

CAT's (Cognitive Ability Tests) and how we use them

Introduction

CAT tests should carry a serious 'health warning'. Until 2008 school has carried out these tests but not disclosed the results to pupils or parents. This runs counter to important principles of transparency in how school operates and the importance of sharing all individual pupil data and information with parents. The problem with the tests themselves however, is that it is very easy for parents and pupils to misinterpret what the scores mean. Results can then appear negative and demoralise some children or fuel overconfidence in others.

After some considerable thought we have decided that this information should be available to parents and that it is our responsibility to explain what the scores are useful for, so that parents and children do not fall into mistaken assumptions about what the results actually mean.

What do CAT scores tell us?

CAT score results are very useful for school in assessing individual pupil reasoning ability. They are standardised, externally marked and have a huge amount of supporting analysis and interpretation to support them. They allow school to assess the core ability of a child to reason with number, language and solve increasingly complex spatial/conceptual problems. In addition they are highly accurate predictors of GCSE outcome in individual subjects and of Key Stage 2 and Key Stage 3 levels in English, Maths and Science.

The differences in the results between the three measured areas (verbal, quantitative and non-verbal reasoning) can reflect a particular predisposition towards certain subject strengths/ weaknesses or even give an early indication of a specific learning difficulty. The average of the three scores (mean CAT) gives a fairly clear indication of where each pupil's ability lies in relation to the national peer group.

Measuring Added Value

As CAT scores are used by most secondary schools in the country they give our small school an objective baseline to compare each child's core ability to the rest of the pupils in that age group in the country. The predicted outcomes at KS2, KS3 and/ or GCSE level become the minimum expectations that teachers and the school have for each child.

Teachers can then monitor each child's progress against the CAT prediction for each subject as the pupil moves through school. We assess how much 'added value' our school environment has brought to the pupil's attainment. I expect every child to exceed the baseline targets determined by CAT scores. In our small school environment every child should do significantly better than the CAT predictions. This progress relative to CAT scores helps teachers

judge praise and feedback to each pupil and informs appropriate target setting.

For example, a pupil predicted to be at Level 5b at the end of Year 9 who is actually at Level 6 by the end of Year 8 is making tremendous progress. A pupil predicted to obtain a Grade A GCSE in Year 11 who is on target in Year 10 for a Grade C is significantly underachieving.

Ultimately the CAT data allows an absolute assessment of final GCSE performance. When GCSE grades are converted into point scores it can be seen that the 2008 Year 11 group achieved substantially better results than expected for their abilities. In the best case the 'added value' was in the region of an additional 20 GCSE grades! Of course that group of children had only been with us for two or three years. We have targeted significantly greater added value for children who have been at Rivington Park from Year 7 or primary school.

As a school we are committed to being non-selective on the basis of ability. It is essential therefore that school can demonstrate how well pupils who may not have achieved a good number of GCSE passes at C or above have done compared to their intrinsic ability. A pupil predicted to get F/G grades at GCSE who achieves 1B 3C's and 7 D's has actually done very well even though they have failed to attain the benchmark 5 GCSE A-C passes.

So what is the problem with the data?

There are significant pitfalls to be aware of when interpreting the data: -

Accessing the test:

- Younger pupils in juniors may find the concentration required to complete 3 hours of testing (with breaks) difficult. A loss of concentration for a few minutes on a particular battery of questions timed for 8 minutes, for example, can result in a significant underestimation on the final test result. Many factors can interfere with an individual pupil performance on a given day. In the case of younger pupils this can seriously undermine the validity of the final score. (As teachers we would ignore a low CAT test result which ultimately does not reflect the real attainment and progress of an individual child or which we view as implausible.) Our targets and feedback would be based on our experience of the working capabilities of the pupil. CAT's are simply one measure of interest amongst many.
- Specific learning difficulties can inhibit performance in the tests resulting in an overall average score which underestimates innate ability.

Predictive accuracy

- The accuracy of the predictions falls broadly into the range of 75%. However this actually means that 1 in four of the predictions is routinely wrong.

- The cognitive capability of an individual is only (AND THIS IS CRUCIAL TO FULLY UNDERSTAND) **ONE** factor that determines ultimate academic progress and success. Hard work, attendance, parental support, quality of teaching and learning can all result in massive variation in the results achieved. Routinely pupils with CAT results below average can achieve excellent GCSE outcomes and make excellent progress because of their hard work, and personal qualities. Teaching quality is obviously a major factor here as well. These other influences can prove to completely outweigh the intrinsic cognitive factors being measure by the tests. Similarly pupils with high CAT scores can underachieve significantly because of poor influencing factors.

Sharing CAT data can therefore be perilous if it encourages a hard working child to 'give up' or a 'bright child' to cruise along taking academic success as a certainty.

- Pupils at the highest end of the scale find the results least useful as their predictive outcomes of A* GCSE are relatively easily achieved. Higher levels therefore effectively hit the ceiling of the examination system requiring school to define different outcomes in order to assess added value in a meaningful way. This can be achieved through broadening the curriculum, alternative assessment programmes or open ended research type programmes of study.

Can CAT scores change?

This is a really interesting question. CAT scores should not change significantly. As pupils age the tests are modified (the tests and scoring gets harder). Children cannot learn or 'revise' for these kinds of tests and there is no evidence that experiencing tests several times leads to any significant improvement in outcome i.e. a benefit for 'practising'.

We have introduced re-testing to try to monitor these changes and better understand the underlying causes amongst our pupil population. CAT testing is now done in early juniors or on admission (when the next cycle is processed). Year 7 is tested and Year 9 re-tested.

School is beginning to pick up some interesting increases in CAT test outcomes in pupils who have experienced our small school environment for three years or more. Some of the increases in the average ability range and slightly below are statistically significant. That is, there is increasing evidence that the small school environment and excellent teaching is improving the way that some children think and shifting their cognitive outcomes in key areas by as much as 6-10 points.

Instinctively, we feel that something very interesting and positive is taking place here. Much data and analysis is required. However, understanding

these changes will be useful in planning how we evolve the teaching and learning in school.

Reporting and interpreting results.

From January 2009 all parents will receive a confidential report detailing CAT test outcomes for their child.

I have uploaded spreadsheets onto the website which will enable you to input the CAT data for your child and will generate subject by subject outcomes.

I sincerely hope that parents do not draw pupil attention to these results and outcomes without considerable thought. As teachers we avoid referring pupils to their CAT outcomes as it rarely brings any meaningful comfort to the child because the score doesn't change if they work hard or not.

Parental support of effort, individual progress and extension tasks is far more productive. However, to help guide parents in understanding how well their child is progressing compared to their ability and so informing meaningful praise (or discipline) I think it will be helpful.

Mr Philips and I are happy to spend time discussing individual queries in relation to pupil CAT outcomes by appointment. I have also included web links to useful technical information for those interested in the underlying concepts.

Michael Ruaux
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