



# HAST

Higher Ability Selection Test

## Guide to identifying high ability students

### Does your school offer the following opportunities to students of high academic ability?

- ✓ Selective Entry
- ✓ Acceleration
- ✓ Extension and enrichment
- ✓ Gifted and talented programs

### How do you identify students for these programs?

If you are currently using a testing instrument or another way to determine ability are you confident that you are selecting the students who would benefit most from these programs or have you noticed that some students are not performing as expected?

This guide provides general information about high ability testing that ACER has gathered in the course of developing and delivering academic selection tests for over 50 years. The specific information on selection methods used by schools has been gathered from direct partnership and delivery of assessment programs to schools.

While some testing instruments claim to identify the full range of student ability, they often provide only a broad 'brush stroke' and are unable to distinguish high ability students from the other test takers due to the limitations of the testing instrument being used. They will measure achievement across a broad ability range, reflecting low, average and high achievement as would be found in the general population.

However, the trade-off in using a broad approach to testing is the potential to miss identifying performance in the very high to exceptional ability ranges. A test that has few appropriately difficult test items can create what is known as a 'ceiling effect' in which the highest possible score or close to the highest score on a measurement instrument is achieved. This decreases the likelihood of the testing instrument accurately measuring the intended domain. To put it another way, if a test is too easy then the test may not reflect actual differences in performance among test-takers at the higher end of the test performance range. This can unintentionally have negative consequences on individuals and the selection process itself. Ceiling effects can result in an inability, first to distinguish among the academically able (whether moderately 'gifted', profoundly 'gifted', etc.), and second, make selection decisions very difficult when there is a high number of near perfect scores.



## Targeting high ability

Sound methodology in test development requires clarification of the test construct in relation to test purpose. What is the test measuring?

For the identification of students of high academic ability, the ACER focus is on assessing higher order, cross-curricular reasoning skills that are characteristic of such students.

ACER academic reasoning tests focus on the mental processes that underpin school and tertiary studies, rather than the specific knowledge and skills of particular academic disciplines. They can be thought of as generic or cross-curricular reasoning assessments.

The terms generic and cross-curricular refer to breadth of transferability. While reasoning processes are learned in a particular context and their form varies from discipline to discipline, they do not have to be learned totally anew in each new context; that is, reasoning processes can be transferable.

Transferability is seen as related to general academic mastery. The greater the general academic mastery, the greater the ability of a candidate to transfer skills to new situations and new contexts, including the scenarios in the test. The expectation is that the wider the range of contexts in which students are able to reason, the more likely they are to be able to reason within contexts with which they have yet to become familiar. It is this expectation that leads people to label tests of this kind as aptitude tests.

The Higher Ability Selection Test is one of ACER's academic reasoning tests that measures higher-order thinking skills such as verbal reasoning, quantitative reasoning and abstract reasoning and discriminates at the higher end of the test performance range.

## Based on evidence

Evidence-based reasoning assessments such as HAST are consistent indicators of academic aptitude as they:

- Clearly identify assessment purpose and target student population
- Have a well-defined test construct that is underpinned by a sound theoretical model of intelligence
- Design and develop test items matched to the test construct
- Are underpinned by a Rasch measurement approach allowing the construction of a measurement scale
- Target the test population by first being trialled on appropriate populations
- Ensure that test items fit the level of difficulty, discrimination and purpose required of the test construct
- Deliver test results that are referenced on an Australia-wide cohort of academically able students
- Contribute reliably to a multi-faceted approach to the identification of gifted and talented students (triangulation of data).

## How does HAST compare to tests like NAPLAN?

Large scale educational tests like NAPLAN are designed to assess an entire student population in order to get a picture of where all students are in their learning. They measure achievement across a broad ability range, reflecting low, average and high achievement as would be found in the general population. Typically, high-ability students do well on these general population tests but a large number of students obtaining near perfect scores means the test has very poor discrimination and very subtle differences in ability will not be identified.

In contrast, due to the purpose of the HAST tests, the ability range of the cohort is likely to be restricted. Students will choose to participate because they have cause to believe they will do well on this assessment. This is known as a 'self-selecting' cohort. As the tests are designed to discriminate between students at the upper end of the ability range it is worth remembering that an average score in HAST is likely to be higher than an average score in an achievement-based assessment which is designed to capture the progress of all students in a general population.



## Using HAST results to identify the top performers

Many schools simply select the top performing students from the Merit Order Listing report (rank order list of the total standardised score for each student) or look at the individual test component scores separately to identify particular strengths and weaknesses between test domains in order to determine selection. Other schools adopt a more method based approach by using multiple data sources or 'data triangulation' to provide a comprehensive picture of the cohort. These data sources can include all or some of the following:

- Evidence submitted by parents of the child's diverse learning needs and personality traits eg, early or avid reading, rapid learning, unusual curiosity, vivid imagination
- Psychometric assessments that demonstrate exceptional abilities
- Nomination by teachers with training in gifted education
- Principal's recommendation
- System-wide testing data like NAPLAN
- Diagnostic assessment data from schools eg, Progressive Achievement Tests (PAT)
- Academic selection test data based on a common assessment that objectively ranks the performance of students. eg, Higher Ability Selection Test (HAST).

The sourced data for each student (as above) is then entered into a chart or spreadsheet, interrogated carefully and observations recorded on consistencies and anomalies across the data, which can then be used to construct an overall ranking of students.

Rather than using just one source of information 'data triangulation' can reveal a comprehensive picture of each student's capabilities relative to other students; and corroboration of evidence from multiple sources leads to increased validity and enhanced understanding of the cohort.

## ACER academic reasoning tests

For more than 50 years government and non-government schools around Australia have been using ACER academic reasoning tests to identify academically able students for the award of a scholarship or selection into a high ability class or program. The tests are designed to rank-order students by finely differentiating at the top end of the performance spectrum. The selection tests require candidates to demonstrate a range of skills such as the ability to interpret, infer, deduce and think critically. The tests are not curriculum-based and do not test the ability to retrieve learned knowledge.

Predictive capacity is one of the key features in ACER academic reasoning tests. This is evident in the correlation between performance on ACER assessments administered in the final year of primary education and results achieved in the final year of secondary school\*.

\* Final year academic performance of scholarship recipients, ACER 2004.

## About ACER

ACER's mission is to create and promote research-based knowledge, products and services that can be used to improve learning across the life span. ACER is one of the world's leading educational research centres. Our goal is to support learners, learning professionals, learning institutions and the development of a learning society through our work. ACER has built a strong reputation as a provider of reliable support and expertise to education

policymakers and professional practitioners since it was established in 1930.

As an independent not-for-profit organisation, ACER generates its entire income through contracted research and development projects, and through developing and distributing products and services, with operating surplus directed back into research and development.