

# Queensland Comparable Assessment Tasks (QCATs) 2008 extended trial

Report to teachers

---

July 2009

# Contents

- Executive summary..... 4**
- Findings ..... 4**
- Introduction ..... 6**
- Focus..... 6**
- 1. Background ..... 7**
  - 1.1 The QCAR Framework ..... 7
  - 1.2 Purpose of QCATs..... 7
  - 1.3 Scope of QCATs ..... 7
  - 1.4 Models of QCAT development..... 8
  - 1.5 Assessment within the QCAR Framework ..... 8
- 2. Implementation..... 11**
  - 2.1 School participation ..... 11
  - 2.2 School preparation for the trial ..... 12
  - 2.3 Gathering information from the trial ..... 14
- 3. Key learnings..... 15**
  - 3.1 Student achievement ..... 15
  - 3.2 Overall achievement..... 15
  - 3.3 Consistency of teacher judgments ..... 19
- 4. Trialled QCATs: Purpose, learning and refinement .....22**
  - 4.1 Year 4 QCATs..... 22
  - 4.2 Year 6 QCATs..... 25
  - 4.3 Year 9 QCATs..... 28
- 5. Appendix: Targeted Essential Learnings.....31**

## List of figures: Distribution of overall grades

Figure 1: Distribution of overall grades for each QCAT .....	15
Figure 2: Distribution of responses across overall grades for each QCAT by student achievement and gender .....	16
Figure 3: Distribution of responses across overall grades for each QCAT by Indigeneity .....	17
Figure 4: Distribution of responses across overall grades for each QCAT by student achievement and ESL status .....	18

## List of tables

Table 1: QCATs trialled by Education Queensland region .....	11
Table 2: Numbers of students participating in each QCAT .....	12

## Executive summary

This report relates the learnings from the 2008 extended trial of the Queensland Comparable Assessment Tasks (QCATs). The Queensland Studies Authority (QSA) developed centrally devised QCATs in Years 4, 6 and 9 in the English, Mathematics and Science *Essential Learnings* and *Standards*. The trial involved 1300 schools. Each of the Education Queensland regions trialled a specific Queensland Comparable Assessment Task (QCAT).

The purpose of the trial was to gather data from schools to refine:

- the model of authentic, performance-based assessments
- QCATs implementation processes
- the moderation processes used by teachers to develop comparability of reported results.

QCATs are an integral component of the Queensland Curriculum, Assessment and Reporting (QCAR) Framework developed by the QSA in partnership with the Department of Education and the Arts. The QCAR Framework provides for alignment of curriculum, assessment and reporting through its five interlocking components: the *Essential Learnings*, *Standards*, the Assessment Bank, QCATs and the *Guidelines for reporting*.

QCATs provide information on student achievement in a selection of the *Essential Learnings*, as well as opportunities for teachers to understand and practise quality assessment as part of the QCAR Framework. Specifically, QCATs require students to solve a meaningful problem using critical thinking and reasoning, and to provide evidence of what they know, understand and can do in relation to the targeted *Essential Learnings*. The 2008 extended trial of the QCATs was conducted within this framework for quality assessment.

The QCAR Framework recommends moderation processes within schools and clusters of schools as a way of building consistency of teacher judgments in grading student achievement on a five-point scale of A to E grades. QCATs involve teachers making an overall on-balance judgment of student achievement.

## Findings

The 2008 extended trial provided the QSA with a set of key learnings organised around:

- student achievement
- consistency of teacher judgment
- teacher feedback on QCATs.

### **Student achievement**

The patterns of student achievement in most QCATs showed a normal distribution of results.

- Small proportions of students were awarded grades at the extremes (the A and E grades) with larger proportions in the middle (the C grade). The exceptions are Year 6 and 9 Mathematics, and Year 9 Science in which large proportions of students were awarded an E grade.
- Girls performed better than boys in English, but boys and girls appeared to do equally well at Mathematics and Science.
- Non-Indigenous students achieved better results than Indigenous students.
- ESL and non-ESL students, as measured by most QCATs, appeared to do equally well, with the exception of Year 6 Mathematics.

## Consistency of teacher judgment

Teachers achieved a reasonable comparability of reported results when provided with *Teacher guidelines* for implementation of the QCAT and a common *Guide to making judgments* for making judgments about the quality of student responses. In other words, when given these resources, teachers achieve satisfactory, or in some cases close to satisfactory, agreement between their judgment of student responses with that of trained markers.

Teachers, especially those of Year 4 and Year 6 students, were less experienced in using the *Guide to making judgments*, than were their secondary colleagues. Data from the trial suggests the need for greater teacher familiarity with the continua model used in the *Guide to making judgments*.

Half of all teachers involved in the trial worked with colleagues from other schools to develop consistency of judgments. More than half of teachers used the *conferencing* (or *consensus*) *model* alone to establish consistency of teacher judgment. A further 21% of teachers used this method combined with another method.

The 2008 extended trial of the QCATs highlighted key areas for further professional development of teachers to build consistency of judgments. The trial also contributed significantly to the requisite culture for establishing such consistency across Queensland's Years 1 to 9 teachers.

## Teacher feedback on the QCATs

Teacher feedback on the QCATs was generally positive. Most teachers regarded the contexts of the tasks appropriate for their students and the problems meaningful, with opportunities for the range of students to demonstrate their best work. Mathematics and Science teachers were more critical of the capacity of the QCATs to engage students, particularly the Year 9 Science QCAT.

Teachers, on the whole, agreed that the materials provided to support implementation of the QCATs were helpful. However, data from the trial suggest that teachers require more detailed information about the amount of support teachers should give students to complete the task.

Teacher feedback provided valuable insights about student performance and the areas where focused teaching needs to occur to build student knowledge, understanding and skills. These insights include:

- the need for teachers to develop student skills in reflection in English, Mathematics and Science across all years.
- the challenge to students presented by questions and tasks that require higher order thinking.

The benefit of teacher engagement in moderation processes to promote consistency of judgments recurred as a strong theme within the specific learnings from individual QCATs. (These learnings are documented in Section 4: Trialled QCATs: Purpose, learnings and refinement.) For example, teachers overcame the challenges of judging the relative worth of particular assessable elements through professional collaboration on moderation processes.

## Conclusions

The significance of the trial was three-fold. It provided:

- detailed information to schools about students' knowledge, understanding and skills in relation to specific tasks
- understanding of the refinements required for the general implementation of the QCATs in 2009
- awareness of the moderation processes that support consistency of teacher judgments, and the practical experience of these gained by large numbers of Queensland Years 1 to 9 teachers.

# Introduction

This report provides information to teachers about what was learnt through the extended trial of the Queensland Comparable Assessment Tasks (QCATs) conducted by the Queensland Studies Authority (QSA) in 2008.

QCATs are designed to be implemented in Queensland schools in Years 4, 6 and 9 in the key learning areas (KLAs) of English, Mathematics and Science. QCATs were first trialled in Queensland in 2006 in Years 4 and 9 English and Mathematics. The trial was extended to include Years 4, 6 and 9 Science in 2007, and further extended in 2008.

A key purpose of the 2008 trial was to refine the range of QCAT products and processes in all three Years and KLAs, before general implementation in 2009. The QSA has used the information and feedback from the trials for this purpose. Information about post-trial refinements features in Section 4: *Trialled QCATs: Purpose, learning and refinement*.

The information collected from the QCATs themselves is of most value for use within the school. The purposes of the QCATs, which are explored in Section 1: *Background*, are to develop consistency of teacher judgments about the quality of student achievement and provide information to schools about student learning. This information is not appropriate for use in measuring school or teacher effectiveness, or for purposes such as certification of students, or gaining funding and resourcing.

Similarly, the information forwarded by schools to the QSA is not suitable for a comparison of the performance of students in one school against the performance of students in other schools, given that the assessments are not implemented and marked under strictly controlled conditions. Schools are not required to publish their student achievement results in annual reports or other publications, and the QSA does not disaggregate or publish any individual school, cluster or sector data.

The primary value of the information provided by the QCATs is at the school level, where teachers analyse individual and class responses to improve teaching and learning. The 2008 extended trial provided teachers with an opportunity to understand the role of the QCATs in this process and develop the professional skills for making consistent judgments.

## Focus

This report is organised in four key sections:

- **Background** — provides information about the purpose, scope and implementation of QCATs as part of the QCAR Framework
- **Implementation** — provides information about the implementation of the 2008 extended trial of QCATs
- **Key learnings** — reports on information gained from the 2008 extended trial of QCATs
- **Trialled QCATs: Purpose, learning and refinement** — profiles each of the nine trialled QCATs from the 2008 extended trial and lists refinements for implementation in 2009

# 1. Background

QCATs provide opportunities for teachers to understand and practise quality assessment supported by the Queensland Curriculum, Assessment and Reporting (QCAR) Framework. The QSA conducted the 2008 extended trial of the QCATs within this framework for quality assessment.

## 1.1 The QCAR Framework

The alignment of curriculum, assessment and reporting of achievement for students in Years 1 to 9 is a policy objective of the Queensland government. The QSA, in partnership with the Department of Education and Training, developed the QCAR Framework in response to this policy objective.

The QCAR Framework has five interlocking components:

1. *Essential Learnings* identify what students should know, understand and be able to do.
2. *Standards* articulate the quality of student achievements described on a five-point scale from A to E.
3. the Assessment Bank contains an online collection of assessments and resources linked to the *Essential Learnings* and *Standards*, as well as professional learning resources.
4. QCATs are authentic, performance-based assessment tasks.
5. *Guidelines for reporting* outline how schools might provide information about students' learning.

## 1.2 Purpose of QCATs

QCATs are designed to:

- provide resources to support consistency in the way teachers make judgments about the qualities in student work using the *Standards*
- provide a model of quality assessments aligned to a selection of *Essential Learnings* and to the *Standards*
- provide information for students, teachers and parents/carers about student achievement in the selection of *Essential Learnings* with such information contributing to discussions about student learning and to plans for future learning
- support school planning by providing information about what students know, understand and can do, as well as processes needed to support consistency of teacher judgments.

## 1.3 Scope of QCATs

QCATs:

- involve solving a meaningful problem
- emphasise critical thinking and reasoning
- provide students with the opportunity to do their best work
- produce evidence of what students know, understand and can do in relation to the targeted *Essential Learnings*.

Further, QCATs assess a selection of the following *Essential Learnings*:

- in Year 4 — *Essential Learnings* by the end of Year 3
- in Year 6 — *Essential Learnings* by the end of Year 5
- in Year 9 — *Essential Learnings* by the end of Year 9.

## 1.4 Models of QCAT development

The two models for the development of the QCATs are:

- centrally devised — an assessment task developed and quality assured by the QSA
- school-devised — assessment tasks devised locally at the school level.

This report only concerns the 2008 extended trial of centrally devised QCATs.

## 1.5 Assessment within the QCAR Framework

QCATs provide opportunities for teachers to enhance their understanding of assessment practices within the QCAR Framework and, specifically, to enhance teachers' ability to make consistent judgments of quality in student work.

### 1.5.1 Standards

The *Essential Learnings* make explicit to teachers what to teach. *Standards* indicate how well a student has achieved by matching a degree of quality, in specified dimensions, across a range of work.

#### Standards

**Standards describe how well a student has demonstrated their learning based on a collection of evidence.**

##### A standard

Evidence in a student's work typically demonstrates a very high level of knowledge and understanding of concepts, facts and procedures, and application of processes.

##### B standard

Evidence in a student's work typically demonstrates a high level of knowledge and understanding of concepts, facts and procedures, and application of processes.

##### C standard

Evidence in a student's work typically demonstrates a sound level of knowledge and understanding of concepts, facts and procedures, and application of processes.

##### D standard

Evidence in a student's work typically demonstrates a limited level of knowledge and understanding of concepts, facts and procedures, and application of processes.

##### E standard

Evidence in a student's work typically demonstrates a very limited level of knowledge and understanding of concepts, facts and procedures, and application of processes.

Teachers make judgments about student achievement by matching evidence in student work to the *Standards*. Teachers use the dimensions of Knowledge and understanding and Ways of working together when making these judgments. Both dimensions are important for a balanced teaching, learning and assessment program.



## 1.5.2 Assessable elements

The *Standards* are supported by assessable elements, which are identified in the learning and assessment focus of the *Essential Learnings* for each KLA. Assessable elements are designed to guide:

- development of assessments
- the selection of evidence of student learning
- judgments made about the evidence by distinguishing visible demonstrations of the learning.

Assessable elements are drawn from the two dimensions of the *Essential Learnings* (Knowledge and understanding and Ways of working). They can be used together or independently when designing assessment.

Task-specific assessable elements identify how particular assessable elements will look in a specific assessment. Task-specific descriptors can be devised to guide students on the expected quality for each task-specific assessable element. To make a judgment on a single assessment, task-specific descriptors are used to identify the degrees of quality (A to E) for each assessable element. QCATs include annotated student responses that demonstrate how the *Standards* look in student work.

## 1.5.3 Making judgments about the quality of student work

A *Guide to making judgments*, accompanies QCATs to help teachers with the processes for making consistent judgments about the quality of student work.

The *Guide to making judgments*:

- specifies the task-specific assessable elements and descriptors
- clarifies the curriculum expectations for learning at each of the five grades (A to E) of the *Standards*
- supports evidence-based discussions to help students understand their strengths and areas for improvement
- provides a basis for conversation among teachers, students and parents/carers about the quality of student work.

Making a judgment about the quality of a student's response to the assessment is a two-step process. Teachers were given the following advice about using the continua model of a guide to making judgments.

### **Step 1: Make a judgment about the evidence related to each assessable element**

- Read the purpose statement at the top of the *Guide to making judgments*. This statement describes the focus of the QCAT.
- Read the task-specific assessable elements in the *Guide to making judgments*. These identify significant and discrete aspects that teachers look for in student responses.
- Identify the evidence in the *Student booklet* as indicated in the *Guide to making judgments*.
- Match the evidence from the *Student booklet* with a task-specific descriptor. Begin at the bottom of each continuum. Moving up the continuum, each task-specific descriptor signposts a discernable difference in the quality of the student performance.
- Consider all the task-specific descriptors on the continuum.
- Record a judgment on the continuum for each assessable element. A judgment may be recorded anywhere along the length of the continuum. Refer to the model response and *Sample responses* to support the process of matching student responses to task-specific descriptors in the *Guide to making judgments*.

## Step 2: Make an overall on-balance judgment

- Reread the purpose of the assessment as stated at the top of the *Guide to making judgments*.
- Consider the judgments recorded for each assessable element. Sometimes the on-balance judgment will be an easy fit over one of the A to E grades. Where there is uneven performance across the assessable elements, however, an overall on-balance judgment must be made by considering the significance of each assessable element in relation to the purpose of the assessment.
- Record the overall grade by circling the relevant letter A to E on the *Guide to making judgments*. It is important to note that a nil award of “N” should be recorded only when there is insufficient evidence to inform a judgment for an overall grade. In some circumstances students completing only part of the task may have their assessment considered complete if there is sufficient evidence of student performance across the assessable elements to inform an overall on-balance judgment.

### 1.5.4 Consistency of teacher judgment

The process of achieving consistency of teacher judgment is integral to making judgments about the quality of student responses. This involves teachers consistently applying a shared understanding of those qualities that characterise the *Standards*. Consistency of teacher judgment is achieved through engaging in professional conversations about the quality of evidence in student responses using *Standards*, assessable elements and task-specific descriptors as a common language. There are various ways of achieving teacher consensus. Three approaches include the:

- *expert model* — teachers grade all student responses and then submit representative samples to an expert who provides advice to teachers on their judgments
- *calibration model* — a facilitator selects samples deemed to be of a certain standard, with teachers individually grading samples and then comparing their judgments with the grade nominated for the sample
- *conferencing model* — (or consensus model) teachers grade student responses individually and then select student samples representative of A to E qualities for later sharing and discussion of judgments with colleagues.

Schools often use various aspects of each approach in order to achieve consistency of teacher judgments.

### 1.5.5 Providing feedback to students

The purpose of assessment within the QCAR Framework and the QCATs is to support student learning. As a result, feedback to students is pivotal. Effective feedback to students requires reference to the:

- student response
- *Guide to making judgments*
- *Essential Learnings* and *Standards*
- model and *Sample responses*.

An assessment-for-learning approach operates when teachers work with students to discuss information about what they were expected to know, understand and do, and how their responses were judged using the *Guide to making judgments*. The focus in such discussions is on developing strategies to improve learning.

## 2. Implementation

Teachers had a pivotal role in the successful implementation of QCATs. They chose how and when the QCATs will be implemented (within the prescribed eight weeks), grade and evaluate student responses to the QCATs, provide feedback to students on the strengths and weaknesses of their performance and use the information to plan for the next stage of learning.

### 2.1 School participation

Approximately 1300 schools from independent, Catholic and state sectors participated in the extended trial of the Queensland Comparable Assessment Tasks (QCATs) in 2008. The trialling of particular QCATs was based on school location in Education Queensland regions as shown below.

**Table 1: QCATs trialled by Education Queensland region**

Region	Primary school	Secondary school
Greater Brisbane	Year 4 Science	Year 9 Mathematics
Mackay Whitsunday	Year 6 Mathematics	Year 9 English
Moreton	Year 4 English	Year 9 Science
North Queensland	Year 6 Science	Year 9 Mathematics
South Coast	Year 4 Mathematics	Year 9 English
Sunshine Coast	Year 6 English	Year 9 Science
Wide Bay–Burnett	Year 4 Science	Year 9 Mathematics
Darling Downs & South West Queensland	Year 6 Mathematics	Year 9 English
Far North Queensland	Year 4 English	Year 9 Science
Fitzroy Central West Queensland	Year 6 Science	Year 9 Mathematics
Note: P–12 schools implement one QCAT for primary school (either Year 4 or 6), and one QCAT for secondary school (Year 9).		

The numbers of *Student booklets* distributed for each QCAT are shown below.

**Table 2: Numbers of students participating in each QCAT**

QCAT	Number of students
Year 4 English	8119
Year 4 Mathematics	7812
Year 4 Science	15559
Year 6 English	7274
Year 6 Mathematics	6001
Year 6 Science	6837
Year 9 English	13511
Year 9 Mathematics	22854
Year 9 Science	13824

## 2.2 School preparation for the trial

### 2.2.1 Resources provided

In June 2007, the QSA provided schools with the design brief, clearly identifying the *Essential Learnings* to be assessed to support forward planning. Each sector nominated their participating schools.

QSA distributed to nominated schools a packages of materials relevant for each QCAT containing:

- *Teacher guidelines* — with information about QCATs in general; how teachers should prepare themselves and their students for the QCAT; online resources relevant to the assessment; a list of the *Essential Learnings* that forms the basis of the assessment; and models for achieving consistency of teacher judgments
- *Student booklet* — with the assessment task to be completed by the students
- *Sample responses* — with a model response and five annotated responses, one for each point on the five–point (A to E) scale
- *Guide to making judgments* for the task (provided in the *Teacher guidelines* and the *Student booklet*).

### 2.2.2 Suggested implementation processes

#### Preparation

An implementation period of eight school weeks was available to schools. The implementation period allowed sufficient time to organise school programs and provided flexibility to implement the QCATs at any time within that timeframe.

The QSA advised teachers that students should have the opportunity to develop their understanding of the selected *Essential Learnings* well in advance of participating in the trial. An expectation was also expressed to teachers that they would orient students to the assessment. It was suggested that this could involve ensuring that students practise any specific skills they had not used for a significant period of time. Inappropriate orienting activities such as rehearsing the actual or similar assessment were also highlighted.

It was recommended that teachers work through each student assessment before it was given to students to gain an insight into what would be required of students and to support planning for implementation. Working through the assessments also assisted teachers to mark student responses effectively and efficiently. School administrators were asked to support teachers with the implementation of QCATs through classroom and whole-school planning, as well as through ensuring that teachers understood the purpose and strengths of performance-based assessment.

Teachers were reminded that QCATs are designed to assess how well students know, understand and apply their learning in relation to a selection of *Essentials Learnings*. For this reason, the QSA recommended that teachers did not embed QCATs in units of work as this may have reduced the capacity of the assessments to demonstrate how well students could apply their learning in contexts other than those in which they gained the knowledge and skills.

Teachers played a central role in the implementation of the 2008 QCATs. Within the *Teacher guidelines* provided, teachers were free to make informed decisions appropriate to their context about:

- preparing students for the assessments
- choosing how and when the assessments would be implemented
- providing sufficient scaffolding to ensure students had every opportunity to do their best work
- grading and evaluating student responses to assessments
- improving the consistency of teacher judgments
- providing feedback to students on the strengths and weaknesses of their performance
- using the information to plan for the next stage of learning.

### **Administration**

Teachers were advised that each assessment would take approximately 90 minutes for students to complete. The decision about whether to implement assessments in one session, or over multiple sessions, depended on the school. Within a school, teachers were encouraged to work together, sharing resources to implement assessments so that all students had the opportunity to complete the QCATs under equitable conditions.

QCATs are designed to support school-based assessment and teachers were encouraged to apply the principles of participation and equity. The *Teacher guidelines* provided information for teachers on how to make adjustments for those students who required special consideration.

### **Grading student responses**

Grading of student responses required teachers to match evidence in student work to the task-specific descriptors. Specifically, teachers were asked to “make a judgment” by awarding an A to E grade on the five-point scale related to each assessable element within each QCAT, then “make an overall on-balance judgment” by awarding an overall A to E grade on the five-point scale for the QCAT. On the five-point scale, A represents the highest level of achievement and E represents the lowest level.

## 2.3 Gathering information from the trial

All schools participating in the trial submitted to QSA aggregate data in the form of the number of overall on-balance grades of A to E. There were no individual students' identifying labels on the data. Schools using the QSA Data Tool were able to breakdown their overall grades by:

- class group
- gender
- Indigenous status
- English as a Second Language (ESL) status.

Teachers were also encouraged to complete a survey and provide feedback to the QSA on implementing the QCATs.

### 2.3.1 Random sampling of school-based judgments

The QSA also gathered information from random sampling of school-based judgments of student achievement in QCATs. This sampling is one of the QSA's quality assurance procedures for implementation of the QCATs. The principal purpose is to:

- evaluate how consistently teachers apply state standards in determining overall grades of achievement in QCATs
- provide information about the quality of the assessment judgments (how teachers used the *Guides for making judgments*)
- identify any issues concerning the implementation of QCATs that may need further investigation.

The random sampling project checks the quality of the school-based judgments after they have been made. However, feedback may be provided to the sampled schools and this can contribute to the calibration of their future judgments. As well, the findings can contribute to further improvements in the developments of future QCATs.

For each QCAT, 30 schools were randomly selected to provide five samples to best represent A to E samples from that school. From these schools, QCATs were then graded independently by two expert markers.

### 2.3.2 Summary of data sources

In summary, the QSA used five sources of data to gather information on the 2008 extended trial of the QCATs. These sources included:

1. data from 1300 schools — which provided information on student achievement of overall grades as well as achievement in relation to gender, Indigeneity and ESL status
2. teacher survey data — comprising 480 responses
3. data from 30 schools — which drew on completed *Student booklets* that represented a typical response for each overall grade
4. data from double-marking 10 schools — which drew on completed *Student booklets* from 10 schools (selected from the sample data collected from 30 schools) which were double-marked by trained and independent markers
5. summaries of focus group discussions with the markers at the conclusion of the double-marking process.

Analysis of these five data sources informs the next section of the report, Key learnings.

### 3. Key learnings

The key learnings from the 2008 extended trial of the QCATs relate to three significant areas:

- student achievement of overall A to E grades (as well as achievement related to gender, Indigeneity and ESL status)
- consistency of teacher judgments
- teacher feedback on QCATs.

#### 3.1 Student achievement

Samples used to calculate patterns in student achievement for some QCATs were quite small in statistical terms. This is because some QCATs were trialed in relatively small, non-metropolitan regions and this resulted in a small number of responses. However, the patterns of achievement discussed in this section reflect trends also reported in other major testing programs.

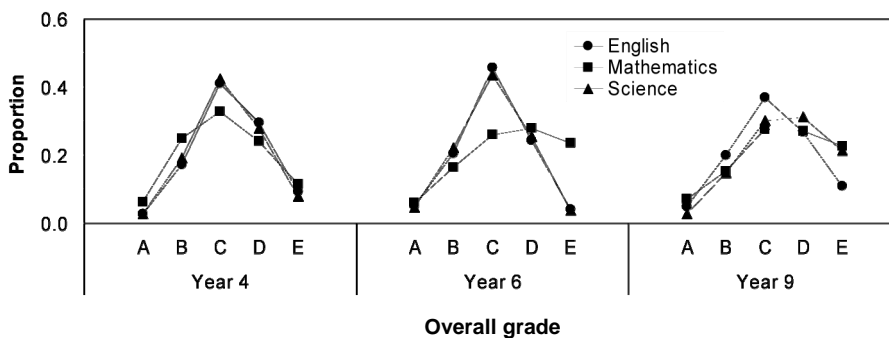
#### 3.2 Overall achievement

Figure 1 below shows the overall achievement of students in the QCATs through the distributions of overall grades for each QCAT. In other words, it shows the proportion of students awarded each overall grade for the QCAT, out of the total number of students who completed the QCAT.

The three distributions, or achievement patterns, for the Year 4 QCATs show a roughly normal distribution of student grades. Only small proportions of students were awarded an A grade — the grade awarded to students achieving at the highest level. Typically, less than 10% of students (0.1 of students) received an A grade. The proportions tend to rise for grades B and C, and then decrease for grades D and E. In other words, the typical pattern is roughly a normal distribution, that is, a distribution with smaller proportions of students at the extremes of the distribution, with larger proportions of students receiving mid-range grades.

Figure 1 shows that the achievement patterns for Year 4 Mathematics differ a little from the other two Year 4 distributions. Responses for Mathematics were more evenly spread across grades B, C and D than they were for English and Science. At Year 4, the patterns of achievement, even for Mathematics, are roughly the same with small proportions at the extremes and larger proportions in the middle. For Year 6, however, the shape of the distribution for Mathematics differs markedly from the other two; and at Year 9, both Mathematics and Science differ from the Year 4 pattern. In all three cases, there is no sharp drop-off at grade E; that is, the proportions receiving grades C, D, and E were relatively constant. To restate this, larger proportions of students, than would be seen typically in a normal distribution, received an E grade in Year 6 and 9 Mathematics and Year 9 Science.

Figure 1: Distribution of overall grades for each QCAT



### 3.2.1 Student achievement and gender

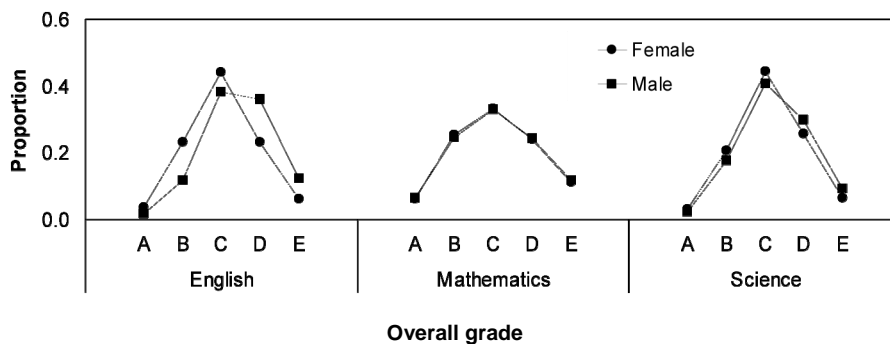
Analysis of the overall grades awarded to students in the QCATs shows that girls achieved at higher levels than the boys in English, with girls and boys achieving at comparable levels within Mathematics and Science. Figure 2 shows the overall grades for each QCAT according to gender.

In the English QCAT, the difference in girls' achievement compared to that of the boys is most evident at Year 4. This effect is represented in Figure 2 by the boys' distribution being displaced to the right compared to the girls' distribution. This relative shifting of the distributions is the result of larger proportions of girls than boys receiving the higher grades (A, B and C), and larger proportions of boys than girls receiving the lower grades (D and E). The patterns for Year 6 and Year 9 English are somewhat similar to the Year 4 pattern. That is, across the three year levels, girls are achieving at higher levels than boys.

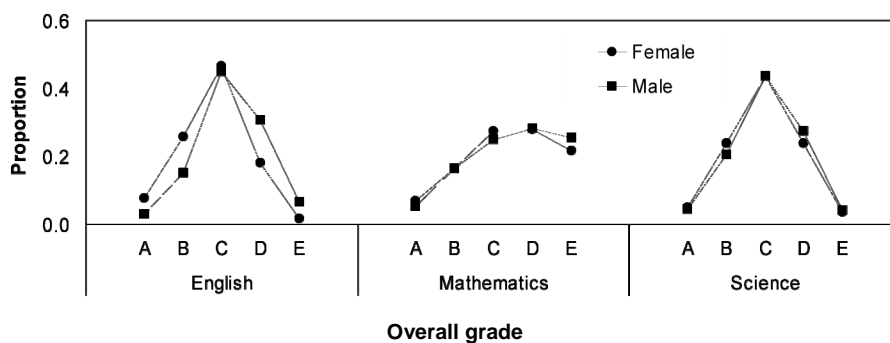
There is little or no separation of the boys' and girls' achievement patterns for Mathematics and Science, however, across the three year levels. That is, boys and girls are achieving at comparable levels for Mathematics and Science.

**Figure 2: Distribution of responses across overall grades for each QCAT by student achievement and gender**

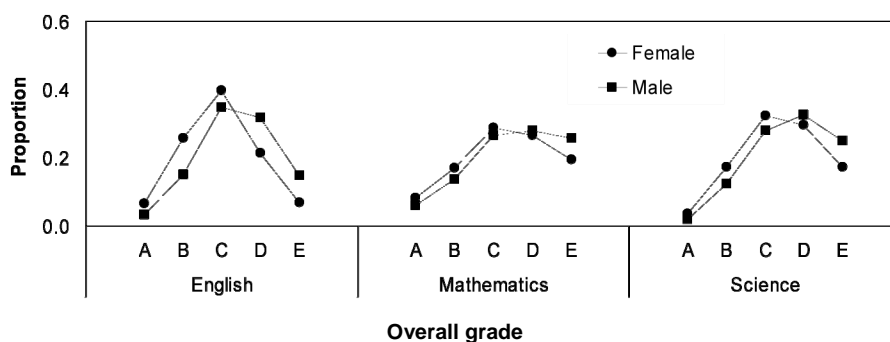
#### Year 4



#### Year 6



#### Year 9



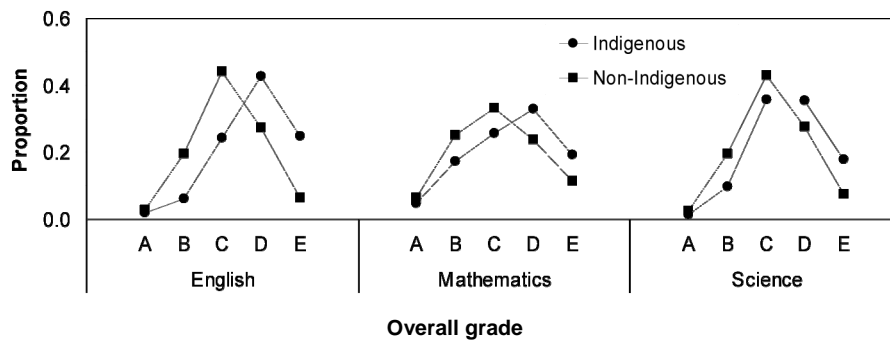


### 3.2.2 Student achievement and Indigeneity

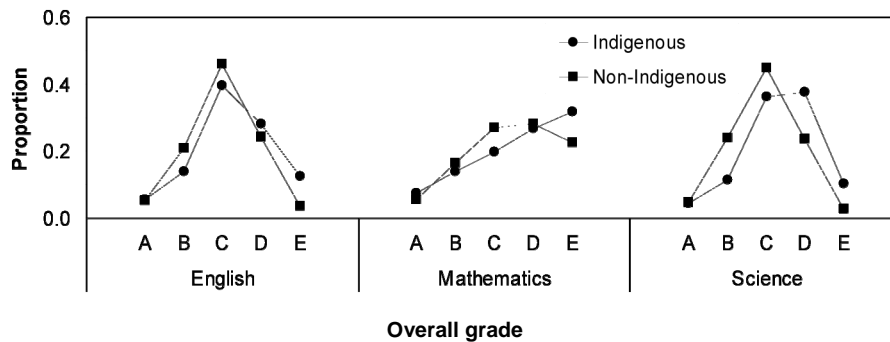
The data gathered from the trial schools suggest a marked difference between the achievements of Indigenous students compared to that of non-Indigenous students (see Figure 3). In fact, the distributions for Indigenous students for Year 6 and 9 Mathematics are shifted to such an extent that close to 50% of Indigenous students were awarded an E grade. For Year 9 Science and Mathematics, large proportions of both Indigenous and non-Indigenous students were awarded an E grade, but the proportion of Indigenous students receiving an E grade is even larger. It is noted, however, that with the exception of Year 9 Mathematics, the proportions of Indigenous and non-Indigenous students receiving an A grade are approximately equal.

**Figure 3: Distribution of responses across overall grades for each QCAT by Indigeneity**

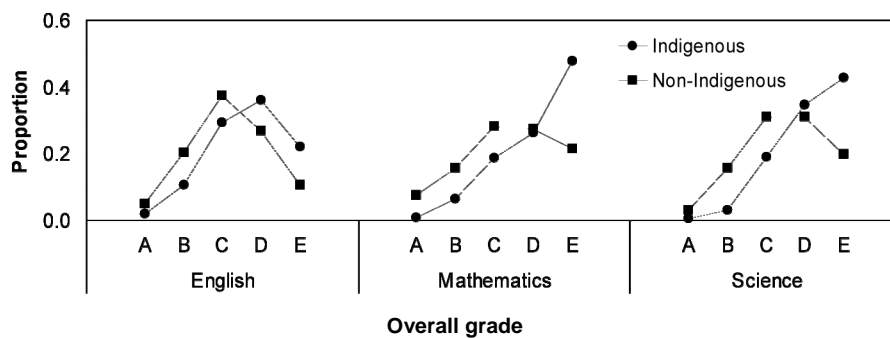
#### Year 4



#### Year 6



#### Year 9

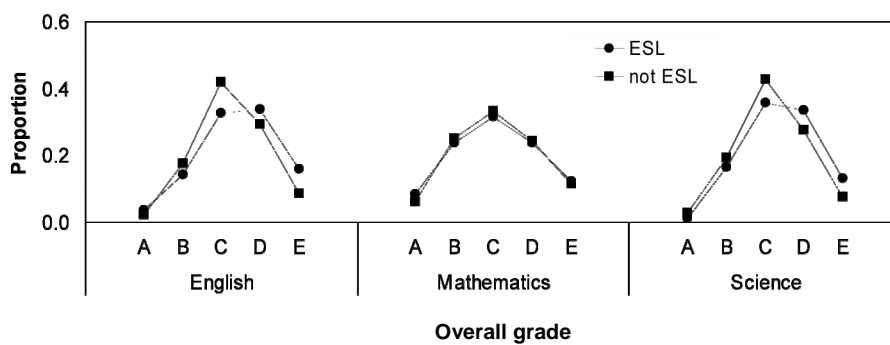


### 3.2.3 Student achievement and ESL status

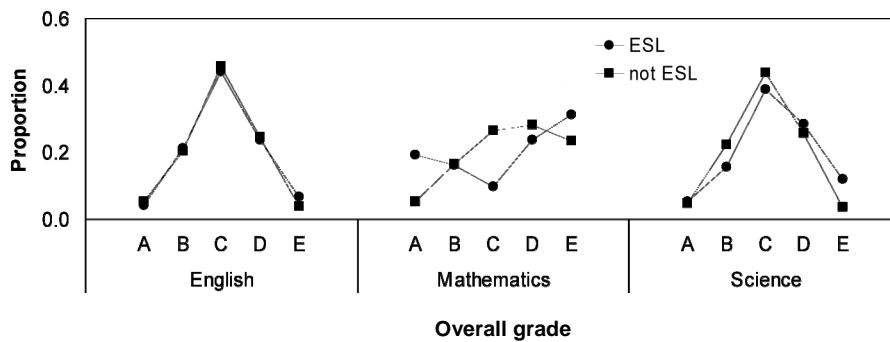
English as a Second Language (ESL) status appears to have only a small association with students' achievements. Figure 4 shows achievement by ESL status. With the exception of Year 6 Mathematics, the patterns of achievement are similar for ESL and non-ESL students. For Year 6 Mathematics, the distribution is almost the reverse of a typical normal distribution; that is, a small proportion of ESL students were awarded a C grade, but larger proportions were awarded grades at the extremes. This could mean that being an ESL student is not necessarily an impediment for high-achieving students but it is an impediment for low-achieving students. Across all the QCATs, the proportions of ESL students awarded an A grade are equal to or greater than the respective proportions of non-ESL students.

**Figure 4: Distribution of responses across overall grades for each QCAT by student achievement and ESL status**

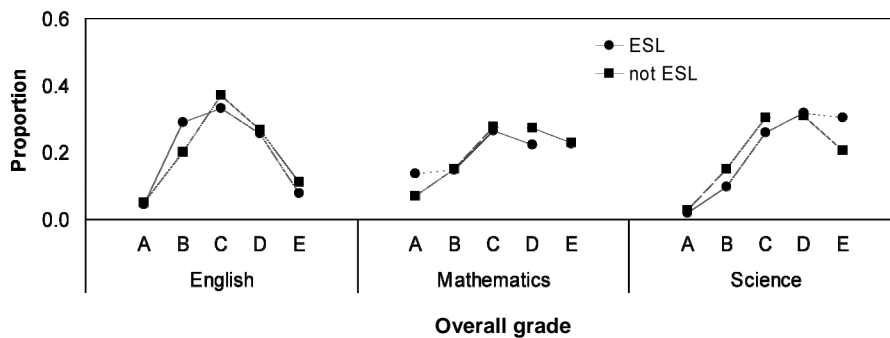
#### Year 4



#### Year 6



#### Year 9



### 3.2.4 Student achievement in summary

In terms of student achievement measured by the 2008 QCATs, girls performed better than boys in English but boys and girls appeared to be doing equally well at Mathematics and Science. Non-Indigenous students achieved better results than Indigenous students. ESL and non-ESL students, as measured by most QCATs, appeared to be doing equally well, with the exception of Year 6 Mathematics.

## 3.3 Consistency of teacher judgments

A key objective of the QCAR Framework is to strengthen schools' capacity to deliver more cohesive learning programs that support students to achieve deeper levels of knowledge, understandings and skills. Enhanced levels of achievement are supported through the use of the *Standards* and the *Essential Learnings*. Consistency of teacher judgments, that is, shared professional knowledge about what constitutes the A to E *Standards* in specific key learning areas and at particular junctures, is an integral component of the QCAR Framework.

Moderation processes are essential within schools and clusters to build consistency of teacher judgments. As discussed in detail in the Background of this report, assessment within the QCAR Framework is supported through teacher's using a common *Guide to making judgments*. The process of making a judgment requires teachers to look for a match between the evidence in the student's work and the task-specific descriptors of quality for each assessable element. The descriptors of quality align to letter grades, A to E in each assessable element being judged in the task. Following the grading of student performance against each assessable element, the teacher then makes an on-balance judgment across all the assessable elements to determine an overall letter grade from A to E.

Results from the trial suggested that when teachers are provided with *Teacher guidelines* for implementation and a common *Guide to making judgments* for making judgments about the quality of student responses, reasonable comparability of reported results is possible. The levels of agreement between the overall grades awarded by the trained markers and the overall grades awarded by the schools were satisfactory or not far from it.

Teachers of Years 4 and 6 were inconsistent in making judgments on the individual criteria, that is, about the assessable elements. There were several factors that might have contributed to inconsistency in terms of judgment of specific assessable elements. For example, difficulties were encountered by teachers (and markers) when:

- a particular assessable element drew on information across a number of questions
- a task-specific descriptor did not exist at each grade level for an assessable element (as is the design feature associated with the continua model of a *Guide to making judgments* used for QCATs).

Teachers also found the next step of reaching an overall, on-balance judgment challenging. In other words, assessment within the QCAR Framework requires that teachers consider each assessable element in terms of its relative importance in a particular task rather than assuming that all assessable elements are of equal importance. It was obvious in the trial that teachers in Year 9 were more experienced in using *Guides for making judgments*.

Data gathered through the trial showed that the majority of teachers used processes from the conferencing (consensus) model to establish consistency of judgments. Fifty-seven per cent of teachers used the conferencing model alone and another 21% combined the conferencing model with another model. A total of 35% used processes from the calibration model but only 14% used calibration on its own. Five per cent of teachers used processes from the expert model. Half the teachers worked with teachers from other schools to help develop consistency.

### 3.3.1 Teacher feedback on QCATs

Overall, teacher feedback on the QCATs was positive. The QCATs provided valuable insights into what students knew, understood and could do in relation to the targeted *Essential Learnings*. Generally, teachers found the tasks to:

- be meaningful
- emphasise critical thinking
- provide opportunities for the range of students
- provide evidence of student learning.

Survey data collected from teachers demonstrated that overall, teachers agreed that the instructions for implementing the QCATs were clear, and that the suggested level of support to students was appropriate.

It was generally considered that the *Teacher guidelines* provided the required information, but teachers of Year 6 and Year 9 Mathematics expressed somewhat less agreement for the statement: *Suggested level of support to students was appropriate*.

Each of the questions about a QCAT package provided opportunities for teachers to write a comment about the documents in the package. Comments suggested that the QCAT trial engaged teachers in professional activities including:

- careful reading of the documents
- discussions and meetings with other professionals to clarify matters associated with the implementation of the QCAT
- working through the QCAT
- participation in professional development at the cluster level
- accessing appropriate resources
- discussion of the purpose of the QCAT and time management with students
- preparation of practice QCATs
- modification of their teaching programs.

Clearly, some teachers engaged in professional activities beyond what was suggested in the *Teacher guidelines* to maximise student and professional learning.

### 3.3.2 Summary of the main concerns raised by teachers

#### *Teacher guidelines*

Teachers advised that the *Teacher guidelines* were not explicit about:

- which students should complete the QCATs
- what level of support should be provided to those students who do complete the QCATs and how much scaffolding to provide. For example, some Mathematics and Science teachers were concerned about the levels of literacy required of students to understand what was being asked and to produce a response.

Some teachers advised that terminology was either inappropriate (e.g. use of the American term “socket”); was not generally known by students (e.g. “turbines”, “graphic artist”); or needed further explanation (e.g. “school community”).

#### *Student booklets*

*Student booklets* received feedback about the:

- cultural relevance of the contextual material
- age-appropriateness of the context

- the relevance of the material
- the level of difficulty of the questions.

Teachers advised that students, particularly of Mathematics, were not sure how much detail to provide when asked to "Explain how you get your answer".

### **Guide to making judgments**

The *Guide to making judgments* received feedback advising that:

- the descriptors for assessable elements should align with an A to E grade
- assessable elements should not draw upon information across a number of questions
- there was not sufficient differentiation between descriptors and thus grades
- there was not enough guidance on how to weight assessable elements when assigning an overall grade
- there was not enough guidance on how to assign a grade for an assessable element that in one part was one grade but in another part was a different grade
- minor errors amounted to a large penalty
- some descriptors appear to be inappropriately placed (e.g. To what extent should "spelling" be assessed as part of Interpreting and Reflecting?) Note: It appears that teachers misunderstood the importance of matching the actual descriptor to the student work. (If spelling was not in the task-specific descriptor at any level, then spelling was not meant to be considered as part of Interpreting.)

### **Sample responses**

Some teachers wanted:

- a larger range of responses in the *Sample responses*, including responses where the grades for the assessable elements do not always align with the overall grade
- *Sample responses* that were more realistic and indicative of the sorts of responses that they encountered. The model response was sometimes not a realistic response (e.g. teachers questioned whether the model responses were written by students).

For at least one QCAT, a number of teachers claimed that:

- the A and the B responses should have been reversed
- the annotations contradicted or were not consistent with the *Guide to making judgments*.

### **General comments**

Other comments related to:

- the time-consuming nature of the process of making judgments
- the questioning by some Year 9 teachers about the timing of QCATS (in the same year as NAPLAN)
- the useful nature of the professional development associated with the trial for those who could attend.
- implementation time. Teachers agreed that the implementation of QCATs took no longer for students to complete than the recommended 90 minutes.
- preparation time. There was a tendency for Year 6 Science, and possibly Year 6 English, teachers to spend more time preparing students for the QCAT. Year 4 English and Mathematics teachers tended to spend less time contextualising the QCAT with students, and teachers of Year 9 Science tended to spend more time contextualising the QCAT.
- engagement. Most Years 4 and 6 teachers agreed that QCATs were engaging for students and that teachers gathered useful information about student learning. However, many Year 9 Science and Mathematics teachers did not agree that the QCATs were engaging for students.

## 4. Trialled QCATs: Purpose, learning and refinement

This section provides specific details about each of the nine QCATs) that were trialled in Queensland schools during 2008. For each QCAT the following information is provided:

- purpose of the assessment task (with relevant targeted *Essential Learnings* and assessable elements listed in the Appendix)
- learnings based on teacher feedback
- post-trial refinement of the QCAT by QSA for general implementation in 2009.

### 4.1 Year 4 QCATs

#### 4.1.1 English

##### *Purpose of the assessment task*

The purpose of the Year 4 English QCAT was to combine listening, reading and writing using the context of a lost puppy issue to support student demonstration of their understanding and application of the key elements in successful messaging. Students were required to:

- listen to a spoken message and respond to questions
- reflect on key elements for successful messaging
- apply their knowledge to construct a thankyou message.

##### *Learnings based on teacher feedback*

Teacher feedback suggested that the task was challenging but that it allowed access for a diverse range of learners given its demands from simple recall of information to higher order thinking. Teacher feedback endorsed the QCAT as having an authentic context for Year 4 students.

There were some concerns expressed about the amount of text students were required to read, the age-appropriateness of some language and the level of support that teachers should provide to students with specific learning needs. In response to their concern that the listening task was too hard for students, teachers suggested that the message could be read twice to support greater student access to the information.

Teachers gathered valuable insights into what students knew and could do in relation to the purpose of the task. Information from the data provided by 1300 schools indicates that, overall, students achieved most success in Knowledge and understanding. Further, students demonstrated successful strategies for Constructing texts but were mostly challenged by Interpreting texts and Reflecting.

Feedback from cluster moderation conducted in both regions highlighted the challenges teachers experienced in making an overall on-balance judgment and in working with the continua model used in the *Guide to making judgments*. It was also clear that the *Sample responses* provided valuable support to teachers making judgments but it was also apparent that some teachers created their own marking guides based on the annotated samples provided. Sample responses are provided as additional information and are designed to support the *Guide to making judgments* not replace it.

## **Post-trial refinement of the QCAT by QSA for general implementation in 2009**

Refinements included changes to the language of some questions to improve clarity. Greater detail was provided on the *Guide to making judgments* to build familiarity with the continua model. A greater range of *Sample responses* was made available for teachers through the Assessment Bank.

### **4.1.2 Mathematics**

#### **Purpose of the assessment task**

The purpose of the Year 4 Mathematics QCAT was for students to demonstrate mathematical reasoning when solving problems. Students were introduced to the assessment through a discussion of class projects, hermit crabs and fundraising. In this assessment, students were required to plan a fundraising activity that covered the cost of a hermit crab project. Specifically, the students were required to calculate, explain and solve problems involving money and time.

#### **Learnings based on teacher feedback**

While teacher feedback acknowledged the scope of the task to assess thinking at a range of levels, concern centred around the high literacy expectation, uncertainty about the level of teacher support required, and their lack of confidence in using the *Guide to making judgments*.

While most students are familiar with the context of fundraising, planning for fundraising is unfamiliar and required considerable discussion.

The QCAT yielded insights into what students knew and understood, as well as what they could do in relation to achieving the purpose of the task. Operations involving addition and subtraction were generally done quite well. Where bundling or grouping was required, students had greater difficulty. Many students wanted to use the division algorithm, given that they were in Year 4, although this was not an expectation. This may have led to confusion for some students. The question that involved placing students in shifts was too difficult for nearly all students. Most students could work out the arrival and departure times within the festival timetable. While many students could do the mathematics involved in working out the number of pens that could be purchased for \$10, most students had difficulty explaining the mathematics.

In relation to the *Student booklet*, teachers expressed concern about the high literacy requirement of the task. Many teachers thought that the QCAT looked like a NAPLAN test booklet, and treated it as a standardised test, thus giving very minimal support to students and compounding the literacy demands. As there was a systemic decision to collect data on the grades awarded, teachers interpreted this requirement to mean that the QCAT was “high stakes” even though the *Teacher guidelines* reinforced the “low stakes” emphasis.

Teachers reported that the *Guide to making judgments* was not easy to interpret in the first instance. The benefit of the purpose statement, when making an overall judgment, was often not considered.

Most teachers thought the *Sample responses* were useful. It was apparent, however, that many teachers used the sample responses as a default marking guide, as they found using the *Guide to making judgments* a new and challenging experience.

Teachers expressed considerable concern about the time needed to prepare students properly. A major concern was the length of time that had elapsed since students’ previous engagement with the knowledge and understandings valued in the QCAT. As the QCAR Framework had only just been introduced, students may not have had an opportunity to be taught in depth the targeted *Essential Learnings*. Engagement in the QCAT trial motivated many teachers to consider the need for reviewing their school programs and ensuring that the *Essential Learnings* are fully incorporated.

### ***Post-trial refinement of the QCAT by QSA for general implementation in 2009***

Questions in the *Student booklet* were refined to improve their accessibility by all students. A few questions were added to more fully incorporate the targeted *Essential Learnings*, specifically in terms of Reflection.

Information in the *Teacher guidelines* about preparation and implementation, including encouragement to teachers to read the task to students, was enhanced. The problem that constituted the task was more clearly identified and the steps to solve the problem outlined, so that teachers could conduct the class discussion with students.

The *Guide to making judgments* was rewritten and was explained in greater detail in the *Teacher guidelines*. The use of the purpose statement was highlighted in the *Teacher guidelines* and in the *Sample responses*.

### **4.1.3 Science**

#### ***Purpose of the assessment task***

The purpose of the Year 4 Science QCAT was for students to explain sunbird behaviour based on information and evidence. The students were introduced to the assessment through a discussion focussing on the nesting cycle of sunbirds and the building of a cat run that would protect sunbird chicks from the cat. The students were required to collect information about sunbird behaviour, identify warm and dry months, and provide a justifiable explanation in relation to the month they had identified as being the earliest month the sunbirds would return.

#### ***Learnings based on teacher feedback***

In relation to the purpose of the task, students competently read and interpreted temperatures and completed rainfall graphs. Most students struggled with combining this information in the weather wheel activity. The graphic organiser used for this activity was unfamiliar to students, making accessibility difficult. The colouring of different wedges of the wheel proved an obstacle for students demonstrating their scientific understanding. The colours represented different temperature or rainfall patterns and the fact that students had to flip pages to gather this information added to the level of difficulty for students.

Many students had difficulty with the higher order thinking requirement in Question 4. Without teacher explanation, students had difficulty understanding the connection of the “earliest month” with seasons, temperatures and rainfall, and the construction of a cat run.

Some feedback received from teachers about the Year 6 Mathematics QCAT aligned with that received from teachers trialling the Year 6 Science QCAT. This common feedback related to uncertainty about levels of support to provide to students, the literacy demands of the task, as well as teacher lack of confidence in using the continua model adopted in the *Guide to making judgments*.

### ***Post-trial refinement of the QCAT by QSA for general implementation in 2009***

The refinement of this QCAT included clearer advice to teachers in relation to the preparation of students and to the implementation of the task. Consideration was also given to more effective use of the QCAT trialling and panelling processes to ensure appropriate literacy levels, as well as to the level of difficulty of the task generally.



## 4.2 Year 6 QCATs

### 4.2.1 English

#### *Purpose of the assessment task*

The purpose of this task was for students to demonstrate how well they could construct texts for different purposes, and appropriate to the audience. The students were required to write two texts — a literary description of a favourite place and an itinerary. The audience for both texts was a student visiting as part of a sporting team.

#### *Learnings based on teacher feedback*

Teachers considered the notion of sporting teams travelling to compete against other school communities provided an authentic context that students across Queensland may experience in either the capacity of travelling to compete or hosting a visiting sporting team. Students generally found the context of hosting a sporting visitor in their local community motivating.

Students were able to access the task at their ability level and construction of different text types allowed for open-ended responses. Teachers reported that the oral description read aloud during the *Setting the scene* was a useful support for students to begin to respond to the task of describing their favourite place.

In terms of achieving the purpose of the task, students competently wrote the description using some descriptive language, and selecting activities in their local area in a one-day itinerary. Students were able to choose the most interesting place to visit in their itinerary and give a reason for their selection. Feedback showed that students found the planning table for the description and the graphic organiser for the itinerary useful supports in planning their writing.

Where opportunities existed to participate in moderation, teachers found this a professionally rewarding experience that assisted them with using the *Standards* to make on-balance judgments about student work. Some teachers reported that they found it difficult to make an on-balance judgment about the overall quality of student work because they had to consider both the itinerary and the justification of the most interesting place. Some teachers relied too much on the textual features of a description with penalties made to students who recounted some details. This may have occurred where teachers relied on using the annotated *Sample responses* rather than the descriptors in the *Guide to making judgments*.

Results from surveys revealed that teachers were satisfied with the level of support provided in the *Teacher Guidelines* and the instructions given to students in the *Student booklet*. A large proportion of teachers indicated that more than one hour was needed in preparation time. This may have been a result of the need to contextualise a visit to the local area and to familiarise students to two different text types.

Teachers reported that the moderation process provided rewarding professional dialogue and assisted them in making on-balance judgments about student work. Feedback showed that, when working outside moderation processes, some teachers relied too heavily on using the textual features identified in sample responses to guide them in making judgments rather than on the *Guide to making judgments*.

#### *Post-trial refinement of the QCAT by QSA for general implementation in 2009*

Changes in the *Student booklet* included adding an illustration to better represent other cultures. The notion of a “billet” who stays overnight was removed and replaced with a “sporting visitor”. Questions were refined to improve their clarity and intent.

Significant changes were made to the *Guide to making judgments* to clarify the task-specific descriptors and assessable elements for teachers.

## 4.2.2 Mathematics

### *Purpose of the assessment task*

The purpose of the Year 6 Mathematics QCAT was to enable students to demonstrate understanding of standard and non-standard units of length through procedures and strategies used in predicting, estimating and solving multi-step problems. Initially, students found three personal measurements and used these to estimate the length of an object. Variation and accuracy of estimates were discussed so students could demonstrate understanding of the concept of error. In later questions, students used the non-standard unit of step length and the standard unit of metres to solve multi-step problems. These involved the comparison of their step length with that of the teacher's and the interpretation of a mud map to estimate distance.

### *Learnings based on teacher feedback*

Students found the hands-on activity engaging. Teachers noted better student performance through the use of an enjoyable task, and that the task provided access and opportunities for success for a range of learners with a variety of skill levels.

The task also provided opportunity for the use of mathematical language, working or diagrammatic responses to explain reasoning. Teachers reported that the literacy demands matched the numeracy demands well and that the clear and concise *Student booklet* contained all the relevant information to assist with easy administration of the task.

Teachers learned valuable information about what students could do in terms of predicting, estimating and solving multi-step problems. For example, questions requiring the use of their own personal measurements were generally done to a high standard. Students had minimal success with the last question, however, concerning the shortest straight-line distance between school and home. Teachers noted that this type of problem solving was difficult for many students. In some instances this occurred because students did not understand whether they were to follow the road or cross the river. This resulted in the question being poorly answered or skipped completely.

Feedback from moderation highlighted the relative newness of the continua model in the *Guide to making judgments* in Mathematics and, as a result, the challenges it provided for teachers. It was also noted that there was very limited feedback provided to students by teachers and in most cases none was provided.

Teachers agreed that the moderation process with colleagues from other schools provided valuable professional development in consistency of teacher judgments and will inform their future teaching and assessment practices.

### *Post-trial refinement of the QCAT by QSA for general implementation in 2009*

Further assistance was provided to teachers, through the *Teacher guidelines*, to support on-balance judgments of overall grades using the continua model of the *Guide to making judgments*. Further information was also included about the level of support to be provided for students.

## 4.2.3 Science

### *Purpose of the assessment task*

The purpose of this QCAT was to enable students to demonstrate understanding and interpretation of the causes of day and night and of moon phases. Students discussed a photo of a moon rise and then interpreted and applied data from a series of diagrams relating to the position and motion of the earth, moon and sun. In the final questions, students reflected on their understandings and applied scientific ideas by interpreting a photo of the earth and using evidence to justify an opinion about a title for that photo.

### *Learnings based on teacher feedback*

Students found the context engaging and teachers considered that the assessment provided opportunities for students to evaluate and interpret evidence to draw conclusions. The task also provided a variety of written and diagrammatic responses.

Teachers noted that the dynamic, three-dimensional relationship of the earth, moon and sun is challenging for some students at this stage. Students who had prior opportunities to manipulate models and use the interactive representations, recommended in the *Teacher guidelines*, were more able to engage with these concepts and achieve the purpose of the task. In addition, teachers who used the suggested online resources with students before the assessment reported that these were appropriate and supported the task effectively.

Questions requiring factual scientific knowledge and short answer responses were generally done to a high standard. Teachers reported, however, that students had difficulty applying scientific concepts, drawing conclusions and generating persuasive arguments. Similar comments came from the sample response markers, who felt that some students were not well prepared to display higher order skills such as explaining, justifying or applying knowledge in different domains. Reflection was another area found to be challenging for students, although this assessment was considered to provide a good model for embedding reflective activities within the task.

There were some concerns about the levels of literacy required of students to understand questions and to produce a response. Some teachers felt that the selected *Essential Learnings* gave limited scope for “authentic, performance-based assessment” as they did not provide opportunities for hands-on investigations, while others considered that interpretation of the diagrams and photos were authentic scientific tasks.

Teachers reported that the *Student booklet* was generally clear and straightforward for students to follow, with the colour diagrams easy to interpret.

Teachers responding to the survey suggested that assessable elements should not draw upon information across a number of questions. In a problem-based assessment, however, the topics and questions are not discrete and judgments are better informed when the evidence for each element is shown in different ways at multiple stages of the task. This approach may differ from other assessment or “test” modes with which teachers are familiar and may require increased clarity.

Teachers reported that the moderation process, while often challenging, provided valuable professional dialogue, informing their teaching practice and giving better understanding of students’ specific needs. They enjoyed the opportunity to talk with other professionals about evidence of the *Standards* in student work. The final question, which could be answered in a variety of ways, was difficult to moderate as student responses did not often align with the provided sample responses. The markers wanted the *Sample responses* to cover a wider range of possible answers, as they were looking for guidance in dealing with unexpected responses, particularly when responses could be complex, such as was the case with Question 5.

## **Post-trial refinement of the QCAT by QSA for general implementation in 2009**

Given some teacher concern about the literacy demands of the task, the Year 6 Science QCAT was refined to provide greater scaffolding for written responses and more opportunities for students to respond with diagrams.

Refinement of the task also included addressing concerns about terminology in the assessment (e.g. the use of “spin” rather than “rotate”), as well as the Northern hemisphere orientation of diagrams.

*Sample responses* were extended to provide more detailed support.

## **4.3 Year 9 QCATs**

### **4.3.1 English**

#### ***Purpose of the assessment task***

The purpose of the Year 9 English QCAT was to demonstrate how well students could use persuasive language to influence different audiences. Students were asked to analyse techniques used in an advertisement with an environmental message. Students then constructed two non-literary texts, a draft advertisement to persuade their school community to care for their environment and an explanation to their school principal of the persuasive techniques the student used in their advertisement.

#### ***Learnings based on teacher feedback***

Teacher feedback suggested that students found the context of the task engaging and that the purpose and audience for construction of texts was authentic. The task was structured to support access for all students with challenges for more able students. Starting with a given text allowed students to identify the use of text and visual images before drafting their own advertisement. The written reflection provided students with an opportunity to demonstrate higher-order thinking. Overall, students showed confidence in constructing non-literary texts for different purposes.

The QCAT provided teachers with information in relation to student knowledge and skills. Specifically, teachers reported that students were able to identify how the use of visual images, colours and language was used in the given environmental advertisement and identify a target audience for the message. Feedback showed that students were able to construct a draft advertisement with a generic environmental message and select elements in their advertisement to elaborate in some detail.

Feedback from teachers showed that some students found it difficult to construct an advertisement that targeted the given audience of the school community. Students also found choosing and describing their language choices to position their audience to care for their environment a difficult task. Some students found it challenging to construct a text that used detailed arguments through the structuring of paragraphs that built and sustained cohesion. Some teachers commented on the high level of literacy demands in a number of instructions given to complete products 2 and 3.

Some teachers commented that it might have been necessary to teach explicitly advertising terminology such as ‘target audience’ and ‘persuasive techniques’ before implementing the task.

Survey results revealed that the Year 9 English QCAT, on the whole, took more than two sessions to implement. This may have been as a result of the QCAT being structured into three distinct products.

It appeared that teachers were satisfied with the level of support provided in the *Teacher guidelines* and instructions given to students in the *Student booklet*.

Moderation at a school and workshop level revealed a high level of consistency in awarding overall grades. Some teachers, however, found it difficult to determine an overall grade based on grades in the four different assessable elements. “Constructing texts” was considered to have the most weighting when making an on-balance judgment. While acknowledging that the *Sample responses* were useful in assisting them to make judgments, some teachers reported difficulties in reaching agreement on a C or D grade in relation to this assessable element for their draft advertisement where many students presented a generic environmental message rather than a message that was appropriate for the school community. Some teachers found it difficult to find a match with the descriptor for this type of response. Teachers also noted that the draft advertisement and the written description of techniques used were interdependent: if students struggled to construct an advertisement for the target audience, this affected the quality of their reflection to the principal. Teachers also reported difficulties in making a ‘trade-off’ between responses about the wind advertisement and the draft advertisement in awarding an overall grade in the *Guide to making judgments* for the first assessable element of Knowledge and understanding.

### **Post-trial refinement of the QCAT by QSA for general implementation in 2009**

An extra question was added to the first section of the *Student booklet*. The sequence of questions was changed in the second section to better support students in drafting an advertisement.

Questions were refined to elicit evidence more closely aligned to the selected *Essential Learnings*.

## **4.3.2 Mathematics**

### **Purpose of the assessment task**

The Year 9 Mathematics QCAT was designed to give students the opportunity to demonstrate how well they could use mathematical reasoning to develop an appropriate local plan for the storage and use of rainwater. In *Setting the scene* students were encouraged to discuss what they would need to consider when planning how to make use of rainwater to supplement their water supply. Students were required to use their mathematical knowledge and understanding to make predictions about future rainfall patterns and to investigate rainfall measurement. Finally, students needed to apply mathematical reasoning when using local rainfall data to plan rainwater use and choose an appropriate storage tank.

### **Learnings based on teacher feedback**

Teachers reported that students generally found the local real-life context of the QCAT engaging. Some teachers, however, commented that many students were not engaged by the task, as it did not “count” and that they were “tested-out” from recent NAPLAN tests.

Some students, who were generally considered to have demonstrated a high level of success in much of the task, had minimal success with the open-ended response required by the last question. The language of the checklist was considered by a number of students to be challenging.

Overall, about 50% of students achieved at a D or E grade. This may have been the result of a number of factors including lack of student engagement, unfamiliarity with this style of assessment, lack of prior engagement with targeted *Essential Learnings*, literacy demands, and the difficulty experienced by teachers in making judgments.

Teachers reported that the *Student booklet* was generally clear and straightforward for students to follow, with the colour diagrams easy to interpret.

Feedback from teachers indicates that there was variation in implementation styles from strict test conditions to the supportive style suggested in the *Teacher guidelines*. In some schools, teachers and students struggled with the openness and flexibility allowed in implementation. Other teachers commented that this helped to engage less able students.

### ***Post-trial refinement of the QCAT by QSA for general implementation in 2009***

Diagrams in the student booklet were made larger and clearer for students. Some questions were renumbered and re-ordered to improve accessibility for students. Several questions were reworded to improve clarity. The task-specific descriptors in the *Guide to making judgments* were modified to help teachers make judgments.

## **4.3.3 Science**

### ***Purpose of the assessment task***

The Year 9 Science QCAT was designed to assess how well students could evaluate and interpret evidence to inform an opinion about climate change. In *Setting the scene* students were encouraged to discuss media reports of scientific issues, as well as how to obtain reliable information on which to base an informed opinion. Students then evaluated the reliability of three sources of information about climate change, interpreted scientific data and applied their scientific knowledge to the possible effects of particular energy choices. Finally, students were required to draw on all aspects of the task to arrive at an informed opinion.

### ***Learnings based on teacher feedback***

Students generally found the real-life context engaging and teachers considered that the assessment was useful in providing opportunities for students to evaluate and interpret evidence to draw conclusions. The task also provided some variety in types of response, including short answers, diagrams and equations. Interestingly, the results from 30 randomly selected schools showed that most students graded as C overall actually achieved at a B level in “drawing conclusions and forming opinions”.

Many teachers considered that the task was not engaging for students who are used to “hands-on” science. A number of teachers reported that the literacy demands were also a barrier to student achievement of the purpose of the task, though this logically appears to be dependent on the levels of support offered during implementation. In some cases the QCAT was implemented under test conditions, limiting opportunities for engaging students in discussion about the context and requirements before responding to the task.

Overall, about 50% of students achieved at a D or E grade. This may reflect a combination of issues — lack of student engagement, unfamiliarity with this style of assessment, lack of prior engagement with targeted *Essential Learnings*, unreasonable expectations and literacy demands, and difficulty in making judgments.

### ***Post-trial refinement of the QCAT by QSA for general implementation in 2009***

A practical component has been added to the QCAT. A significant amount of stimulus text material has been removed from the *Student booklet* to decrease the literacy demands on students.

The number of questions requiring a written response was reduced. Questions were refined to improve clarity.

## 5. Appendix: Targeted Essential Learnings

The following pages outline the *Essential Learnings* targeted in each of the nine QCATs from the 2008 extended trial as listed in the design brief of June 2007.

Year 4 English QCAT: Targeted Essential Learnings by the end of Year 3.....	32
Year 4 Mathematics QCAT: Targeted Essential Learnings by the end of Year 3 .....	34
Year 4 Science QCAT: Targeted Essential Learnings by the end of Year 3.....	35
Year 6 English QCAT: Targeted Essential Learnings by the end of Year 5.....	36
Year 6 Mathematics QCAT: Targeted Essential Learnings by the end of Year 5 .....	37
Year 6 Science QCAT: Targeted Essential Learnings by the end of Year 5.....	39
Year 9 English QCAT: Targeted Essential Learnings by the end of Year 9.....	40
Year 9 Mathematics QCAT: Targeted Essential Learnings by the end of Year 9 .....	42
Year 9 Science QCAT: Targeted Essential Learnings by the end of Year 9.....	43

# Year 4 English QCAT: Targeted Essential Learnings by the end of Year 3

## *Assessable elements*

- Knowledge and understanding
- Interpreting texts
- Constructing texts
- Reflecting

## *Ways of working*

Students are able to:

- identify audience, purpose and text type
- identify main ideas and the sequence of events, and make simple inferences
- recognise and select vocabulary to describe subject matter
- interpret how people, characters, places, events and things have been represented
- construct simple literary and non-literary texts by planning and by using prior knowledge and experience to match an audience and purpose
- reflect on and identify how language elements in texts represent people, characters, places, events and things in similar and different ways.

## *Knowledge and understanding*

### **Speaking and listening**

**Speaking and listening involve using oral, aural and gestural elements to interpret and construct texts that achieve purposes in familiar contexts.**

- The purpose of speaking and listening includes exchanging information, sharing and exploring ideas, entertaining, supporting relationships, giving opinions and getting things done.
- Speakers can adopt different roles in formal and informal situations.
- Active listeners identify main ideas and information, show interest and respond.
- Speakers and listeners use a number of strategies to make meaning, including identifying purpose, activating prior knowledge, responding, questioning, identifying main ideas, monitoring, summarising and reflecting.

### **Reading and viewing**

**Reading and viewing involve using a range of strategies to interpret and appreciate written, visual and multimodal texts in familiar contexts.**

- Readers and viewers make connections between their prior knowledge and the subject matter of the text.
- Words, groups of words, visual resources and images elaborate ideas and information, and portray people, characters, places, events and things in different ways.
- Comprehension involves using language elements and contextual cues to interpret, infer from and evaluate familiar texts.
- Readers and viewers use a number of active comprehension strategies to interpret texts, including activating prior knowledge, predicting, questioning, identifying main ideas, inferring, monitoring, summarising and reflecting.



## Writing and designing

**Writing and designing involve using language elements to construct literary and non-literary texts for familiar contexts.**

- The purpose of writing and designing includes reporting and conveying simple messages and information.
- Writers and designers can adopt different roles for different audiences.
- Words and phrases, symbols, images and audio have meaning.
- Text users make choices about grammar and punctuation.
- Common spelling patterns of monosyllabic words, two-syllable words and high-frequency words are used to spell familiar and unfamiliar words.

## Language elements

**Interpreting and constructing texts involve exploring and using grammar, punctuation, vocabulary, audio and visual elements, in print-based, electronic and face-to-face modes (speaking and listening, reading and viewing, writing and designing) in familiar contexts.**

- Statements provide information; questions seek information; commands give orders; and exclamations emphasise or express emotions.
- A sentence can be a single clause or a combination of clauses.
- Text connectives are used to link and sequence things, ideas and events.
- Tense is used to indicate time in sentences.
- Nouns, verbs, adjectives, adverbs and prepositional phrases develop and elaborate ideas and portray people, characters, places, events and things in different ways.
- Punctuation marks, including capital letters, full stops, commas, exclamation marks and question marks, clarify meaning.

## Literary and non-literary texts

**Exploring literary and non-literary texts involves developing an awareness of purpose, audience, subject matter and text structure.**

- Texts are produced for particular audiences and their interests.
- Formal and informal texts are ways of communicating for different purposes.
- Literary texts entertain, evoke emotion and convey simple messages and information.
- Main ideas and events can be sequenced and subject matter described, including supporting ideas and details.

# Year 4 Mathematics QCAT: Targeted Essential Learnings by the end of Year 3

## *Assessable elements*

- Knowledge and understanding
- Thinking and reasoning
- Communicating
- Reflecting

## *Ways of working*

Students are able to:

- use everyday and mathematical language, mental computations, representations and technology to generate solutions and check for reasonableness of the solution.
- make statements and decisions based on interpretations of mathematical concepts in familiar everyday situations.
- communicate thinking and reasoning, using everyday and mathematical language, concrete materials, visual representations, and technologies.
- reflect on and identify the contribution of mathematics to everyday situations.
- reflect on learning to identify new understandings.

## *Knowledge and understanding*

### **Number**

**Whole numbers, simple fractions and the four operations are used to solve problems.**

- Whole numbers (to 999) can be represented in different ways, including the use of concrete materials, pictorial materials, number lines and technologies.
- Addition and subtraction involving 2-digit whole numbers can be calculated using concrete materials, mental computation and written strategies.
- Multiplication and division of whole numbers to 10 can be calculated using arrays, skip counting, doubles, double doubles, turnarounds and sharing of concrete materials.
- Problems involving operations can be explored using concrete materials, sketches and diagrams.
- Problems using a single operation can be planned and solved.
- Money can be used to buy goods and services.

### **Algebra**

**Relationships between objects or numbers can be described using patterns and simple rules.**

- Simple relationships between objects or numbers can be described in terms of order, sequence and arrangement.

### **Chance and data**

**Chance events can be explored using predictions and statements. Data can be collected, organised and explored.**

- Data can be organised in lists, tables, picture graphs and bar graphs.
- Data can be explored for variation and adequacy.

### **Measurement**

**Unique attributes of shapes, objects and time can be identified and described using standard and non-standard units.**

- Hour, half-hour and quarter-hour times and five-minute intervals are read using analogue clocks and all times are read using digital clocks.

# Year 4 Science QCAT: Targeted Essential Learnings by the end of Year 3

## *Assessable elements*

- Knowledge and understanding
- Investigating
- Communicating

## *Ways of working*

Students are able to:

- identify and collect data, information and evidence
- use identified tools, technologies and materials
- draw conclusions and give explanations, using data, information and evidence
- communicate scientific ideas, data, information and evidence, using terminology, illustrations or representations.

## *Knowledge and understanding*

### **Earth and beyond**

**Changes in the observable environment influence life.**

- Earth and space experience recurring patterns and natural cycles of events, including seasons, weather and moon phases, and these can affect living things.

### **Life and living**

**Needs, features and functions of living things are related and change over time.**

- Change occurs during the life cycle of living things.
- Living things depend on the environment and each other.

# Year 6 English QCAT: Targeted Essential Learnings by the end of Year 5

## *Assessable elements*

- Knowledge and understanding
- Constructing texts

## *Ways of working*

Students are able to:

- identify main ideas and the sequence of events, and make inferences
- construct literary and non-literary texts by planning and developing subject matter, using personal, cultural and social experiences that match an audience and purpose.

## *Knowledge and understanding*

### **Writing and designing**

**Writing and designing involve using language elements to construct literary and non-literary texts in personal and community contexts.**

- The purpose of writing and designing includes entertaining, informing and describing.
- Writers and designers can adopt different roles, and make language choices appropriate to the audience.
- Text users make choices about grammar and punctuation, to make meaning.

### **Language elements**

**Interpreting and constructing texts involve making choices about grammar, punctuation, vocabulary, audio and visual elements in print-based, electronic and face-to-face modes (speaking and listening, reading and viewing, writing and designing) in personal and community contexts.**

- A sentence can be either simple, compound or complex.
- Sentences can indicate what is happening (verbs), who or what is taking part (nouns), what it looks like (adjectives), and the circumstances surrounding the action (prepositional phrases and adverbs).
- Vocabulary is chosen to express ideas and information in a commonsense or technical way.

### **Literary and non-literary texts**

**Making choices about literary and non-literary texts involves identifying the purpose, audience, subject matter and text structure.**

- Non-literary texts report, inform, present and seek opinions, present arguments, persuade and negotiate.
- Main ideas are established by identifying who, what, where, when, how and why.

# Year 6 Mathematics QCAT: Targeted Essential Learnings by the end of Year 5

## *Assessable elements*

- Knowledge and understanding
- Thinking and reasoning
- Communicating

## *Ways of working*

Students are able to:

- identify and describe the mathematical concepts, strategies and procedures required to generate solutions
- pose questions and make predictions based on experience in similar situations
- plan activities and investigations to explore concepts, pathways and strategies and solve mathematical questions, issues and problems
- identify and use mental and written computations, estimations, representations and technologies to generate solutions and check for reasonableness of solutions
- make statements, predictions, inferences and decisions based on mathematical interpretations
- evaluate their own thinking and reasoning, in relation to the application of mathematical ideas, strategies and procedures
- communicate and justify thinking and reasoning, using everyday and mathematical language, concrete materials, visual representations and technologies.

## *Knowledge and understanding*

### **Number**

**Whole numbers, simple and decimal fractions and a range of strategies are used to solve problems.**

- Place value of digits in whole numbers and decimal fractions changes when they are multiplied and divided by 10 and 100.
- Whole numbers (to thousands) and decimal fractions (to hundredths) can be calculated using addition and subtraction.
- Whole numbers can be multiplied and divided by whole numbers to 10.

### **Measurement**

**Length, area, volume, mass, time and angles can be estimated, measured and ordered, using standard and non-standard units of measure.**

- Timelines, clocks, calendars and timetables are used to sequence, schedule and calculate timed events.
- Standard units, including centimetre, metre, square centimetre, square metre, gram, kilogram, minute, degree, millilitre and litre, and a range of instruments are used to measure and order attributes of objects, including length, area, volume, mass, time, and angles.
- Links exist between different ways of recording the same measurement.
- Reasonable estimates can be made using strategies that suit the situation.

## Space

**Geometric features are used to group shapes and guide the accuracy of representation of 2D shapes and 3D objects. Mapping conventions apply to the structure and use of maps and plans.**

- Mapping conventions, including symbols, scales, legends and alphanumeric grids, are used to represent and interpret movements and to identify locations on maps and plans.
- Mapping conventions, including the four major compass points, are used to give direction and movement and can be linked to turns.

# Year 6 Science QCAT: Targeted Essential Learnings by the end of Year 5

## *Assessable elements*

- Knowledge and understanding
- Investigating
- Communicating
- Reflecting

## *Ways of working*

Students are able to:

- evaluate information and evidence to support data gathered from activities and investigations
- draw conclusions that are supported by evidence, reproducible data and established scientific concepts
- communicate scientific ideas, data and findings, using scientific terminology and formats appropriate to context and purpose
- reflect on learning to identify new understandings and future applications.

## *Knowledge and understanding*

### **Science as a human endeavour**

**Science relates to students' own experiences and activities in the community.**

- Scientific ideas can be used to explain the development and workings of everyday items.

### **Earth and beyond**

**Changes and patterns in different environments and space have scientific explanations.**

- The earth, solar system and universe are dynamic systems.

### **Energy and change**

**Actions of forces, and forms and uses of energy, are evident in the everyday world.**

- Forces may act at a distance or may need to be in contact with an object to affect it.

# Year 9 English QCAT: Targeted Essential Learnings by the end of Year 9

## *Assessable elements*

- Knowledge and understanding
- Investigating
- Communicating
- Reflecting

## *Ways of working*

Students are able to:

- construct non-literary texts by planning and organising subject matter according to specific text structure and referring to other texts
- make judgments and justify opinions about how the qualities of texts contribute to enjoyment and appreciation
- reflect on and analyse how language choices position readers/viewers/listeners in particular ways for different purposes and can exclude information.

## *Knowledge and understanding*

### **Reading and viewing**

**Reading and viewing involve using a range of strategies to interpret, analyse and appreciate written, visual and multimodal texts across local, national and global contexts.**

- Words, groups of words, visual resources and images can position an audience by presenting ideas and information and portraying people, characters, places, events and things in particular ways.
- Comprehension involves drawing on knowledge of the subject matter, contextual cues and intertextuality to interpret, infer from and evaluate texts in local, national or global contexts.

### **Writing and designing**

**Writing and designing involve using language elements to construct literary and non-literary texts for audiences across local, national and global contexts.**

- The purpose of writing and designing includes parodying, analysing and arguing.
- Writers and designers establish and maintain roles and relationships by recognising the beliefs and cultural background of their audience, and by making specific language choices.
- Words and phrases, symbols, images and audio affect meaning and establish and maintain roles and relationships to influence an audience.

### **Language elements**

**Interpreting and constructing texts involve manipulating grammar, punctuation, vocabulary, audio and visual elements, in print-based, electronic and face-to-face modes (speaking and listening, reading and viewing, writing and designing) across local, national and global contexts.**

- Paragraphs build and sustain cohesion and develop a central idea.
- Nominalisation (turning verbs into nouns) can be used to compress ideas and information, and to add formality to a text.
- Figurative language, including onomatopoeia and alliteration, and emotive, evocative, formal and informal language, creates tone, mood and atmosphere.
- Vocabulary is chosen to establish roles and relationships with an audience, including the demonstration of personal authority and credibility.
- Auditory, spoken, visual and nonverbal elements, including the use of sound fades, dissolves, cuts, hyperlinks, camera angles and shot types, can be combined to position an audience.



### Literary and non-literary texts

**Manipulating literary and non-literary texts involves analysing the purpose, audience, subject matter and text structure.**

- Comparison, contrast, exaggeration and juxtaposition are used to create emotional responses.
- Non-literary texts analyse, inform, argue and persuade.
- Non-literary texts can focus on a major point that is supported by elaboration.
- Non-literary texts can conclude with recommendations, restating the main arguments or summarising a position.

# Year 9 Mathematics QCAT: Targeted Essential Learnings by the end of Year 9

## *Assessable elements*

- Knowledge and understanding
- Thinking and reasoning
- Communicating

## *Ways of working*

Students are able to:

- Analyse situations to identify the key mathematical features and conditions, strategies and procedures that may be relevant in the generation of a solution
- Select and use mental and written computations, estimations, representations and technologies to generate solutions and to check for reasonableness of the solution
- Communicate thinking, and justify and evaluate reasoning and generalisations, using mathematical language, representations and technologies.

## *Knowledge and understanding*

### **Number**

**Number properties and operations and a range of strategies can be applied when working with integers and rational numbers.**

- Problems can be interpreted and solved using rational and irrational numbers, including integers, simple powers and square roots, and conventions of the four operations to generate solutions using mental, written and technology-assisted strategies.

### **Algebra**

**Variables, algebraic expressions and equations, relationships and functions can be described, represented and interpreted**

- Variables and constants are represented using words and symbols when writing expressions and equations.
- Inverse, associative, commutative and distributive properties can be used to manipulate and rearrange algebraic expressions that involve the four operations, reciprocals, whole-number powers and square roots.

### **Measurement**

**Units of measure, instruments, formulas and strategies can be used to estimate and calculate measurement and consider reasonable error.**

- Instruments, technologies, strategies and formulas are used to estimate, compare and calculate measures and derived measures, including rate, area, duration and Australian time zone differences.
- Lengths and angles that cannot be measured directly can be investigated using scale, similarity or trigonometry.

### **Chance and data**

**Judgments can be based on theoretical or experimental probability. Data can be displayed in various ways and analysed to make inferences and generalisations.**

- Simple measures of spread and centre, distribution of responses, and the effect of bias and outliers on the measures of location are used to make inferences.

# Year 9 Science QCAT: Targeted Essential Learnings by the end of Year 9

## *Assessable elements*

- Knowledge and understanding
- Investigating
- Communicating

## *Ways of working*

Students are able to:

- research and analyse data, information and evidence
- evaluate data, information and evidence to identify connections, construct arguments and link results to theory
- draw conclusions that summarise and explain patterns, and that are consistent with the data and respond to the question
- communicate scientific ideas, explanations, conclusions, decisions and data, using scientific argument and terminology, in appropriate formats.

## *Knowledge and understanding*

### **Science as a human endeavour**

**Responsible and informed decisions about real-world issues are influenced by the application of scientific knowledge.**

- Responsible, ethical and informed decisions about social priorities often require the application of scientific understanding.

### **Earth and beyond**

**Events on earth and in space can be explained using scientific theories and ideas, including the geological and environmental history of the earth and the universe.**

- Geological evidence can be interpreted to provide information about past and present events.

### **Energy and change**

**Forces and energy are identified and analysed to help understand and develop technologies, and to make predictions about events in the world.**

- Energy is conserved when it is transferred or transformed.

### **Natural and processed materials**

**The properties of materials are determined by their structure and their interaction with other materials.**

- Chemical reactions can be described using word and balanced equations.