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Value added measures

This briefing paper considers some of the tools used by schools for assessing the value they add to pupil outcomes. It finds that a range of tools is available that has the potential to support school improvement. However, the paper notes that it is not likely that the various tools in use can be related to InCAS in a manner that provides a system of continuous assessment for pupils due to differences in their design and use; and that value added findings for smaller schools should be treated with a degree of caution.

Key points

- It is well-known that the effective use of data can play an important role in addressing underachievement;
- Value added measures can take either the form of a 'Simple Value Added' approach, which measures pupil progress between different stages of education, and Contextual Value Added, which also takes into account out-of-school factors;
- A range of assessment tools is available to schools in Northern Ireland; these use mainly Simple Value Added measures;
- Examples of these include MidYIS, a tool not linked to the curriculum that measures pupils' aptitude and ability; and SOSCA, which provides curriculum-based assessments and acts as a measure of attainment midway through post-primary school;
- The various assessment tools (such as MidYIS and Yellis) are each used at different times and for varying purposes;
- It is therefore unlikely that they can relate to InCAS in a way that provides a continuous system of measuring pupils' progress;
- However, the different tools can complement each other to provide a range of information to support schools' teaching and learning;
- It is also important to note that when considering the effectiveness of smaller schools, the lower pupil numbers on which to base value added assessments mean that findings should be treated with a degree of caution; and
- While Contextual Value Added measures take account of a wider range of factors that can impact on attainment, there is a risk that they can mask underachievement.

Executive summary

Introduction

The effective use of data is known to be an important tool for school improvement. When used appropriately, it can help to inform school strategy, target interventions and monitor the effectiveness of policies and practices. Value added measures are generally based on a student's prior attainment and relative progress, and assess the additional value a school has added to pupil outcomes.

Value added measures used by schools

A range of commercial tools is available to post-primary schools to assess the value they add to pupil outcomes, and to help address underachievement. Some of the more frequently used tools are outlined in the following table.

Table 1: Examples of value-added tools used by schools

Tool	Ages	Key features of tool
MidYIS	11-16	<ul style="list-style-type: none"> Assesses pupils' ability and potential: not related to the curriculum Value added can be reviewed in light of GCSE results
SOSCA	14-16	<ul style="list-style-type: none"> Curriculum-based assessments in maths, science and reading Measure of attainment midway through post-primary school Value added measures in comparison to baseline data and future results
Yellis	14-16	<ul style="list-style-type: none"> Not related to the curriculum (vocabulary, mathematics, non-verbal ability) Predictions of performance at GCSE Value added measures between Yellis and GCSE
ALIS	Post-16	<ul style="list-style-type: none"> Baseline test measuring ability in mathematics, vocabulary and non-verbal ability Predictions of performance at A-level Value added measures from GCSE to A-level
Assessment Manager	All	<ul style="list-style-type: none"> Can provide detailed assessment information enabling pupil tracking for school-based analysis
Alps	Post-16	<ul style="list-style-type: none"> Value added between GCSE and A-level Results available at student, school and departmental level
CVA	All	<ul style="list-style-type: none"> Considers a range of contextual issues outside of the school's control as well as prior attainment Used in league tables in England although being phased out

All of these tools, with the exception of the Contextual Value Added approach that has been used in England, involve Simple Value Added measures. That is, they measure the progress made by a pupil between different stages of education, without taking into account out-of-school factors such as socio-economic background and gender.

The use of assessment tools

The various assessment tools used by schools are each used at different stages of children's education and for varying purposes; using different measurements. Therefore it is not likely that they can relate to InCAS in a way that provides a continuous system of measuring pupils' progress. However, schools can use the different assessment tools to provide them with a range of information to support their teaching and learning and in helping to address underachievement.

It is also important to note that when assessing the effectiveness of smaller schools, there are fewer pupils on which to base a judgement of the school's effectiveness. As such, the findings should be treated with some caution and should not be used for comparisons between schools. It has been suggested that considering value added measures over a longer period of time in smaller schools can increase the robustness of the data.

Conclusion

It is clear that value added tools can play an important role in identifying pupil progress and in improving educational outcomes for children and young people. However, it is not likely that the various tools in use can be related to InCAS in a manner that provides a system of continuous assessment for pupils due to differences in their design and use.

When assessing the effectiveness of smaller schools, analysis of value added measures should take into account lower pupil numbers, and the findings therefore should be treated with some caution or considered over a longer period of time. In addition, the evidence warns against an over-reliance on measures that take into account out-of-school factors, such as socio-economic background.

1 Introduction

There is widespread recognition of the importance of using data effectively in raising educational attainment. When used well, data can be used to assess pupil and school achievement and to target and evaluate interventions. However, there is evidence to suggest that the extent to which data are understood and used varies across schools.¹

There are different approaches to using data in schools to evaluate pupil and school performance; for example, GCSE and other examination results can be used to assess pupil outcomes. Value added measures, however, go further to identify the value a school has added to pupil outcomes by allowing for the measurement of progress made by pupils.

2 Value added measures used by schools

While there is no system-wide approach to measuring value added, schools in Northern Ireland employ a number of different assessment tools to determine the value they add to pupil outcomes. These tools are used for internal assessments and are not intended for comparisons between schools or for transferring pupils between primary and post-primary phases. There are two main types of value added measures that can be used in schools.²

- **Simple Value Added:** Progress made by an individual pupil, or group of pupils, between different stages of education; and
- **Contextual Value Added:** Such measures also take into account factors relating to the context of individual pupils when comparing the progress they have made.

Simple Value Added measures relate to pupils' prior attainment, and do not account for other factors, such as socio-economic background, that can have an impact on pupils' attainment. However, it is important to note that prior attainment has been found to have the greatest influence on differences in the attainment of individual pupils.³

Contextual Value Added (CVA) measures include a multi-level analysis of a range of factors that can have an effect on educational outcomes such as socio-economic background and age. While proponents of CVA argue that such measures take into account factors that are outside of schools' control and therefore provide a more accurate picture of the value added by schools to pupil outcomes,⁴ others express concerns about the validity and robustness of such measures.⁵ In addition, there is

¹ PwC (2008) *School and pupil performance data* Bangor: DE

² PwC (2008) *School and pupil performance data* Bangor: DE

³ Mayston, D. (2006) *Educational Value Added and Programme Evaluation* London: Department for Education and Skills

⁴ PwC (2008) *School and pupil performance data* Bangor: DE

⁵ Tymms, P., Dean, C. (2004) *Value-Added in the Primary School League Tables* NAHT

likely to be a risk that over-reliance on CVA measures could mask true underachievement.⁶

Simple Value Added tools and measures

Most of the systems available to schools are based on Simple Value Added measures. The following paragraphs consider some of the value added assessment systems available to schools.

MidYIS

MidYIS tests are available from the Centre for Evaluation and Monitoring (CEM) at Durham University. The tests are designed to be taken upon entry to post-primary school and are available in both computer-adaptive and paper-based formats. An optional follow-up assessment can be taken to provide further information on pupils' abilities.⁷

The assessments aim to measure pupils' ability and aptitude for learning, as opposed to their achievement, helping teachers to consider what will be required to prepare them for Key Stage 3 and GCSEs. MidYIS tests include assessments of vocabulary, maths and non-verbal skills and contribute to an overall measure of ability that can predict subsequent achievement and identify pupils' strengths and areas for development. Attitudinal questionnaires are also available through this tool.⁸

Value added feedback for individual subjects can be provided once pupils have taken GCSE examinations. These identify whether pupils have performed better than, the same as, or worse than expected given their MidYIS test score, in relation to the progress of other pupils of similar abilities.⁹

SOSCA

Secondary On Screen Curriculum Assessments (SOSCA), a suite of curriculum-based adaptive assessments, is also provided by CEM at Durham University. It aims to measure pupil progress in Maths, Science and Reading at age 14 (Year 10).¹⁰ The assessments highlight students' attainment, and can provide value added information in relation to the lower part of post-primary school (using data from the MidYIS baseline test), and to GCSE results at a later date.¹¹

Yellis

Yellis, or the Year 11 Information System, is a value added monitoring system developed by CEM at Durham University. It aims to provide a wide range of

⁶ PricewaterhouseCoopers (2008) *School and pupil performance data* Bangor: DE

⁷ *MidYIS – Introduction* [online] Available at: <http://www.cemcentre.org/midyis/introduction>

⁸ *MidYIS – Introduction* [online] Available at: <http://www.cemcentre.org/midyis/introduction>

⁹ *MidYIS – Introduction* [online] Available at: <http://www.cemcentre.org/midyis/introduction>

¹⁰ *SOSCA – Introduction* [online] Available at: <http://www.cemcentre.org/sosca/introduction>

¹¹ *SOSCA – Process & Timescales* [online] Available at: <http://www.cemcentre.org/sosca/process-timescales>

performance indicators and attitudinal measures for students in the last two years of mandatory schooling, between the ages of 14 and 16.¹²

A baseline test can be taken in Years 10 or 11, after which the results are sent to pupils' schools with detailed KS4 and GCSE predictions at a subject level.¹³ Teachers can then track the progress of pupils throughout Key Stage 4 and a value added analysis is provided at a later time, outlining the progress made by students in comparison to others participating in Yellis tests. Value added feedback is provided at the student, subject and school level with the data for each baseline cohort analysed separately.¹⁴

ALIS

The Advanced Level Information System (ALIS) is another commercial assessment tool available from CEM. It provides predictive data and value added analysis for post-16 students by using both its own baseline tests and GCSE data as measures of ability.¹⁵

This approach enables ALIS to provide predictive data and value added analyses specific to each student and each subject studied; and data can also be provided at a school level. The test is designed to measure ability rather than achievement. Attitudinal surveys can also be provided through ALIS.¹⁶

Assessment Manager

Schools in Northern Ireland have access to SIMS.net, an integrated suite of Management Information Systems Tools aiming to provide the information schools need and to reduce their workload. It has the potential to provide a range of value added indicators relating to individual pupils, teachers and the school. However, research by PricewaterhouseCoopers (PwC) in 2008 found that the take up and use of SIMS.net modules varies across schools.¹⁷

Assessment Manager is one of the key modules within SIMS.net. This programme can provide detailed assessment information enabling the tracking of pupils of any age for school-based analysis. Research has suggested that around 50%-60% of post-primary schools and 15% of primary schools use Assessment Manager to a large extent.¹⁸

Alps

Advanced Level Performance Systems (Alps) is a commercial system outlining the value added by schools between GCSE and A level. Its reports on A / AS level and BTEC qualifications provide a statistical analysis of a school's results in relation to a

¹² Yellis – Introduction [online] Available at: <http://www.cemcentre.org/yellis/introduction>

¹³ Yellis – Assessment [online] Available at: <http://www.cemcentre.org/yellis/assessment>

¹⁴ Yellis – Benefits [online] Available at: <http://www.cemcentre.org/yellis/benefits>

¹⁵ ALIS – Introduction [online] Available at: <http://www.cemcentre.org/alis/introduction>

¹⁶ ALIS – Assessment [online] Available at: <http://www.cemcentre.org/alis/assessment>

¹⁷ PwC (2008) *School and pupil performance data* Bangor: DE

¹⁸ PwC (2008) *School and pupil performance data* Bangor: DE

national benchmark, taking into account prior attainment. The results can be broken down to school, departmental and individual student level.¹⁹

Contextual Value Added

Contextual Value Added measures (CVA) have been used in league tables in England in recent years. Value added scores for each school are based on the difference between predicted and observed attainment, using a multilevel model taking into account contextual factors, including:²⁰

- Prior attainment;
- Deprivation;
- Special Educational Needs;
- Gender;
- Ethnicity;
- Age; and
- Language.

However, it should be noted that the Coalition Government is seeking to discontinue the use of CVA in school league tables due to concerns over the extent to which the measure is statistically robust and reliable.²¹

InCAS, other tools and the transfer of data

The Interactive Computerised Assessment System (InCAS) is the method used by the Department of Education to assess pupils in Years 4-7. It provides pupil assessments in reading and general maths (as well as other, optional assessments), and aims to help schools identify the strengths and areas for improvement of pupils. InCAS tests are not intended for comparison between pupils or for transfer from primary to post-primary, rather, they act simply as diagnostic support for pupils' learning.²²

InCAS assessments are tailored to the ability of individual children, and generate an age-equivalent outcome in both reading and mathematics. This data is returned directly to schools and is not collected centrally. Schools are, however, required to inform parents of the results of the assessments.

The Department of Education encourages schools to make use of other assessment tools in addition to InCAS in order to help support school improvement.²³ With regard to whether other assessment tools can relate to InCAS, it is important to note that the various tools are used at different times and for different purposes, and use different indicators. As such, they are not likely to work with InCAS in a way that provides a

¹⁹ *Alps* [online] Available at: <http://www.alps-va.co.uk/Home>

²⁰ DfES (2006) *School Value Added Measures in England* Department for Education and Skills

²¹ Q&A *School league tables* [online] Available at: <http://www.bbc.co.uk/news/education-11947183>

²² Department of Education (2010) *Circular: InCAS*

²³ Department of Education (2010) *Circular: InCAS*

continuous system of measuring pupils' progress. Nonetheless, the different assessments can complement each other in providing a range of information to support schools in their teaching and learning.²⁴

In terms of the transfer of pupil assessment data between primary and post-primary schools, Regulation 9 of The Education (Pupil Records and Reporting) (Transitional) Regulations (Northern Ireland) 2007 provides that "where a pupil ceases to be a pupil at a school and becomes a pupil at another school", there is a duty on the Board of Governors at the original school to arrange for the pupil's "formal record of the academic achievements, other skills and abilities and academic progress" to be transferred to the receiving school within 15 days.²⁵

Questions around the use of value added measures

The robustness of value added data in small schools has been called into question. Where smaller numbers of pupils are considered, it is likely that less confidence can be placed on school-level value added results (as there is reduced evidence on which to base a judgement).²⁶ Tymms and Dean conclude that while value added information is important for school improvement, it should not be used to compare the performance of different schools.²⁷

In their report *School and pupil performance data*²⁸ PwC recommends that value added measures should be introduced to schools to provide a more rounded picture of pupil performance. For smaller schools, it recommends that value added is recorded and considered over an extended period of time, potentially over three years, suggesting that this may support the identification of trends across groups of pupils.

3 Conclusion

A range of commercial tools for assessing value added is in use by schools to support them in improving pupil outcomes. The evidence suggests that considering value added measures can play an important role in identifying the contribution schools have made to pupil progress. However, the tools cannot necessarily be related to InCAS in a manner that provides a system of continuous assessment for pupils due to variations in their design and use.

In addition, it is important to note that value added findings at a school level should be treated with a degree of caution, particularly in smaller schools, and there should not be an over-reliance on CVA measures.

²⁴ Information from the Department of Education, 22nd February 2011

²⁵ The Education (Pupil Records and Reporting) (Transitional) Regulations (Northern Ireland) 2007 [online] Available at: <http://www.legislation.gov.uk/nisr/2007/43/made>

²⁶ DCSF (2007) *A Technical Guide to Contextual Value Added 2007 Model*

²⁷ Tymms, P., Dean, C. (2004) *Value-Added in the Primary School League Tables NAHT*

²⁸ PwC (2008) *School and pupil performance data* Bangor: DE