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# What Value 'Value Added'?

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ABSTRACT Two quantitative measures of school performance are currently used, the average points score (APS) at Key Stage 2 and value-added (VA), which measures the rate of academic improvement between Key Stage 1 and 2. These figures are used by parents and the Office for Standards in Education to make judgements and comparisons. However, simple statistical analysis suggests that the measures are correlated and, therefore, schools with high APS values have high VA. This calls into question whether the measures are objective and valuable as a means of assessing a school's efficacy.

Two principal measures are commonly used to quantify a primary school's ability to improve children's academic performance. Key Stage 2 APS gives the average points score per pupil in the English and Mathematics Standard Assessment Tasks (SATs). The sum of the points that pupils achieved in the two subjects is then divided by the number of pupils eligible to take the tests. The concept of 'value added' (VA) attempts to measure the gain (or loss) from being in a school with respect to an average school; the average performance of schools taken from a data set. It provides a data-driven measure of school efficiency (Raudenbush, 2004; Timmermans et al, 2011). Contextual value added (CVA) measures the individual characteristics of a cohort against other measures such as gender, whether children are in receipt of government financial support, ethnicity or children with special education needs and/or disabilities. Value added is calculated for each student and then aggregated to give a score for the school. In this way an individual student's progress is compared with the progress made by other students with the same or similar prior attainment.

The argument for using both values is that they report different things; the APS measure only reflects children's attainment, and not progress. This means that it can be influenced by a range of external factors that do not reflect the capacity of a school in encouraging children's academic development. VA recognises that similar types of children should show similar growth in their skills and knowledge. Those children that show more growth than average

must have had better teachers, while those with less growth than the average must have poorer teachers (McCaffrey et al, 2003; Rockoff & Speroni, 2010; Hanushek & Rivkin, 2010; Manzi et al, 2014).

Parents and carers are encouraged to refer to these measures when they are deciding on where their children should go to school by both government and non-governmental organisations (i.e. The Good School Guide, BBC). The Office for Standards in Education (Ofsted) often uses the measures to pre-determine the results of school inspections and league tables are published in most broadsheets as soon as the data becomes available, readily comparing the efficacy of different schools. In the USA, value-added measures are frequently used to measure a teacher's impact – a trend that has caused a great deal of unrest (David, 2010; Berliner, 2013; *The Economist*, 2013).

When plotted against each other, Key Stage 2 APS and overall VA measures produce some interesting results. Figures 1a, b and c show the 2014 data for primary schools in Herefordshire, Shropshire and Birmingham respectively. Figure 2 shows the 2014 data for every primary school in England (excluding those where less than 10 children sat the Key Stage 2 tests). R-squared is a statistical measure of how close the data are to the fitted regression line, or the percentage of the response variable variation that is explained by a linear model. 0 indicates that the model explains none of the variability of the response data around its mean while 1 indicates that the model explains all the variability of the response data around its mean. Therefore, in general, the higher the R-squared, the better the model fits the data. As a further measure, the Pearson product–moment correlation coefficient was calculated for the two sets of values as a separate measure using the covariance of the standard deviation from the mean.

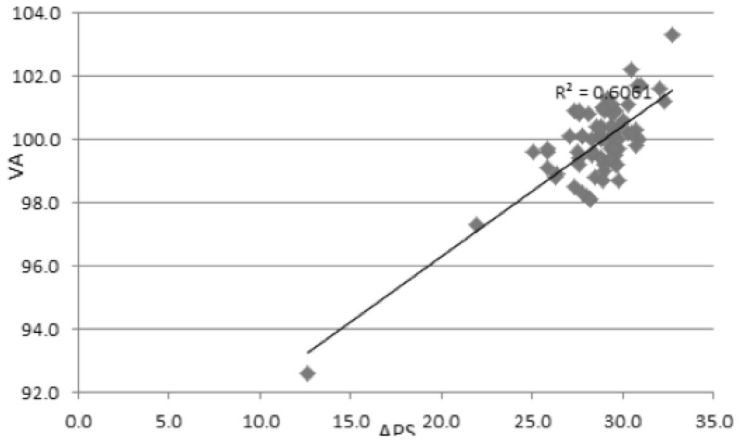


Figure 1(a). Scatterplot VA vs. KS2 APS: Herefordshire (correlation coefficient: 0.778).

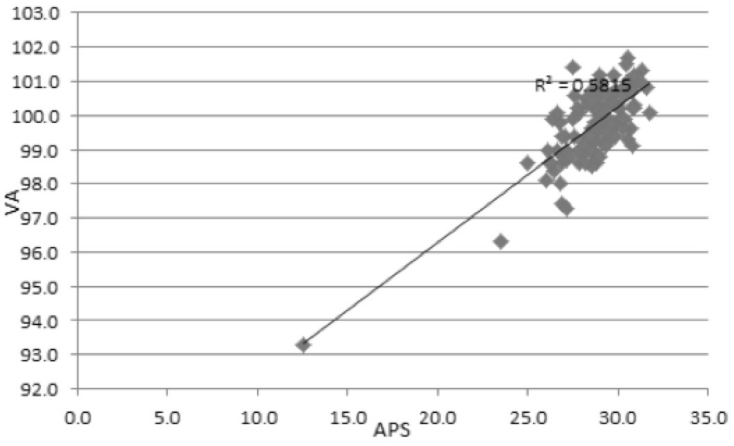


Figure 1(b). Scatterplot VA vs KS2 APS: Shropshire (correlation coefficient: 0.763).

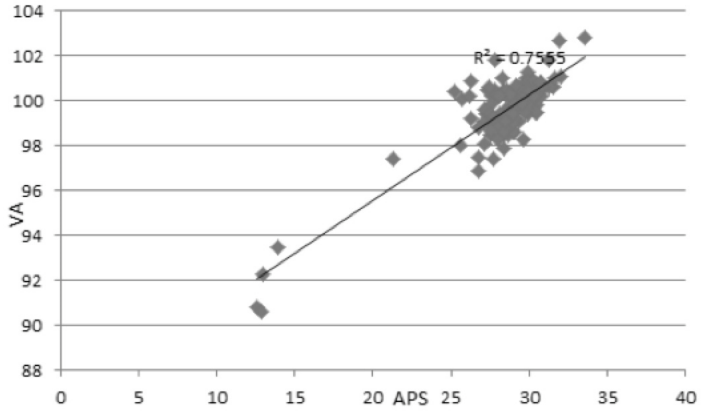


Figure 1(c). Scatterplot VA vs KS2 APS: Birmingham (correlation coefficient: 0.869).

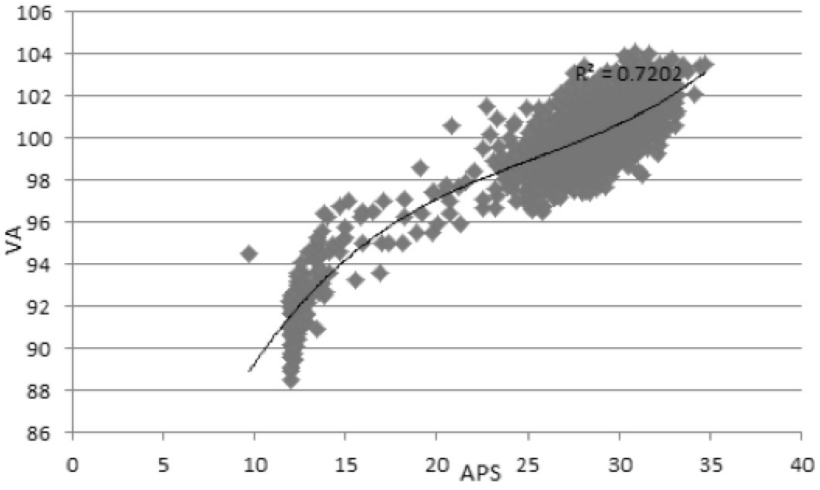


Figure 2. Scatterplot VA vs KS2 APS: England (correlation coefficient: 0.841).

When the national indices are compared (Figure 2), it seems that a 'normal' linear fit does not suffice, while a 3-power polynomial or curvilinear model is more appropriate. Not only do the Key Stage 2 APS and VA measures appear to be correlated, the measures involve some statistical relationships that are not applicable for all schools – and in this case, suggesting that a cohort with low APS at Key Stage 1 is predetermined to make progress at a different rate to those with APS values that are more comparable with the national trend. When the data set that includes the 4500+ primary schools in England is analysed, different rates of progress are applicable. While this is relevant regarding the way that the VA assessment measures these schools, it also questions the validity of using both Key Stage 2 APS average and the VA measure as a collective, and independently relevant, measure of a school's performance.

*Questions:*

- Do the indices offer anything different in terms of measuring that effectiveness of a school?
- Is the VA measure independent of children's inherent abilities, the influence of localised socio-economic factors and/or the power of a school's ability to influence these indices through pedagogic practice?
- If we use similar models for assessing teacher efficacy as in the USA, will there be sufficient awareness of problems associated with whole-population heterogeneity and in-school endogeneity that cannot accurately be measured using current models?

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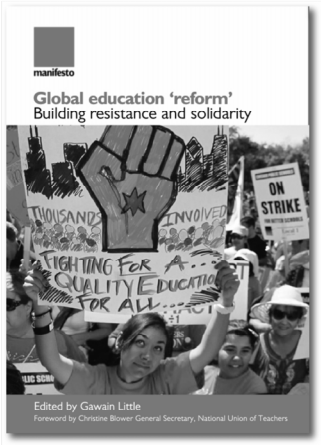


This collection of essays, based on the international conference organised by the National Union of Teachers and the Teacher Solidarity Research Collective in 2014, explores the neoliberal assault on education and the response of teacher trade unions.

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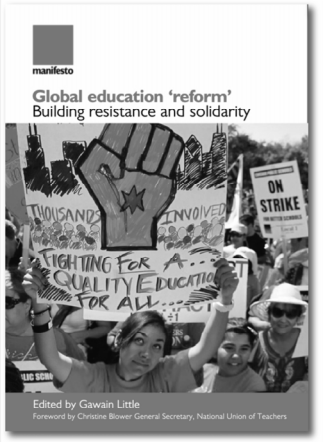


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