



**COMMISSION
ON SCHOOL
REFORM**

Why Educational Data Matters:

**Statistical Evidence for Improving
Scotland's Schools**

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Introduction and Summary

The quality of statistical evidence on Scottish education is poor. Although useful summary information is published annually, that provides no more than a bare description of the system. The existing data provide no insights into how effective Scottish education is, where its strengths and weaknesses are, and how it might be improved. Few of the statistical sources allow valid comparison with other countries.

This Briefing proposes a new statistical framework that would transform the range and quality of statistical data on Scottish education. The data proposed here would be objective and politically neutral. It would thus strengthen the basis of educational policy-making, and would offer the opportunity for sustained educational improvement.

The most notable current gaps in data are:

- There is no way of analysing pupils' learning from the point at which they enter pre-school education at age 3 or 4 to the point at which they leave school. Individual children can be tracked, but no data set collates this into a form that might give insights into the performance of schools, local authorities or the system as a whole, nor into how pupils' home circumstances affect their learning.
- There is no statistical evidence on effective teaching strategies: advice on this is wholly dependent on evidence from other countries. Learning from elsewhere is indeed very important, but that has to be translated into a local context, which cannot be done in any well-informed way here.
- There is no systematic information about young people's subjective experiences in school, for example in relation to bullying, misbehaviour or absence from school altogether. There is no data set that would allow any understanding of how these experiences relate to pupils' learning.
- The statistical evidence on the transition from school to work and post-school education is superficial.

In Scotland, schooling is thus a black hole out of which no information escapes that might be useful to immediate policy.

Nevertheless, amidst the general gloom, there are scattered examples of good statistical practice. Better data can be developed by building on these. The best-known is Scotland's participation in the Programme for International Student Assessment – the PISA studies – which happen every three years in about half of the world's countries, under the auspices of the Organisation for Economic Cooperation and Development. This has become the model for high-quality surveys of education systems. In other countries it is supplemented by surveys that are tailored to the specific characteristics of the national education system. Scotland provides nothing of that kind.

But the PISA studies are not enough. They catch pupils at only one moment in their progress – at age around 15. So they tell us nothing about how they got there, nor about the role of schools in helping or hindering them.

There is one very high-quality Scottish survey – Growing Up in Scotland. This has been tracking a cohort of children who were born around 2005. It has built up a rich body of evidence on progress in the period since then. But it is only one cohort, and there are no plans to follow any new cohorts. This means, for example, that there is no way of using this survey to evaluate the impact of Curriculum for Excellence because the cohort started primary school in the year when the new curriculum was extended across all schools. There is no baseline evidence with which to compare these new experiences.

There is good-quality evidence on attainment from the Scottish National Standardised Assessments and from the Scottish Qualifications Authority, but these bodies of evidence exist in isolation from each other. The information which they produce is thus not collated in any form that would be useful for understanding the progress of pupils.

Drawing on the strengths of these and a few other examples of good practice, this Briefing proposes a new statistical framework for Scottish school education, based on two proposed new resources and a new context for the governance of statistical data:

Regular sample surveys of pupils

New sample surveys would gather evidence about pupils' progress right through their time at school – starting in Primary 1, gathering further information in Primary 4, Primary 7, and Secondary 3, and having a final questionnaire shortly after leaving school. There would be a new such longitudinal sample started every three years.

These sample surveys would collect information about curriculum, attainment, experience of school, and students' social circumstances. At primary-school level, information would also be gathered from the class teacher about teaching methods, so as to contribute to understanding how these methods contribute to students' progress. Data on attainment would come from the Scottish National Standardised Assessments and from the Scottish Qualifications Authority.

At the primary-school stages, the information on home circumstances would be asked from parents. At Secondary 3 and at the school-leaving stage it would be collected directly from the students. All participation would be voluntary by the students, and would also require active parental consent for all but the school-leaving stage: that is, the parents would have to agree explicitly to take part, not merely not opt out. Communication with the students and with their parents would be direct, not via the school. Only in these ways can the evidence be said to be wholly independent of the school system.

Annual tracking data on all students

Information about attainment would be collated annually. The purpose is to analyse pupil progress. As in the proposed surveys, the attainment in primary and early secondary would be measured by the Scottish National Standardised Assessments, and in later school stages by the results of SQA assessments. So this dataset would be a collation of information that is already held in fragmented ways. The model is the National Pupil Data Base in England, which tracks pupils from age 2 to 21. and has been running successfully and uncontroversially since 2002.

The universal coverage of the tracking would be a firm basis for assessing standards across Scotland. The number of participants would be large enough to provide reliable information about individual schools, and thus to hold schools accountable in public in a manner that would be more informative, and fairer to schools, than the current practice of reporting the results of SQA assessments and of some basic data on progression beyond school.

Office for Scottish Education Data

This new data environment would be overseen by a new Office for Scottish Education Data. As well as being responsible for these two new sources of data, the Office would take charge of the full range of statistical data on Scottish school education, including, for example, all the statistical bulletins that are currently published by the Scottish government. Its responsibilities would extend to post-school data. The Office would be required to ensure comparability of Scottish statistical measures with those compiled in the rest of the UK and, where possible, the rest of Europe. The Office should be accountable directly to the Scottish Parliament, not to the government. It would be funded by a grant from the Parliament.

What is wrong with Scottish education data?

The current statistical evidence on Scottish schools does not provide a basis for understanding what works and what does not, what can be improved and how, and what experiments are worth extending. The information in the annually [published](#) statistical bulletins is useful but rudimentary. Numbers of students, and of teachers, though important, are no more than the bare minimum that is required. Rates of [absence](#), and levels of [misbehaviour](#), are indicators of the barriers to teaching and learning, but they tell us nothing about how to reduce their extent and impact. Numbers sitting and passing the assessments run by the [Scottish Qualifications Authority](#) tell us something, but not much unless this evidence can be related to teaching, learning and opportunity, which it cannot. Progress through primary school and early secondary is [measured](#) only approximately, and even these measurements are not published in a standardised way: these annual reports are impressionistic guesses, not hard evidence.

What would be needed in a more informative system of statistical evidence can begin to emerge if we go through systematically what is missing. The most glaring gaps are:

1. There is no coherent way of tracking children's learning from the point at which they enter pre-school education at age 3 or 4 to the point at which they leave school. Some of the elements of a tracking system are in place, notably the Scottish National Standardised Assessments (SNSA) which are discussed more fully below. But, at best, these are currently used only for quite informal reporting to parents about individual children. No attempt is made to use the evidence from these assessments to evaluate what schools are contributing to children's progress and attainment. In the absence of that kind of evidence, there is no way of understanding the extent to which a pupil's attainment is due to individual teachers, to the school as a whole, to their home or community circumstances, or to their intelligence as gradually built up from birth or earlier.
2. There is no information on the curriculum that is offered in secondary schools – for example, on how many [subjects](#) students may take in the Senior Phase (secondary years 4, 5 and 6). Although the Scottish Qualifications Authority stipulates the minimum time that schools must provide for courses that prepare for its assessments, there is no published information on the

stages before that. Thus there is no evidence on how much class time schools allocate to each subject in the period of Broad General Education (usually the first three years of secondary education). There is no information on how and at what stage (usually at the end of second year or third year) schools require student to choose which subjects they will take in the Senior Phase.

3. There is no evidence on the relationship between children's progress and anything more than rudimentary aspects of their psychological challenges and their social circumstances. Students face enormous and unfair extra difficulties if they have limited space at home in which to work, and if their parents cannot afford such educational resources as good internet access, a range of books at home, and stimulating excursions. Part of the statistical problem here is the inadequacy of the Scottish government's measure of social deprivation (explained below). More fundamentally, it is simply the absence of any suitably nuanced data on the social contexts in which children's learning happens.
4. No data exist that would allow us to investigate the effectiveness of different teaching strategies. There is hardly any data on teaching practices at all – not even on such important matters as the extent to which schools [group](#) students by prior attainment. There is nothing on how teachers use homework, or the internet, or projects and fieldwork. There is nothing on whether teachers are up-to-date with the latest developments in the psychological understanding of how [memory](#) works to consolidate learning. There is nothing on how well schools prepare students for their lives when they leave school.
5. There is nothing that might offer any insights into how young people's subjective experiences in school relates to their progress and attainment. For example, there is no regularly published evidence on bullying or misbehaviour in class. There is nothing on how teachers respond to these threats to orderly learning, nor on how the well-behaved majority cope with the difficulties of disruption. There is also, therefore, no way of knowing whether any of these experiences has an impact on learning.
6. There is only minimal information about absence from school, apart from crude descriptions of how many children are absent on a randomly chosen week every two years. There is almost nothing that would allow us to say how much impact truanting has on children's learning. There is no source of evidence on the relationship between truanting and other aspects of children's lives, such as their family circumstances.
7. There is no information on pastoral support for students: that is, guidance available to them on mental well-being, on the travails of adolescence, on making choices, on additional support needs, or on difficulties they may face in their relationships with peers, families, or teachers.
8. There is no evidence that would allow any understanding of school leavers' transitions beyond school, whether into work or into further study.
9. Because of all these serious gaps in evidence, there is no way of evaluating policies that are intended to improve schooling. Policy in Scotland is made in ignorance, and evaluation of policy is by guesswork and anecdote. For example, an important policy in the past decade and a half has been the [Pupil Equity Fund](#), which is intended to allow schools to reduce social inequality of opportunity. This is an expensive policy: between 2017-18 and 2020-21, it cost £488m. Its supposed evaluation consists of a simple [survey](#) of headteachers asking for their opinions on whether it is working. They are not asked for any hard evidence to back up their views, and there is no subsequent audit to check whether their optimism or pessimism is

justified. The Scottish Government's [Operational Guidance](#) for the Fund does not require any evaluation by means of verifiable, independent statistical data.

10. There is no scope to compare local-authority schools with independent schools, and thus no possibility of reaching any comprehensive conclusions about social inequality. Some attempt is made to compare each local-authority school with other local-authority schools that serve students of similar social circumstances. That is useful but tells us nothing about the overall impact of social circumstances, especially in the cities, when large minorities of children from the most affluent families attend independent schools. Thus it is impossible to know whether the higher average attainment in independent schools than in local-authority schools is due to selection, or to teaching, or to the social circumstances of their families.

What is partly right?

Despite these multiple weaknesses, some valuable statistical measures are published. The problem with them is that they are isolated or not precise enough. In thinking about any particular statistic, three key criteria are helpful:

- *Validity*: does the statistic measure what it claims to measure? An example discussed below is whether the Scottish Index of Multiple Deprivation is a valid measure of individual students' social circumstances.
- *Reliability*: if we calculated the statistic repeatedly, would we get the same answer? The most common example in education is testing attainment, which we would want not to be dependent on the circumstances under which the tests are done.
- *Objectivity*: does the statistic measure actual features of education, or does it measure people's opinions about these features? An example noted above is the canvassing of headteachers' views about the effectiveness of the Pupil Equity Fund. This is not an objective measure of the Fund's actual effectiveness.

The interpretation of several commonly used statistical measures in Scottish education suffer from some of these problems. Notable examples are:

1. [Scottish Index of Multiple Deprivation](#) (SIMD): This measure was devised as a way of understanding how different kinds of social disadvantage tend to cluster together in communities. Examples are low pay, bad health, poor housing, and limited transport. For this purpose, it works well for urban areas – but only as a measure of whole neighbourhoods. It does not tell us about everyone who lives in a neighbourhood, only the average. Thus it is not a valid measure for individual students. Around [one half](#) of families with low income do not live in the most deprived fifth of neighbourhoods as measured by the SIMD. So policies that aim to target resources according to the SIMD will miss many deprived children. An example is from [research](#) on the Glasgow area which showed that the young people with the poorest chances of getting to university were those who were socially deprived and yet living in affluent areas. In the other direction, around a quarter of families in the most deprived fifth of neighbourhoods are not themselves deprived. So it would be possible to observe an improvement in educational outcomes in a deprived neighbourhood that was due only to an improvement for the children in these non-deprived families. There is [evidence](#) that universities do this cherry-picking as a way of improving their published statistics on recruitment from socially deprived neighbourhoods. The SIMD also fails to measure rural poverty adequately, because that tends to be spread around many neighbourhoods, not concentrated as in the cities.

The SIMD remains an important and valuable measure of the social characteristics of neighbourhoods. It is admirably objective and reliable. The multiple deprivation which it records does exacerbate the challenges faced by families who themselves are in poverty. But it is not a valid measure of individual families' social circumstances.

2. [Free School Meals](#) (FSM): Being entitled to free meals, too, is sometimes used as an approximate indicator of low family income. Because the entitlement to free meals has been tied to the family's official entitlement to social security, the indicator has been a valid measure of family material resources. Being a family measure, this is better than the SIMD for measuring students' individual circumstances. But it is crude because it has only two values (entitled or not), and thus does not capture the complexity of social circumstances. The entitlement also varies as family circumstances vary, but few data sets allow this fluctuation to be taken into account (unlike, for example, Growing Up in Scotland, below). In any case, the indicator is becoming less useful in Scotland as free meals are extended in some primary-school stages to all pupils.

The FSM indicator is objective because it is based on administrative data, but it is only broadly valid as a measure of social circumstances, it is not reliable as an indicator of long-term poverty, and it is becoming partly out-of-date.

3. [Achievement of Curriculum for Excellence Levels](#) (ACEL): Each year, the Scottish Government publishes data on the percentage of pupils who have attained each of the levels of the Scottish curriculum. In principle, this ought to be valuable, but the problem is that it is based, not directly on any objective tests of attainment, but rather on teachers' judgement. There is good [evidence](#) that teacher judgement is not a reliable measure of students' attainment. This is not a criticism of teachers. Any good teacher has to believe that their pupils can make progress, and therefore has to be optimistic that they are doing so. In some respects also there is probably bias in both directions, because of what has been called the 'halo effect': pupils who have done well in the past are judged leniently; the opposite happens for those who done badly. These various sources of bias are why we need objective tests, and yet the guidelines to teachers for estimating whether a pupil has achieved a specific curriculum level refer only vaguely to any objective tests.

This is not an objective measure; it is probably not reliable, because judgements vary over time; and it is not a valid indicator of attainment.

4. [Scottish Qualifications Authority](#) (SQA): The annual reports of the results of the assessments run by the SQA are the fullest record available of objective measures of school attainment, but they are not useful in assessing the attainment of individual students because the data are almost entirely about presentations in each subject, not about students' combinations of attainment. That is, for example, it tells us how many people passed Higher mathematics, and how many passed Higher English, but it does not tell us how many students passed both. The SQA could publish this kind of information at almost no extra cost, because every candidate has a unique Scottish Candidate Number. That would allow information to be compiled that showed much richer information about the combinations of subjects which students take, how that develops during their passage through the senior school stages, and how it relates to their overall attainment. The absence of such information makes these annual reports, valuable

though they are as a record of awards by the SQA, almost useless for understanding the ways in which external assessment shapes the curriculum of students.

These data are objective, reliable and valid as indicators of attainment in specific subjects at particular levels, but are no more than that.

5. *Inadequacy of 'positive destinations'*: The annual [reporting](#) of what school leavers do is useful, but the concept of 'positive' is undifferentiated, being 'higher education, further education, training, employment, voluntary work, [or] Personal Skills Development'. Employment can be anything from a stable, full-time job with good prospects to a zero-hours arrangement with no actual contract and no offer of training or any other kind of career advice. The data are collected vicariously (via Skills Development Scotland) rather than directly from the leavers themselves. Leavers from independent schools are not included.

This information is objective, but not strongly valid, because of the crudity of the classification, and it is not reliable, because of the way the data are collected.

6. *Higher Education Statistics Agency (HESA)*: Although the HESA is the most comprehensive source of data on entry to UK higher education from school, it is misleading because it fully covers only courses at universities and higher-education colleges. Most of its tables do not include higher education in further-education colleges, and yet around [one third](#) of entrants to undergraduate higher education in Scotland enter these courses. [In England](#) the proportion of higher-education students at colleges is much lower.

These data are objective measures, but, being incomplete, they are not valid as indicators of transition to higher education. They are reliable, because they relate ultimately to the funding of higher-education institutions.

What is being done well?

Despite all these problems, there are aspects of the data environment of Scottish school education that are of high quality. The problem is that these are fragmented, but they can point towards what needs to be done to create a more coherent account of the whole system of school education.

1. [Growing Up in Scotland](#) (GUS): This survey – run by ScotCen Social Research – is done to the highest international standards, tracking a group of children who were born around 2005. The survey thus has been building up a rich body of evidence on progress in the period since then. It includes a range of measures of social circumstances. But it is only one cohort, and there are no plans to follow any new cohorts. This means, for example, that there is no way of using GUS to evaluate the impact of Curriculum for Excellence because, as it happens, the cohort started primary school in the year when the new curriculum was extended across all schools. Without any baseline data on progress before the curriculum was started, there is no way in which GUS data can be compared with what went before. Moreover, the GUS cohort will not be tracked beyond 2022-23, and so data will not be available on the full range of transitions beyond school.

The range and depth of the data collected in GUS, and the repeated measures over the course of the respondents' time at school, allow causal pathways to be detected. For example, by holding constant statistically the measures of intelligence that were taken at age 12, it is

possible to investigate the effects of social circumstances on progress at secondary school independently of the effects of intelligence. By decomposing social circumstances into measures of parental occupation, parental education, and educational resources at home (such as books and internet access), it is possible to build up an appropriately complex picture of how children's educational progress is affected by the conditions in which they live.

2. [Scottish National Standardised Assessments](#) (SNSA): These track individuals, testing them in Primary 1, Primary 4, Primary 7 and Secondary 3. The tests themselves are of high quality; they are based on the Scottish curriculum; and they could in principle be independent and objective. But the SNSA results are not fully objective because the dates and other circumstances under which the tests are given to pupils are not standardised, an aspect of their use which was the result of political opposition to standardisation. The political claim was that standardising the test date and other aspects of the tests would be too rigid and would not allow for the different rates at which children develop. In fact, only by standardising all aspects of the measurement is it possible to have a valid analysis of children's uniqueness. The SNSAs also record nothing on home circumstances or other aspects of life outside school, nor do they record any aspects of pedagogy.
3. [Programme for International Student Assessment](#) (PISA): Scotland's uninterrupted participation in the OECD's PISA studies since they started in 2000 provides the only regular source of objective, comparative data on Scottish schooling. It investigates three domains of learning – reading, mathematics, and science. There is a range of measures of social circumstances, including details of educational resources at home. Students are asked about what they do at school – for example, whether the teacher asks them questions, whether they are encouraged to work in groups, and whether they have regular homework. There are measures of students' attitudes to school, of their attendance, and of their perception of the behaviour of other students. But this is a cross-section (of 15-year-olds) only every three years. By this stage, pupils have experienced seven years of primary school and three years of secondary school, but there is no way of knowing from the PISA data what the relative contribution of these two periods have been (especially because, unlike in *Growing Up in Scotland*, there is no measure of attainment or intelligence at the end of primary). Because the evidence is gathered only at one moment in time that is late in the respondents' schooling, it is impossible to draw causal inferences about the effects of teaching and of social circumstances.
4. *International surveys of mathematics, science and literacy*: The decision in 2023 to take Scotland back into the international surveys of mathematics, science and literacy is welcome. The series [Trends in International Mathematics and Science Study](#) (TIMSS) has a four-year cycle, with the next one in 2027, reporting in 2028. The series [Progress in International Reading Literacy Study](#) (PIRLS) is five-yearly, and the next scheduled wave is 2026 with reports in 2027. The series are run by the International Association for the Evaluation of Educational Achievement. Both operate to the same high standards as the PISA studies. These first new waves will be able to measure changes since Scotland last took part (2007 for mathematics and science, 2006 for reading). But to assess the effects of policies that are currently being implemented, the earliest date by which current change could be detected would be the wave after next – 2031 for each series.

What is to be done?

The proposal here is for two new sources of regular and comprehensive statistical data on Scottish schools. One is for longitudinal surveys of representative samples of students, covering a range of topics in depth. The other is for annual tracking data on all students, concentrating on their progress and attainment. These proposals are for the collection of data only, not for how the information would be analysed, but, in deciding what data to collect, it would be important to consult widely with potential users of the data so as to stimulate research on how to improve schools.

Longitudinal surveys of samples of students

Many of the gaps in data that have been described above may be filled by longitudinal surveys of students at specific points in the system. Scotland used to have regular surveys of students, but abandoned them in 2016, and none of them was longitudinal. The best past example was the annual Scottish Survey of Achievement (2005-9), which sampled students in Primary 3, Primary 5, Primary 7 and Secondary 2. One of its great strengths was that it collected data not only on students' attainment but also on their attitude to their studies, on their teachers' practices, and on their experiences other than in attainment. Thus the inter-connections of all these aspects of education could be investigated. The Survey of Achievement was the predecessor to the Scottish Survey of Literacy and Numeracy (2011-16) and was the successor to the Assessment of Achievement Programme (1983-2004). Thus the absence of such a survey since 2017 is unprecedented in the past four decades.

The other main precedent for regular surveys is the Scottish School Leavers' Survey, which ran from 1962 to 2002 (mostly biennially, and with varying titles). This survey was unique internationally in this longevity and in the range and depth of the topics it covered. In particular, it allowed the detailed study of transitions beyond school. In the 1980s, for example, it provided insights into the causes and consequences of youth unemployment, enabling a distinction to be drawn between the effects of the economic recession of the early 1980s and the effects of structural economic change such as the contraction of manufacturing industry. The survey also allowed the investigation of the effects of the move to comprehensive secondary schooling, and also the patterns of access to the expanding system of higher education.

The main features and strengths of new longitudinal surveys would be:

1. Unlike all these previous surveys, the proposed surveys here would be longitudinal, and thus be based on the design of Growing Up in Scotland (though not starting at birth, using less frequent waves, and with shorter questionnaires). The core purposes of the surveys would be to contribute to school improvement, and to understand how schooling relates to the wider society. It is likely that starting a new longitudinal survey every three years would be sufficient (because annual monitoring would be achieved by the annual data on all students, described below).
2. The surveys would be run by a survey organisation that was wholly independent of government and of schools. Like international surveys, this process would be best managed by inviting competitive tenders for the survey contract. That would build in incentives for improving the quality of the surveys, and for public debate about their methods. The bidding process would be managed by a new Office for School Education Data (outlined below). That Office would fund the surveys from its budget.

3. The design of the surveys for which the tendering process would invite bids would be developed by a process of public consultation, led by the Office for School Education Data. The Office would be required to take full account of views on the design from all interested groups, inside and outside government. In particular, it would be required to seek the views of officials and councillors in local government, the Scottish government, the Scottish parliament, the UK government and the UK parliament. Beyond the submission of views to this consultation process, there would be no scope for any political involvement in the management of the surveys.
4. The surveys would be longitudinal. That is, each would start with a representative sample of pupils in Primary 1 and follow them up every three years until they left school. Probably a 7% sample (about 3,500 pupils) would be enough. A new longitudinal panel of this kind would be selected every three years. The structure is thus illustrated in this diagram:

Proposed structure of longitudinal surveys

Each Cohort is a new representative sample of pupils in Primary 1 in the specified school year, followed up till school leaving. The plan is imagined here as if starting in school year 2026-27.

School year	Primary 1	Primary 4	Primary 7	Secondary 3	Leave school
2026-27	Cohort 1				
2029-30	Cohort 2	Cohort 1			
2032-33	Cohort 3	Cohort 2	Cohort 1		
2035-36	Cohort 4	Cohort 3	Cohort 2	Cohort 1	
2038-39	Cohort 5	Cohort 4	Cohort 3	Cohort 2	Cohort 1 (2037-39)
2041-42	Cohort 6	Cohort 5	Cohort 4	Cohort 3	Cohort 2 (2040-42)
2044-45	Cohort 7	Cohort 6	Cohort 5	Cohort 4	Cohort 3 (2043-45)

etc



5. As in the international studies such as PISA, independent schools would be included in the samples in proportion to their size.
6. If possible, a final stage of contact with the sample respondents should happen around age 22 to capture most of the post-school transitions. The capacity to do that ended with the end of the biennial series of [Scottish School Leavers' Surveys](#) in 2002.
7. There would be no scope to alter the samples by schools, local authorities, inspectors, or other government agencies.
8. Participation by children aged under 16 in the surveys would require parental consent; for older students, consent would be from them directly. This parental consent should be explicit (opt-in), not merely not opting out. There are reliable mechanisms for designing sample surveys to ensure that consent is combined with an achieved sample that is representative. Schools and other agencies would have no power to withdraw students from the surveys.
9. Information about the students' home circumstances would be obtained by questionnaires to parents for the primary-school stages of the surveys, and directly from the students for the secondary stages. This would include information about parental occupations and education,

and about educational resources in the home, collected to the same standard as is normal in the PISA studies and in Growing Up in Scotland.

10. So far as possible, the questions asked in the surveys would replicate questions from the international surveys. This would allow the quality of the Scottish surveys to be checked against the international surveys. It also would allow the validity of the international surveys to be checked against the Scottish surveys.
11. The surveys should collect information from the students on the full range of their curricula. The questionnaire would also ask students about their attitudes to school, their experiences of school (including in relation to behaviour and absence), their experience of pastoral support in school, and (at appropriate ages) their plans for the future.
12. The surveys would collect data on properly standardised versions of the Scottish National Standardised Assessments. Ideally, this would be from these tests conducted at the same time for each student. However, if that is still judged to be politically unacceptable, then the test results should be combined with the age and school stage of the test in the calculation of the standardisation.
13. Data from the Scottish Qualifications Authority should be added to the leavers' surveys (after obtaining appropriate consent from the respondents to make this data linkage). This would increase the reliability of the attainment data, would reduce the burden on students of reporting their detailed attainment in the survey questionnaire, and would allow the questionnaire to concentrate on all other aspects of schooling. It would also get round the problem that the annual reporting of SQA data is mostly at the level of presentations, not of students. The precedent for data linkage of this kind is the Scottish School Leavers' Survey from the late-1980s onwards, and also the age-17 wave of Growing Up in Scotland.
14. Data on assessments other than those provided by the SQA (for example, A-level, GCSE, or the International Baccalaureate) would be obtained via the questionnaire to students.
15. At primary-school level, information should be gathered from the class teacher about pedagogical matters (as in the Scottish Survey of Achievement), so as to allow the investigation of the relationship between pedagogy and students' progress. This would form the basis of disseminating practice which analysis of the surveys had shown to be effective.

Annual tracking of all students

As well as this regular sampling of students, there is also a need to track all students' attainment longitudinally in a statistically valid and reliable way, and to compile reports based on the data obtained from this. As in the proposed surveys, the attainment in primary and early secondary would be measured by the Scottish National Standardised Assessments, and in later school stages by the results of SQA assessments. So this dataset would be a collation of data that are already held in fragmented ways. The model is the [National Pupil Data Base](#) in England, which tracks pupils from age 2 to 21 and has been running successfully and uncontroversially since 2002.

The main features and strengths of the tracking data would be:

1. This tracking, too, would be administered by the Office for Scottish Education Data, independently of schools and government agencies.
2. The waves of the tracking for each student would coincide with the stages at which the National Standardised Assessments take place – namely, Primary 1, Primary 4, Primary 7 and

Secondary 3 – and these waves would be followed by waves corresponding to the stages when SQA assessments are taken, which are Secondary 4, Secondary 5 and Secondary 6. These waves would thus also coincide with the waves of the longitudinal surveys.

3. Thus the longitudinal surveys proposed above may be thought of as a representative sample of every third year of the tracking data, adding depth to that data.
4. The universal coverage of the tracking would be a firm basis for assessing standards across Scotland. The number of participants would be large enough to provide reliable information about individual schools, and thus to hold schools accountable in public in a manner that would be more informative, and fairer to schools, than the current practice of reporting the results of SQA assessments and of some basic data on progression beyond school.
5. The data base of all pupils would also record basic demographic information so as to allow inequality to be analysed at local level, but, for economy of administration, this would have to be in a much more summary fashion than for the longitudinal sample surveys proposed above.
6. The tracking data for every pupil in Scotland, along with the longitudinal sample surveys, would provide, for the first time, a full picture of how the system is operating. It would also allow students (and their parents) to compare their own results in the SNSAs with the local and national results, and thus to get a sense of how their progress compares to other students at a similar stage.

Office for School Education Data

The Commission on School Reform has previously [proposed](#) an independent organisation to oversee the collection and integrity of statistical data relating to Scottish education. The analogy is the Office for National Statistics at the UK level, though with the narrower remit of education data only. As well as the tasks that are outlined above, the responsibility of the Office would extend to the full range of statistical data on Scottish school education, including, for example, all the statistical bulletins that are currently published by the Scottish government. It should extend to post-school data, and it should work closely with the UK-wide Higher Education Statistics Agency to integrate information from higher education institutions with information on higher-education courses at further-education colleges. The Office would be required to ensure comparability of Scottish statistical measures with those compiled in the rest of the UK and, where possible, the rest of Europe.

The Office should be accountable directly to the Scottish Parliament, not to the government. It should be funded by a grant from the Parliament. This would be in line with the report of the [Crerar review](#) of the accountability of public services in Scotland, which recommended that ‘there is a need for a revised model of accountability where independence from Ministers is balanced by responsibility to the Parliament’.