school managers, teachers, governors and staff in the Education and Skills Authority

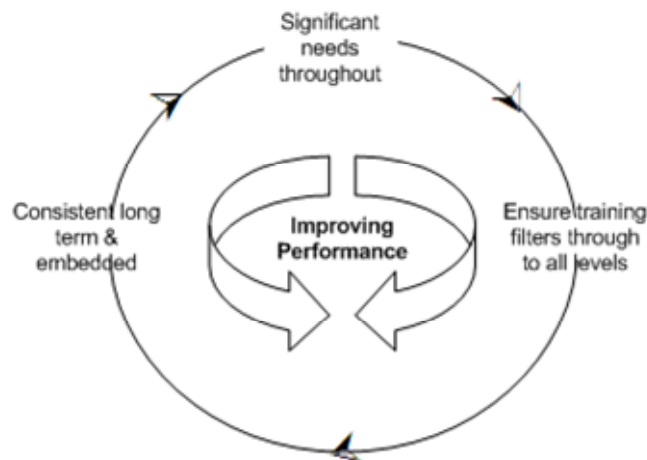
Overview

- 8.1 Everyone within the education sector in the north of Ireland has a role to play in school improvement. Addressing training needs across the system will therefore form an integral part of any new approach to the effective use of data. As new arrangements for the use of data are introduced, it is essential that individuals tasked with implementing the strategy at school and administrative level are given sufficient training and support.
- 8.2 Following the establishment of ESA, the principal and Board of Governors for each school will be accountable to ESA for the standards achieved by their pupils. A School Improvement professional from ESA will visit each school regularly to discuss performance, including the school's improvement targets and performance against benchmarks with comparable schools. This challenge function is an important new component of school improvement and will inevitably require more in-depth analysis of the available data on the part of principals, governors and ESA personnel and the provision of additional support and training. It will be crucial that these School Improvement professionals have sufficient credibility and standing to work effectively with school leaders.
- 8.3 The diagram below presents the different stages of the data process. Training will be required at each stage of the process and to address the various needs of users. Teachers require different skills than school leaders, who again require different skills from individuals involved with the collation and analysis of data regionally and centrally. In some cases, additional forms of support, whether analytical or administrative, will be required by principals and other key personnel in schools.
- 8.4 This section also considers these other forms of support that may be required across the system, given the need to minimise the administrative burdens on principals and other members of school staff.

Figure 8.1 Training needs



Key findings



Scope of training needs

- 8.5 *Every School a Good School* (DE, 2008) emphasises that there is a need to support schools in making more effective use of data within the school to monitor performance and to develop appropriate teaching strategies. The document also identifies the need to consider the ways in which research evidence and best practice can be disseminated to schools.
- 8.6 Stakeholders were consulted on the training needs and requirements throughout the system. It was largely agreed that there were extensive needs at all levels and, in particular, at school level.

"People know the benefits of data, and are interested, but they need to be trained". (Stakeholder respondent)

- 8.7 It also became apparent that there is a great variation in the capability and confidence of principals and other staff to interpret and manipulate the data. Whilst there are many examples of good practice in the use of data in schools in the north of Ireland, this is largely driven by the personal interest of the school principal or other key members of staff. There was a view that, at a minimum, training should provide participants at all levels of the system with the knowledge and ability to undertake the required analysis and translate this into potential school improvement policies.
- 8.8 A study commissioned by DCSF to identify the factors which impact on a school's ability to make effective use of data, found that participants reported a lack of training and awareness in relation to the interpretation of data. This impeded their ability to draw meaningful conclusions and translate these into classroom practice.³⁹ This finding underlines the importance of the interpretation and analysis of data so that it can be used effectively to inform teaching and learning. Training is required not only to help schools use the data at their disposal more effectively but to increase their confidence in using statistical data.

"Many of our principals are relatively young and inexperienced and a lot of training and support is needed. I do think we have a role there along with other colleagues". (Stakeholder respondent)

- 8.9 The OECD comparative report for the north of Ireland on *Improving School Leadership*⁴⁰ highlighted the specific training needs of school governors, given their important role in school

³⁹ *Review of Schools' Education Statistics* (NfER, 2005).

⁴⁰ *Improving School Leadership: Country Report for NI* (OECD, 2007).

improvement and accountability. This report cited a 2006 ETI survey on school governance which found that:

- In almost all schools, governors are not familiar with benchmarking against schools of comparable size or Free School Meals (FSM), and with the exception of a very small number of schools, they are not involved in the setting or monitoring of targets;
- There is little evidence to show that Boards of Governors are involved in, or aware of their school's programme for improvement. A majority of governors have been made aware by the Principal of the SDP but they are not involved in devising it; only a small number scrutinise and monitor the progress of the relevant action plans;
- While there is an increasing use of assessment data for management purposes in schools, very few governors are informed about benchmarking trends. They lack knowledge as to whether their school is maintaining and evaluating its performance against recognised benchmarked data;
- Governors were consistently unaware of the internal assessment processes such as standardised scores, but had some awareness of the school's reporting arrangements; and
- Governors were also unaware of the processes (where they existed) used by the schools to self-evaluate provision and standards of achievement.

8.10 In this context, it is worth noting that *Every School a Good School* emphasises the role of ESA in ensuring that there is appropriate training and support for school governors and school leaders in the delivery of school improvement.

8.11 Research undertaken in primary and post-primary schools in England in 2005, which identified similar issues in relation to the use of data as this review, suggested that schools, education authorities and policy makers should work towards:

- Raising awareness of data systems and their potential capabilities and availability;
- Promoting training and support in the use of data - not only software training but also how to use the outcomes from data analysis and how to share such outcomes with colleagues;
- Reviewing demands on schools to ensure staff have sufficient time to analyse data at a meaningful level;
- Encouraging the sharing of good practice, e.g. through networks, clusters of schools and workshops; and
- Encouraging the appointment of dedicated co-ordinators to drive the process of interpretation and action and not just the input of data (DfES, 2005).

Existing training on the use of data

8.12 Several stakeholders queried the extent to which the effective use of data is addressed in existing training courses at all levels in the system. It was reported, for example, that there is little coverage of the effective use of data and its contribution to the development of teaching strategies in Initial Teacher Training. As one stakeholder noted, if the use of data is not included in ITT, there is a risk that resources will be expended in training the existing teaching workforce while teachers untrained in the use of data enter the profession - thus perpetuating the problem. The RTU is, however, providing a pilot programme on *Leading Learning and Teaching: Making Effective Use of Data for Principals and School Leadership Teams*. This programme is intended to:

- Promote the effective use of data for self-evaluation and to improve the quality of learning and teaching;

- Raise school leaders' awareness of the data available; and
- Share good practice in the use of data.

Format of training

- 8.13 The format of training, in terms of modes and timing, was also cited as an important factor by stakeholders. One of the themes that emerged from the fieldwork was the need for flexibility to enable schools to select the training which best suits their needs. This flexibility included: the need to provide different levels of training from the basic to the 'expert' for those with a specific interest; the need to provide a variety of modes of training (for example, on-line or in-school); and flexibility in timings of training (whether during 'twilight' sessions or exceptional closure days). Training could also take place in clusters of schools, coming together to problem solve and share good practice. Elsewhere, systems such as OfSTED's RAISEonline provide electronic guidance and support for teachers and principals as part of the system.
- 8.14 Several stakeholders noted that there needed to be a much more co-ordinated approach to the development and provision of training, citing some duplication of provision between that provided by CASS, C2k and eSchools. Some doubts were also expressed regarding the capacity of the current system to deal with any increased demand for training.

Minimising the administrative burden on schools

- 8.15 Several stakeholders also commented on lack of resources in many schools and the likelihood that this may impact on the introduction of a new data strategy. Primary schools and smaller schools with teaching principals were thought to experience particular problems in relation to the time taken to input data and undertake the appropriate analyses. This finding echoes a view expressed in the recent OECD Country Report for the north of Ireland on school leadership:

"The administrative burden and high levels of accountability in all schools may be seen as unattractive aspects of leadership. Some schools, particularly smaller schools, stress the need for additional administrative support and believe that at times the need for careful management distracts from the possibility of offering effective leadership." (OECD, 2007)

- 8.16 Stakeholders noted a range of ways in which the administrative burdens on schools could be eased, with many stating that principals should not necessarily be responsible for data entry but rather that their focus should be on the strategic analysis of the available data for school improvement. Indeed, the full roll-out of eSchools and greater automation in reporting should facilitate principals in this analysis. Other means of reducing the burden on schools included the deployment of travelling bursars or statisticians on a buy-back basis, working across a number of schools or the development of clusters or 'families' of schools to share resources and knowledge.

Families of Schools⁴¹

Families of Schools groups London schools into 'families' based on levels of deprivation and prior attainment. The underlying principle is that the data allows schools to compare their outputs against the outputs of schools in statistically similar circumstances.

Recommendations

- 8.17 It is clear from our research that a more joined-up approach is required to tackle the issue of skills development and training, in particular for school staff who remain at the forefront of strategy implementation. However, training must be made available for all personnel involved in school improvement, including governors, staff in the Education and Library Boards and other statutory organisations.

⁴¹ Families of Schools, The London Challenge (DfES 2006).

8.18 The paragraphs which follow present our recommendations in relation to:

- In-depth training needs analysis;
- Existing training opportunities; and
- Long-term training and support.

In-depth training needs analysis

8.19 Our review has highlighted some of the broad areas where training will be required. We recommend that, at the outset, a scoping exercise is undertaken in order to determine the training needs throughout the system in detail. Such an exercise should engage with all stakeholders including, teachers, principals, governors and administrative support staff, to map out a clear needs analysis at the various levels of the system.

Existing training opportunities

8.20 If the effective use of data is to become embedded in the system of school improvement, it is essential that training in data analysis and its use in relation to identifying pupil needs and school improvement is emphasised in initial teacher training. This training should include practical applications of the data strategy, perhaps through discrete projects during the learner's school placement and subsequently as part of the Career Entry Profile (CEP) and Early Professional Development (EPD) stages of a teacher's career.

8.21 The training provision offered by the Regional Training Unit should also be reviewed in order to scope the opportunity to include mandatory modules in the use of data in existing courses such as Induction into Headship.

Long-term training and support

8.22 Following the completion of the detailed training needs analysis and dependent on the outcomes of this analysis, it is likely that a comprehensive training and support programme will be required across the sector.

8.23 We recommend that, based on a model similar to that of the Families of Schools in London, schools are clustered on a geographical basis to allow training and support to be more targeted to specific contextual needs. Schools could then be allocated a link officer who could provide consistent support throughout the data process. This officer should be capable of providing a high level of support and sustaining the teachers and leaders in generating the correct discussions regarding school performance. This system should not only provide vital support and training but enable schools to share best practice and discuss similar issues and challenges.

8.24 In addition, we recommend that the initial training needs analysis noted above addresses the preferred training modes of school leaders and other relevant personnel in order to deliver the required flexibility in training provision. Such provision could include on-line training modules, support and guidance, in-school training for all staff, or 'twilight' sessions to accommodate teaching commitments.

8.25 Existing INSET and RTU provision should also be reviewed to ensure that an appropriate emphasis is placed on the effective use of data, regardless of the subject matter of the courses provided.

9 Next steps...

9.1 While the specific conclusions and recommendations relating to each of the seven objectives are presented in detail in the relevant sections of this report, there are five cross-cutting factors which will determine the success of a new approach to the use of data in a north of Ireland context:

- Achieving greater cohesion;
- Developing an inclusive communication plan;
- Ensuring flexibility;
- Securing investment; and
- Undertaking detailed analysis and review.

Achieving greater cohesion...

9.2 Participants in this research repeatedly stated that there is currently a high level of fragmentation in the management of data across the education sector in the north of Ireland. This fragmentation manifests itself at both the **practical** and the **strategic** levels. With the publication of *Every School a Good School*, and the consequent renewed focus on the effective use of data as a key driver of school improvement, there is a clear need for a more joined up approach. On the practical level, the creation of a Single Design Authority, responsible for maintaining data business rules and adjudicating on examination equivalence issues for example, would resolve many of the current inconsistencies in the data. In our view, this Single Design Authority should be based within the forthcoming Education and Skills Authority.

9.3 On a strategic level, there is need for clear ownership and leadership to take forward the recommendations contained in this report. We have recommended that an *Effective Use of Data* standing committee should be established to take responsibility for the strategic oversight of this new approach. The remit of this group, which should include serving school leaders, should be premised on school improvement as the key driver of data management and analysis. This remit should also include an in-depth training needs analysis and on-going consultation with school stakeholders. Table 9.1 presents potential priorities for each of these bodies, based on the recommendations of this report.

Table 9.1: Responsibility for promoting the effective use of data	
Strategy	Implementation
<p>An <i>Effective Use of Data</i> Group could...</p> <ul style="list-style-type: none"> • Promote greater collaboration and reduce fragmentation in the system by bringing together all key stakeholders, including school representatives, in one forum • Have strategic oversight of developments in the generation, processing, analysis and dissemination of data • Develop a communications strategy to promote the benefits of more effective use of data and changes to the existing system, such as the introduction of value-added measures • Commission an in-depth analysis of training needs, inform the development of any subsequent training and monitor, at a strategic level, the effectiveness of the roll-out of this training • Manage and monitor the progress of any value-added pilot 	<p>A <i>Single Design Authority</i> could ...</p> <ul style="list-style-type: none"> • Define, promote and monitor information standards • Produce and disseminate common schemas and data sets • Standardise existing inconsistencies in data codes • Standardise and monitor examination equivalences • Disseminate best practice on data security • Liaise with the MIS supplier • Monitor emerging practice and new developments in data management elsewhere • Respond to queries from schools regarding data entry policy and procedures

Developing an inclusive communication plan...

- 9.4 Strong communication in relation to the need for, and purpose of, a new data strategy will be crucial. There will be sensitivities around a perceived increased focus on accountability and a move towards greater transparency in relation to school performance. There should be a clear and inclusive communication plan to emphasise the importance of data analysis in raising attainment and to increase awareness of the new qualitative indicators and value-added approaches. This communication plan should be developed in conjunction with a sample of school leaders, should address some of the concerns raised around perverse incentives raised in this review, and should include the dissemination of research and good practice.

Ensuring flexibility...

- 9.5 Notwithstanding the need for consolidation, this review has also identified the need for flexibility in the system. There is a great variation in the skills, and level of interest, in the use of data amongst school leaders. Training, for example, should therefore be flexible enough to provide a basic level of understanding of data analysis for all, while providing additional knowledge and skills to those who wish to pursue their interest further. Likewise, as different sectors have different needs, the data and benchmarking reports provided to schools should be flexible enough to enable manipulation of the data in a meaningful way for individual schools: the principal of a selective school may wish, for example, to analyse A-level results on a different basis to the standard for all schools.

Securing investment...

- 9.6 It is clear from the research evidence that the effective use of data is an essential component of any attempt to drive up levels of attainment. In recent years, the Department has made substantial investment in the ICT infrastructure in the north of Ireland, and, indeed, continues to do so through the development of eSchools. However, this review has demonstrated that there is a clear need for further resources to be targeted at developing the skills and knowledge of personnel within the sector to ensure that the full capability of this infrastructure can be fully exploited. An initial detailed training needs analysis should enable further investment to be made in areas where it is required most and the inclusion of data training in Initial Teacher Training will help ensure that teachers entering the profession are confident in the use of data in the classroom.

Undertaking detailed analysis and review....

- 9.7 Several of the recommendations included in this report, including the consideration of quality indicators and the introduction of a value-added model will require piloting and further testing. The implementation of any pilot should be based on consultation with school leaders and on the premise that the administrative burden on schools should be kept to a minimum. These pilots should also account for the totality of the process, including, for example, the support and guidance required or the optimum ways of presenting data to all relevant stakeholders.

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