Institution: University of Durham

Unit of Assessment: UoA25, Education

Title of case study: Monitoring Performance in Schools

1. Summary of the impact

The Centre for Evaluation and Monitoring (CEM) at Durham University has pioneered the conceptualisation and development of fair and accurate school performance monitoring systems, which report the relative progress of pupils (value-added). Schools, local authorities and jurisdictions use the data generated by these systems to inform their strategy and practice with the aim of improving pupils' educational outcomes. Around 6,000 schools a year from the UK and across the world collaborate in this distributed research network established by CEM. In addition to the direct benefits to the three quarters of a million pupils assessed each year, their parents and their schools, the analyses of the unique longitudinal datasets generated by CEM's monitoring systems have significantly impacted on educational policy.

2. Underpinning research

The performance monitoring systems provide schools with reliable and fair comparative information about their pupils' educational performance, for self-evaluation and school-based research purposes. Today, CEM leads an international distributed network of these performance monitoring systems on a global scale which schools, local authorities and educational jurisdictions pay to join. It has researched and developed its own educational and attitudinal assessments for pupils aged between 3 and 18 years. These are administered in schools and then returned to CEM for marking and analysis, either on paper, or, increasingly, electronically. GCSE and Post-16 qualifications are also used to analyse the progress of older students. This analysis includes norms against which schools can compare the ability and attainment of their pupils, and their relative progress, or the 'value-added' they have provided, which draws on the comparative data across the research network contributed by each of the partner schools.

Conceptual development of the monitoring systems

The conceptualisation of the assessment systems has developed over many years but the significant research and thinking which underpinned them was developed and published by Fitz-Gibbon and others at Durham between 1996 and 2003. The motivation for this research arose from the inadequate methods previously used to judge pupil and school performance which failed to take account of factors such as pupils' ability and their progress made during the time at a school. In a 1996 publication (*Monitoring Education: Indicators, Quality and Effectiveness*), Fitz-Gibbon outlined the idea of distributed research; namely that performance data are fed back to the unit responsible for their generation, for them to interpret and act on. Within an education system, information about pupils' progress should be fed back to the pupils, teachers, management, education authorities and jurisdictions. Key insights from this publication were further developed by Fitz-Gibbon, Tymms and Coe, with outputs published that reflected this research and thinking [R1, R2, R3 and R4]. CEM's integrated performance monitoring systems for schools are based on this conceptual design.

Methodological development

The significant advance in the methodology underpinning performance monitoring systems resulted from a major contract awarded to Fitz-Gibbon and Tymms by the Schools, Curriculum and Assessment Authority (SCAA) to design a national monitoring system for England, the recommendations of which were published by Fitz-Gibbon in 1997 [R1]. This research was pivotal in increasing awareness at policy level of the importance of using value-added information to improve children's outcomes and which, in turn, has supported the development of CEM's systems. This is evidenced in discussion and actions within the Department for Education and Ofsted and the expansion of the voluntary adoption of CEM's systems by schools and local authorities. A distinction between the uses of performance data for official accountability and for professional development was proposed by Tymms (1999) [R2], and a range of theoretical considerations in the design of monitoring systems were presented by Fitz-Gibbon and Tymms (2002) [R4]. This methodological work underpinned the further expansion of CEM's monitoring systems. It took as its basis for a robust and successful national value-added system the requirements for readily understandable and statistically valid data whose collection and interpretation would not be burdensome for schools and which would also be cost-effective. It investigated different methods of calculating value-added and concluded that simple statistical

predictive modelling provided as good information for use by schools and teachers as more complex approaches such as multi-level modelling. To obtain the maximum impact from CEM's monitoring systems, it is important that users can trust and understand how to interpret the information they receive. Recommendations based on the research [R1, R4], involve simple mathematical models which can be readily accessed by teachers and others who come with a wide range of mathematical expertise, but who all need to use the data to improve the outcomes of the pupils in their care. The implementation of these recommendations can be seen within CEM's existing performance monitoring systems. The distributed assessment network has generated a large longitudinal dataset which continues to grow, and is unique in the scope and scale of the data accumulated. In addition to providing information to inform teachers' and schools' practice, the data have therefore been analysed at system-level, resulting in a number of significant publications which have impacted on educational policy. For example, Coe (2007) reported on grade inflation at GCSE and A Level, which can be directly linked to impact at policy-level [R5].

CEM was initially established at Newcastle University, but in January 1996 the Directors (Fitz-Gibbon and Tymms) took up posts at Durham University, moving CEM with them. Fitz-Gibbon directed CEM at Durham from 1996 until her retirement in 2003. Tymms and Coe have remained at Durham since 1996. The key conceptual, methodological and practical development of the performance monitoring systems for schools, therefore, took place at Durham.

3. References to the research

R1 Fitz-Gibbon, C. T. (1997). *The Value Added National Project Final Report - Feasibility studies for a national system of value-added indicators*. London: SCAA. ISBN 1 85838 249 1 Available at: http://bit.ly/16XcxVM (accessed 30/7/13).
This publication arose from the contract with SCAA which ran from March 1995 to December 1996, with a value of £200,000.

R2 Tymms, P (1999) Baseline Assessment *and Monitoring in Primary Schools: Achievements, Attitudes and Value-added Indicators*. London: David Fulton Publishers.
In a review by Ted Wragg in the TES (15/10/99) he noted that it included "the clearest explanation I have seen of the strengths and limitations of value-added approaches."

R3 Tymms, P., & Coe, R. (2003). Celebration of the Success of Distributed Research with Schools: the CEM Centre, Durham. *British Educational Research Journal, 29*(5), 639-653. DOI: 10.1080/0141192032000133686.

R4 Fitz-Gibbon, C.T. and Tymms, P. (2002) Technical and Ethical Issues in Indicator Systems: Doing things right and doing wrong things. *Education Policy Analysis Archives, 10*(6). Available at: http://epaa.asu.edu/ojs/article/view/285 (viewed 30/7/13).
This article has been viewed 16,014 times since January 16, 2002 (EPPA 30/7/13)

R5 Coe, R. (2007) *Changes in standards at GCSE and A-Level: Evidence from ALIS and YELLIS. Report for the Office of National Statistics, April 2007*. Curriculum, Evaluation and Management Centre, Durham University. Available at: http://bit.ly/17gUBJf (accessed 30/7/13). This article has been viewed 637 times since 1/1/08 on the CEM website and 607 views since 29/03/12 on the ONS website.

4. Details of the impact

Reach of CEM's Monitoring Systems in Schools

Since 1997, CEM's performance monitoring systems have made a significant impact in terms of their reach, evidenced by the rapid expansion of age-ranges covered, the areas of development assessed, and the numbers of schools, local authorities and jurisdictions buying into the distributed research network for comparative information about their pupils' progress. From 2008-13, a total of 9,609 schools contributed their assessment data to CEM's systems, with around 6,000 of these adopting the educational assessment systems consistently year on year, resulting in a total income from the research network of almost £27 million. Across this period, 4,119,964 pupil assessments were undertaken. Education authorities have actively endorsed the use of CEM's systems. For example, in the 2012/13 academic year, 18 out of the 32 Scottish authorities recommended that their schools used the data to monitor performance so that support and resources could be appropriately targeted [S1]. One of CEM's systems (InCAS) was used on a statutory basis by all primary schools in Northern Ireland for five successive academic years (2007/8 – 2011/12) [S2]. This totalled 1,076 schools and 350,000 pupil assessments during this period.

Within the REF period CEM's systems have also spread from the UK. Satellite centres have been

established in Australia, New Zealand and Hong Kong. In Australia, the Performance Indicators in Primary Schools (PIPS) system, which assesses what children know and can do when they start school and their progress during their first year, was introduced in December 2000. Over the following decade the uptake by schools and authorities grew, peaking in 2009 when 814 schools were registered and more than 27,000 pupils were assessed. Individual schools have adopted the system in Australia and so have educational authorities during the REF period: Australian Capital Territory Department of Education, Tasmanian State Department of Education, the Tasmanian Catholic Education Office and the Western Australian Catholic Education Office [S3]. The use of PIPS is statutory for all primary schools in Tasmania [S6]. The Abu Dhabi Education Council (ADEC) mandated the use of the PIPS assessment in all 166 state primary schools with the first full cycle of assessments taking place in November and December 2011. This involved approximately 200 teachers being trained to administer it to all children, starting with Kindergarten classes, and to interpret the feedback to inform their practice [S4, S5]. Its use was rolled-out to other cohorts (KG2, Grade 1 and Grade 2) and a total of 51,632 pupil assessments were administered between the Autumn of 2011 and April 2013.

Impact of CEM's Monitoring Systems on the Education System

Pupils' assessment results and their analysis have been used at different levels in educational systems to impact on schools' and systems' practice and policy. Case studies illustrate how it is used to inform schools' practice and strategy [S6]. In one of these case studies, a senior manager explains that the data enabled staff to "*act much more quickly to help pupils with learning difficulties that had not been picked up by their junior schools, before these children start to fall behind their peers and suffer the frustration and unhappiness that comes with this*." He noted that; "*parents have generally welcomed an objective assessment of their children's potential*".

In February 2013, Fife Local Authority gave a presentation outlining how the Authority uses the data to 85 delegates representing 19 Scottish authorities, at an event organised jointly by the Highland Council and CEM [S7]. The impact in this instance is the benefits of the use of CEM's data across Fife reported in the presentation, as well as the further sharing of methods of effective use of CEM data to track the performance of schools and groups such as children from economically deprived backgrounds, which inform local policy decisions about resourcing and intervention.

For five successive years (2007/8 – 2011/12), at national level in Northern Ireland, schools were advised by the Department for Education in Northern Ireland to use CEM's research and assessment data to inform their practice, identifying strengths and weaknesses of children so that education could be tailored to their needs, and monitoring their progress over time, and they were required to report the pupils' scores to parents [S2]. In Abu Dhabi, the Director of Education at Bidayaat reported that PIPS data "*provided impetus for key pedagogical strategies*" [S4].

Impact on National Initiatives

In addition to the direct impact of CEM's monitoring systems on its research partners in schools and local authorities, described above, the research conducted by Fitz-Gibbon and others described in Section 2 has also influenced the development of policy in England. The Statistician Team Leader at the Department for Education, has described how the Fitz-Gibbon report in 1997 influenced policy-makers within the department to see using comparative pupil level data, or 'value-added', as something which was understandable and achievable in a simple and straightforward way. This led to the development of the RAISEonline system which was launched in 2006 and continues to be used in all English state schools (up to 2013) to analyse the results of the statutory assessments [S8]. There is a clear link between Fitz-Gibbon's (1997) *Value Added National Project Final Report* [R1] and the contribution of CEM's conceptualisation to RAISEonline which is acknowledged by the Department for Education, though there were other factors that also contributed to the development of these innovations.

CEM's research on assessment, drawn from its testing and value-added approach, has also had an important impact on national policy on Key Stage tests in England. Tymms' evidence about standards and the use of tests was influential in the Children, Schools and Families Committee's Third Report on the reform of National Testing, published in May 2008. It concluded that the "national testing system should be reformed … to remove from schools the imperative to pursue test results at all costs" (p. 3). This report was a significant contextual factor in the major changes to national testing which took place in Autumn 2008, ending testing at Key Stage 3 from 2009. Although the trigger for the change was a catalogue of problems with the external marking, the

background conditions had already indicated change was necessary, with CEM research important in this national debate. Tymms' and colleagues' work is also referred to in Lord Bew's (2011) 'Independent Review of Key Stage 2 testing, assessment and accountability' and CEM's research on value-added, standards over time and computer-adaptive testing can be identified in its recommendations, such as the emphasis on tracking progress, on the basis of objective and accurate assessments.

A further example of impact on policy is the research by Coe [R5], which has reported changes in 'A' Level standards in England over time and has been referenced in national debate. This research uses data from CEM's ALIS ('A' Level Information System) and YELLIS (Year 11 Information System) whose use rapidly and significantly increased following the reconceptualisation of performance monitoring and value-added that had resulted from Fitz-Gibbon's report [R1]. On 13/10/11, the Secretary of State for Education gave a keynote address to Ofqual's Standards Summit which referred to the research conducted by Coe in relation to grade inflation [S9]. The report referred to investigated trends in 'A' Level performance over time from the mid-1990s up to 2006, which then led to impact within the REF period. In 2012, the Department for Education launched a consultation about reforming Key Stage 4 qualifications which referred to the research published by Coe [S10]. The paper [R7] may not have been the sole reason for consultation, but was clearly an influential part of the discussion from which the consultation has been proposed, evidenced by the references made to it by the minister, the parliamentary select committee and by Ofqual. These impacts on the development of national testing and examinations can all be traced back to the initial research and conceptual development of CEM's performance monitoring systems between 1996 and 2003.

5. Sources to corroborate the impact

S1 The Scottish education authorities whose schools are registered to use CEM in 2013 are: Dundee City Council, Aberdeen City Council, Aberdeenshire Council, Moray Council, Orkney Islands Council, Fife Council, Midlothian Council, Shetland Islands Council, East Lothian Council, Dumfries and Galloway Education and Community Services, Falkirk Education Services, Inverclyde Council, South Ayrshire Council, Angus Council, Renfrewshire Council, Clackmannanshire, Highland Council, Stirling. In 2013, this involved a total of 1,281 schools in which 124,697 pupils were assessed: www.cem.org.

S2 InCAS (Interactive Computerised Assessment System) is one of CEM's monitoring systems used by primary schools. For more information see www.cem.org. Instructions for its administration and use, and reporting to parents were issued to schools by the Northern Ireland Department for Education:
http://www.deni.gov.uk/microsoft_word_-_department_of_education_circular_2008_22-2.pdf
http://www.deni.gov.uk/incas_circular_to_schools_-_september_2009-2.pdf
http://www.deni.gov.uk/de_circular_20_incas_arrangements_for_autumn_2010_english.pdf
http://www.deni.gov.uk/english_circular_201115_-_incas.pdf .

S3 Letter from Dean of the Faculty of Education in a leading Australian University.

S4 Email from Director of Education, Bidayaat, Abu Dhabi: www.bidayaat.com.

S5 U.A.E. Newspaper Article: http://www.thenational.ae/news/uae-news/education/maths-and-literacy-to-be-tracked.

S6 Illustrative case studies from a selection of schools using CEM's performance monitoring systems are presented at: http://www.cemcentre.org/case-studies-see-how-our-systems-are-helping-others.

S7 Presentation by an education statistician from Fife Local Authority.

S8 Email from Department for Education representative summarising impact on DfE.

S9 Secretary of State for Education's speech to Ofqual Standards Summit 13 October 2011 http://www.education.gov.uk/inthenews/speeches/a00199197/michael-gove-to-ofqual-standards-summit#startcontent .

S10 Impact on testing and exam reform: Bew, P.A.E (2011) *Independent Review of Key Stage 2 testing, assessment and accountability: Final Report* London: HMSO Available at: http://bit.ly/15E3Q7K (accessed 30/7/13). Written evidence submitted by the DfE: The Evidence Base for Proposed Reform of the Examination System at Key Stage 4 (Nov. 2012), para 3.13, first bullet point: available at: http://bit.ly/18rLQg0 (accessed July 29th 2013).