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# The Value Added National Project

In February 1995, the CEM Centre, home of ALIS, YELLIS and PIPS<sup>1</sup> was awarded the SCAA contract to design and to pilot national systems for Value Added measures.

The first set of reports has been published and consists of a general report and two technical reports. The General Report *"Issues To Be Considered In The Design Of A National Value Added System"* is highly accessible and provides an introduction to the concept of Value Added, a description of the project to date, including the findings from the statistical trailing conducted with primary data (KS1 to KS2) and secondary data (KS3 to GCSE). The technical reports, one for the Primary project and one for the Secondary project, are written for statisticians and researchers and contain detailed analyses. All reports are available from SCAA. Experiments in the collection and reporting of Value Added measures for primary and secondary schools are in progress now and there will be reports by 1997.

What do busy Head Teachers need to know about this project? Writing in a personal capacity, I would suggest the following points:

1) Value Added is here to stay. I suggest this partly because the Value Added National Project has shown how feasible it will be to have a system which meets the four criteria that were set:

- ▲ Readily understandable
- ▲ Statistically valid
- ▲ Not an undue burden on schools
- ▲ Cost effective

My guess that Value Added is here to stay arises also from the enthusiasm of schools for the Value Added measures provided by the various projects run from the CEM Centre. Once you have started to look systematically at test and examination results not only in terms of the absolute level of achievement but also in terms of the *progress* each pupil has made, you do not wish to abandon this additional insight into the work of teaching. Value Added measures provide an index of the progress made by your pupils relative to that made by similar pupils in other schools. If you are looking for school improvement, Value Added is the index you will use to measure that improvement. If you are investigating with which pupils your school is particularly effective, Value Added measures per pupil are what you need. If you are investigating whether "low" results for some pupils are in line with their prior performance or represent a current failure to make progress, Value Added measures are again what you need. If you want more than impressions of teaching effectiveness, Value Added comes closer than any other measures. It has been the statistic of choice in most studies of school effectiveness.

2) Value Added will certainly be used for internal school management purposes and it may be used in public accountability systems. Dr. Nick Tate, SCAA's chief executive, in chairing the meeting of the Value Added National Project gave a decisive lead: the project was concerned with facilitating school improvement efforts as well as providing information for public accountability.

3) Schools need someone with

data analysis skills. Soon after Key Stage and GCSE results become available, schools will want to conduct rapid and simple analyses of Value Added, pupil by pupil and subject by subject. This can be accomplished if SCAA, or some body commissioned by SCAA, provides essential information from the national results on computer disks or simply in publications or the newspapers. Then someone in the school or LEA can process the school's own data, on a spreadsheet or in a statistical package. Certainly we find in our conferences that most *secondary* schools now report having someone on the staff who can manage spreadsheets. All schools need to give this matter some thought.

4) Value Added will be volatile in several ways. First, the world is unlikely to settle down to a static system. There will be further development of the National Curriculum assessments and vocational qualifications and, in general, there can be no guarantee that an analysis which was appropriate for one year's data will be adequate for the following year. Furthermore the Value Added measures in the National Curriculum subjects will certainly vary around "average" (usually designated as "zero" indicating zero difference between your results and those expected from you on the basis of the national pattern). This up-and-down variation is **to be expected because of the complexity of influences on the results and the ever-changing samples of students with whom you are working.** This variation is one reason why Scotland did not publish data by school subjects until three years of data were available. The Value Added National

Project has been asked to consider three year averages as a possible index.

5) Value Added will need to be considered with great care: it is only one of the many outcomes in your school. Examinations and assessments are not the only important outcomes of schooling. There are many other outcomes that are precious, to individuals, to society, to parents and employers. A good and safe quality of life in school is one such outcome. Furthermore, really poor teaching could conceivably lead to high Value Added scores if pupils sought help outside the classroom, such as from private tutors. Heads need to know more than one indicator to make tentative judgements about their school and how it is functioning. However, few will want to abandon Value Added indicators once these have been provided.

6) There will always be the danger of data corruption. If there is to be any publication of Value Added measures it will be essential to ensure that a national Value Added system is fair, and is seen to be fair, to all schools. This will mean that the data must be derived from externally marked examinations or assessments. It is high time that the Examination Boards removed the names of schools and candidates from scripts, as a basic quality assurance procedure.

The issues of assessment quality and fairness will continue to demand attention but were beyond the purview of this project.

7) Although the debate over methods will continue, simple procedures will probably be found to be as valid as complex ones in most datasets. In our statistical trials, which have been examined by a prestigious group of statisticians, we found that the complex multi-level modelling procedures were not required; the simple procedures used in ALIS, YELLIS, and PIPS gave results which were identical for all practical purposes. Do not be intimidated by statisticians! YOU can work out Value Added.

We have recommended a two stage approach to data analysis nationally. In the first stage results go promptly to schools. Then in the second stage

## The Concept of Value Added

(Reproduced from the Value Added National Project general report entitled: "Issues to be considered in the design of a national value added system")

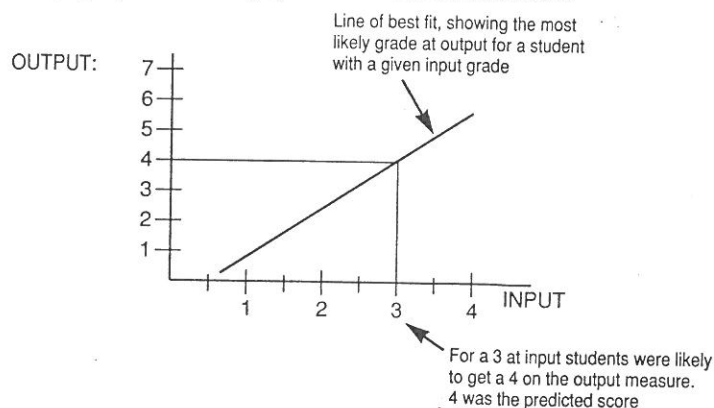
As currently used in education 'Value Added' generally refers to measures of the relative progress made by students. If some students make greater progress than other, similar students, the difference is referred to as the Value Added. In order to measure Value Added in a school, therefore, information is needed on the attainment levels on entry and exit for the school's students *and for students in other schools*. Thus Value Added measures require a large and representative database so that progress-relative-to-similar-others can be estimated.

All measurements and judgements suffer from some degree of error, uncertainty or unreliability and need to be studied in terms of their validity. The constant development and evaluation of *externally set and marked* assessments will be of fundamental importance in the creation of Value Added systems. **Issues surrounding the content and quality of assessments and examinations were, however, strictly beyond the purview of this project.**

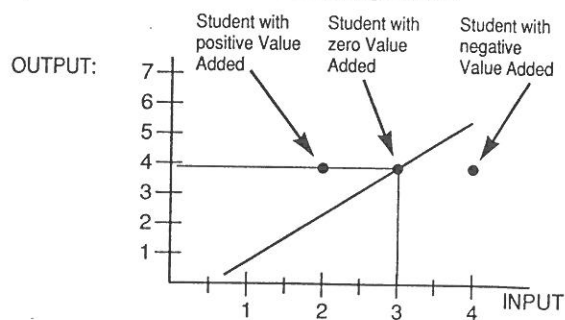
Figure 1. Steps in the simplest method of calculating Value Added.

[Note: the term 'score' is used. It could refer to Key Stage levels or to grades.]

1. Nationally representative data are used to produce a graph showing the general trend from entry to exit i.e. input to output.
2. Using the trend line, each student's 'predicted' score can be calculated. This is the score that student was most likely to get considering the input for that particular student i.e. it roughly represents average performance for similar students.



3. The scores students actually obtained are compared with their predicted scores. The difference is called the Value Added. A positive Value Added is obtained when a student achieves a higher score than predicted. A negative Value Added is obtained when a student achieves a lower score than predicted.



4. Averaging the Value Added scores for a school or class can provide an average Value Added measure for that school or class.

(It could be correctly argued that all students who gained an output level or grade had had 'Value Added'. The term as used can be justified by considering it to mean *relative* Value Added or progress. Value has been added when the student has done better than predicted, i.e. has made greater than average progress relative to similar students. The Value Added which is expected for a school or class making average progress is zero.)

## The Value Added National Project

### Value Added and the Key Stages

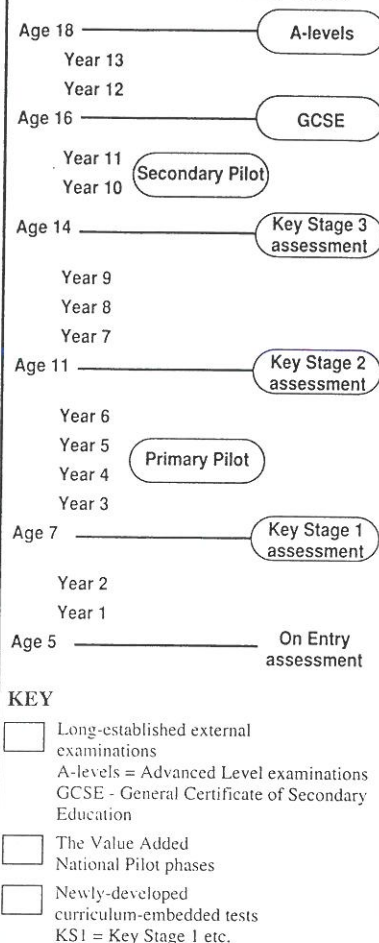


Figure 1.  
Stages to be investigated in the Value Added National Project.

It (Value Added) has been the statistic of choice in most studies of school effectiveness.

national datasets are analysed using the most sophisticated statistics that can be justified and found useful. It is the first stage which you will find useful internally and the results of the second stage are unlikely to be substantially different.

8) Absent or transient pupils will be an issue. The statistics may be easy to come by but there will be other problems. You cannot teach pupils who are not present and for Value Added measures you need for each pupil a set of results on intake to the Key Stage and on completion of the Key Stage. Should pupils count in your indicators of Value Added if they have only recently joined your school (assuming they brought their earlier results with them)? What about persistent absentees?

In both our secondary school and primary school studies it was clear that pupil turn-over could pose considerable problems in substantial numbers of schools. In primary schools this problem of turn-over, combined with small year group sizes and the large, four year time span of Key Stage 2, called into question the feasibility of a Value Added system for the whole of this stage.

### Reports available from SCAA

Fitz-Gibbon, C. T. (1995). *Issues to be considered in the design of a national Value Added system* London: SCAA.

Trower, P., & Vincent, L. (1995). *Secondary Technical Report: Value Added National Project* London: SCAA.

Tymms, P. B., & Henderson, B. (1995). *Primary Technical Report: Value Added National Project* London: SCAA.

See also

Fitz-Gibbon, C. T. (1996). *Monitoring Education: Indicators, Quality and Effectiveness*. London, New York: Cassell.

### Editor's Note:

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<sup>1</sup>ALIS = A-level Information Systems

YELLIS = Year 11 Information System

PIPS = Performance Indicators in Primary Schools.

The Curriculum, Evaluation and Management Centre, now at the University of Durham, runs these and other systems. Information from FAX number: 0191 374 7818.

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NB: Please remember to quote reference numbers where given and "NAHT" where not.