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National Assessment Program – Civics and Citizenship Technical Report

2010

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National Assessment Program –

Civics and Citizenship 2010

Year 6 and Year 10

TECHNICAL REPORT

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Main cover image:
Top left-hand image, "College Captains at ANZAC Day memorial service, Nagle College, Bairnsdale, 25 April 2008"
Top right-hand image, courtesy of ACARA
Bottom left-hand image, courtesy of ACER

The authors wish to acknowledge the expert contributions of Martin Murphy to this technical report, which took the form of developing text that was integrated into this document, and reviewing and editing sections of this report.

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CHAPTER 1: INTRODUCTION

Julian Fraillon

In 1999, the State, Territory and Commonwealth Ministers of Education, meeting as the tenth Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA)[1], agreed to the National Goals for Schooling in the Twenty-first Century. Subsequently, MCEETYA agreed to report on progress toward the achievement of the National Goals on a nationally-comparable basis, via the National Assessment Program (NAP). As part of NAP, a three-yearly cycle of sample assessments in primary science, civics and citizenship and ICT was established.

The first cycle of the National Assessment Program – Civics and Citizenship (NAP – CC) was held in 2004 and provided the baseline against which future performance would be compared. The second cycle of the program was conducted in 2007 and was the first cycle where trends in performance were able to be examined. The most recent assessment was undertaken in 2010. This report describes the procedures and processes involved in the conduct of the third cycle of the NAP – CC.

National Assessment Program – Civics and Citizenship

The first two cycles of NAP – CC were conducted with reference to the NAP – CC Assessment Domain.

In 2008, it was decided to revise the NAP – CC Assessment Domain. It was replaced by the NAP – CC Assessment Framework, developed in consultation with the 2010 NAP – CC Review Committee. The assessment framework extends the breadth of the assessment domain in light of two key curriculum reforms:

- the Statements of Learning for Civics and Citizenship (SOL – CC; Curriculum Corporation, 2006); and
- the implicit and explicit values, attitudes, dispositions and behaviours in the Melbourne Declaration on Educational Goals for Young Australians (MCEETYA, 2008).

The assessment framework consists of four discrete aspects which are further organised according to their content. The four aspects are:

- Aspect 1 – civics and citizenship content;
- Aspect 2 – cognitive processes for understanding civics and citizenship;
- Aspect 3 – affective processes for civics and citizenship; and
- Aspect 4 – civics and citizenship participation.

Aspects 1 and 2 were assessed through a cognitive test of civics and citizenship. Aspects 3 and 4 were assessed with a student questionnaire.

[1] Subsequently the Ministerial Council on Education, Early Childhood Development and Youth Affairs (MCEECDYA).

Participants

Schools from all states and territories, and from the government, Catholic and independent sectors, participated. Data were gathered from 7,246 Year 6 students from 335 schools and 6,409 Year 10 students from 312 schools.

The assessment format

The students' regular classroom teachers administered the assessment between 11 October and 1 November 2010. The assessment comprised a pencil-and-paper test with multiple-choice and open-ended items, and a questionnaire. The cognitive assessment booklets were allocated so that a student in each class completed one of nine different test booklets. The test contents varied across the booklets, but the same questionnaire (one for Year 6 and one for Year 10) was included in each booklet at each year level. The questionnaires for Years 6 and 10 were largely the same. The Year 10 questionnaire included some additional questions that were asked only at that year level.

Students were allowed no more than 60 minutes at Year 6 and 75 minutes at Year 10 to complete the pencil-and-paper test and approximately 15 minutes for the student questionnaire.[2]

Reporting of the assessment results

The results of the assessment were reported in the NAP – CC Years 6 and 10 Report 2010.

Mean test scores and distributions of scores were shown at the national level and by state and territory. The test results were also described in terms of achievement against the six proficiency levels described in the NAP – CC scale and against the Proficient Standard for each year level. Achievement by known subgroups (such as by gender and Indigenous or non-Indigenous status) was also reported.

The questionnaire results were reported both in terms of responses to individual items (percentages of students selecting different responses) and, where appropriate, scores on groups of items that formed common scales. Some relevant subgroup comparisons were made for questionnaire data, as were measures of the association between test scores and selected attitudes and behaviours measured by the questionnaire.

Structure of the technical report

This report describes the technical aspects of NAP – CC 2010 and summarises the main activities involved in the data collection, the data collection instruments and the analysis and reporting of the data.

Chapter 2 summarises the development of the assessment framework and describes the process of item development and construction of the instruments.

Chapter 3 reviews the sample design and describes the sampling process. This chapter also describes the weighting procedures that were implemented to derive population estimates.

Chapter 4 summarises the data collection procedures, including the quality control program.

Chapter 5 summarises the data management procedures, including the cleaning and coding of the data.

[2] Students could use as much time as they required for completing the questionnaire, but it was designed not to take more than 15 minutes for the majority of students.

Chapter 6 describes the scaling procedures, including equating, item calibration, drawing of plausible values and the standardisation of student scores.

Chapter 7 examines the process of standards-setting and creation of proficiency levels used to describe student achievement.

Chapter 8 discusses the reporting of student results, including the procedures used to estimate sampling and measurement variance, and the calculation of the equating errors used in tests of significance for differences across cycles.

CHAPTER 2:
ASSESSMENT FRAMEWORK AND INSTRUMENT DEVELOPMENT

Julian Fraillon

Developing the assessment framework

The first two cycles of NAP – CC were conducted in 2004 and 2007. The contents of the assessment instruments were defined according to the NAP – CC Assessment Domain.

In 2008, it was decided to revise the assessment domain. The NAP – CC Assessment Framework was developed in consultation with the 2010 NAP – CC Review Committee. The assessment framework extends the breadth of the assessment domain in light of two key curriculum reforms:

- the Statements of Learning for Civics and Citizenship (SOL – CC) published in 2006; and
- the implicit and explicit values, attitudes, dispositions and behaviours in the Melbourne Declaration on Educational Goals for Young Australians (referred to as the Melbourne Declaration in this report) published in 2008.

The assessment framework was developed during 2009. The development was guided by a working group of the review committee and monitored (through the provision of formal feedback at meetings) by the review committee during 2009.

Development began with a complete mapping of the contents of the assessment domain to the content organisers of the SOL – CC. An audit of the SOL – CC revealed a small set of contents (mainly to do with topics of globalisation and Australia's place in the Asian region) that were present in the SOL – CC but not represented in the assessment domain. These contents were added to the restructured assessment domain. The content aspect (Aspect 1) of the assessment framework was then described by grouping common contents (under the three content headings provided by the SOL – CC) and generating summary descriptions of these as concepts under each of the three content areas. Four concepts were developed under each of the three content areas. The content areas and concepts in the assessment framework are listed in the first part of Table 2.1.

The second aspect in the assessment framework was developed to describe the types of knowledge and understanding of the civics and citizenship content that could be tested in the NAP – CC test. The cognitive processes aspect of the assessment framework was defined via a mapping of the NAP – CC Assessment Domain (which included both contents and cognitive processes) and a review of the explicit and implicit demands in the SOL – CC and the Melbourne Declaration. The cognitive processes are similar to those established in the Assessment Framework (Schulz et. al., 2008) for the IEA International Civic and Citizenship Education Study (ICCS 2009).

The cognitive processes described in the assessment framework are listed in the second section of Table 2.1

Table 2.1: Four aspects of the assessment framework and their concepts and processes

Aspect 1: Content area	
1.1	**Government and law**
1.1.1	Democracy in principle
1.1.2	Democracy in practice
1.1.3	Rules and laws in principle
1.1.4	Rules and laws in practice
1.2	**Citizenship in a democracy**
1.2.1	Rights and responsibilities of citizens in a democracy
1.2.2	Civic participation in a democracy
1.2.3	Making decisions and problem solving in a democracy
1.2.4	Diversity and cohesion in a democracy
1.3	**Historical perspectives**
1.3.1	Governance in Australia before 1788
1.3.2	Governance in Australia after 1788
1.3.3	Identity and culture in Australia
1.3.4	Local, regional and global perspectives and influences on Australian democracy
Aspect 2: Cognitive processes	
2.1	**Knowing**
2.1.1	Define
2.1.2	Describe
2.1.3	Illustrate with examples
2.2	**Reasoning and analysing**
2.2.1	Interpret information
2.2.2	Relate
2.2.3	Justify
2.2.4	Integrate
2.2.5	Generalise
2.2.6	Evaluate
2.2.7	Solve problems
2.2.8	Hypothesise
2.2.9	Understand civic motivation
2.2.10	Understand civic continuity and change.
Aspect 3: Affective processes	
3.1	**Civic identity and connectedness**
3.1.1	Attitudes towards Australian identity
3.1.2	Attitudes to Australian diversity and multiculturalism
3.1.3	Attitudes towards Indigenous Australian cultures and traditions
3.2	**Civic efficacy**
3.2.1	Beliefs in the value of civic action
3.2.2	Confidence to actively engage
3.3	**Civic beliefs and attitudes**
3.3.1	Interest in civic issues
3.3.2	Beliefs in democratic values and value of rights
3.3.3	Beliefs in civic responsibility
3.3.4	Trust in civic institutions and processes

Aspect 4: Participatory processes	
4.1	**Actual behaviours**
4.1.1	Civic-related participation in the community
4.1.2	Civic-related participation at school
4.1.3	Participation in civic-related communication
4.2	**Behavioural intentions**
4.2.1	Expected participation in activities to promote important issues
4.2.2	Expected active civic engagement in the future
4.3	**Students' skills for participation**
	This process relates to students' capacity to work constructively and responsibly with others, to use positive communication skills, to undertake roles, to manage conflict, to solve problems and to make decisions.

The third and fourth aspects of the assessment framework refer to attitudes, beliefs, dispositions and behaviours related to civics and citizenship. They were developed with reference to the implicit and explicit intentions evident in the assessment domain, the SOL – CC and the Melbourne Declaration. The contents of Aspects 3 and 4 were to be assessed through the student questionnaire. At the time of their development it was understood that not all the described contents could be included in a single questionnaire. The expectation was that the main assessable elements for each aspect would be included in NAP – CC 2010 and that some changes to the balance of contents from Aspects 3 and 4 could be made in any subsequent NAP – CC assessments on the advice and recommendation of experts (i.e. the NAP – CC Review Committee).

The affective and behavioural processes, described in Aspects 3 and 4 of the assessment framework, are also listed in Table 2.1.

The assessment framework acknowledges that the measurement of students' skills for participation is outside the scope of the NAP – CC assessment. The review committee recommended that they nevertheless be included in the assessment framework, with an acknowledgement that they will not be directly assessed in NAP – CC in order to ensure that the profile of these skills in civics and citizenship education is retained.

Item development

The new cognitive items for the 2010 assessment were developed by a team of ACER's expert test developers. The test development team first sourced and developed relevant, engaging and focused civics and citizenship stimulus materials that addressed the assessment framework. Items were developed that addressed the contents of the assessment framework using the civics and citizenship content and contexts contained in the stimulus materials. The items were constructed in item units. A *unit* consists of one or more assessment items directly relating to a single theme or stimulus. In its simplest form a unit is a single self-contained item, in its most complex form a unit is a piece of stimulus material with a set of assessment items directly related to it.

Developed items were then subjected to a process called *panelling*. The panelling process was undertaken by a small group (between three and six) of expert test developers who jointly reviewed material that one or more of them had developed. During panelling, the group accepted, modified or rejected that material for further development.

A selection of items was also piloted to examine the viability of their use by administering the units to a small convenience sample of either Year 6 or Year 10 students in schools. Piloting took place before panelling to collect information about how students could use their own life-

experiences (within and out of school) to answer questions based largely on civic knowledge and about how students could express reasoning on civics and citizenship issues using short extended response formats.

Two ACER staff members also ran piloting test sessions with Indigenous students in selected schools in Western Australia and the Northern Territory. The students in these sessions completed a selection of items from the 2007 NAP – CC school release materials and discussed their experience of completing the questions with the ACER staff members. Information from these sessions was used to inform test developers about the perspectives that the Indigenous students were bringing to the NAP – CC assessment materials. Feedback from these sessions was presented to the review committee.

The coherence with and coverage of the assessment framework by the item set was closely monitored through an iterative item development process. Each cognitive item was referenced to a single concept in Aspect 1 of the assessment framework and to one of the two main organising processes (knowing or reasoning and analysing) in Aspect 2 of the framework.

Item response types included: compound dual choice (true/false), multiple choice, closed constructed and extended constructed item types. The number of score points allocated to items varied. Dual and multiple choice items had a maximum score of one point. Closed and extended constructed response items were each allocated a maximum of between one and three score points.

Consultation with outside experts and stakeholders occurred throughout the item development process, and before and after trialling, draft and revised versions of the items were shared with the review committee and the Performance Measurement and Reporting Taskforce (PMRT)[3].

Field trial

A field trial was conducted in March 2010. At Year 6, 50 schools participated with 1,094 students completing the assessments. At Year 10, 48 schools participated with 1,005 students completing the assessments. The sample of schools was a representative random sample, drawn from all sectors from the three states of Victoria, New South Wales and Queensland.

Field trial data were analysed in a systematic way to determine the degree to which the items measured civics and citizenship proficiency according to both the NAP – CC scale and the assessment framework. The review committee then reviewed the results from the field trial data analysis.

In total, 230 items were used in the field trial, 30 of which were secure trend items from previous assessment cycles used for the purpose of equating the field trial items to the NAP – CC scale. This equating was used to support item selection for the final cognitive instrument. The items were presented in a balanced cluster rotation in test booklets. Thirteen *clusters* of items were established at each year level for the field trial. Each test booklet comprised three clusters. Each cluster appeared in three test booklets – once in the first, second and third position. Table 2.2 shows the *booklet design* for the NAP – CC 2010 field trial and main assessment.

[3] Australian Curriculum, Assessment and Reporting Authority (ACARA) ACARA has assumed the advisory role previously undertaken by PMRT as of 2010.

Table 2.2: Booklet design for NAP – CC 2010 field trial and main assessment

Field Trial				Main Survey[1]			
Booklet	Position 1	Position 2	Position 3	Booklet	Position 1	Position 2	Position 3
1	T61	T62	T64	1	M61	M62	M64
2	T62	T63	T65	2	M62	M63	M65
3	T63	T64	T66	3	M63	M64	M66
4	T64	T65	T67	4	M64	M65	M67
5	T65	T66	T68	5	M65	M66	M68
6	T66	T67	T69	6	M66	M67	M69
7	T67	T68	T610	7	M67	M68	M61
8	T68	T69	T611	8	M68	M69	M62
9	T69	T610	T612	9	M69	M61	M63
10	T610	T611	T613				
11	T611	T612	T61				
12	T612	T613	T62				
13	T613	T61	T63				

[1] *Shaded clusters are intact clusters from NAP – CC 2007*

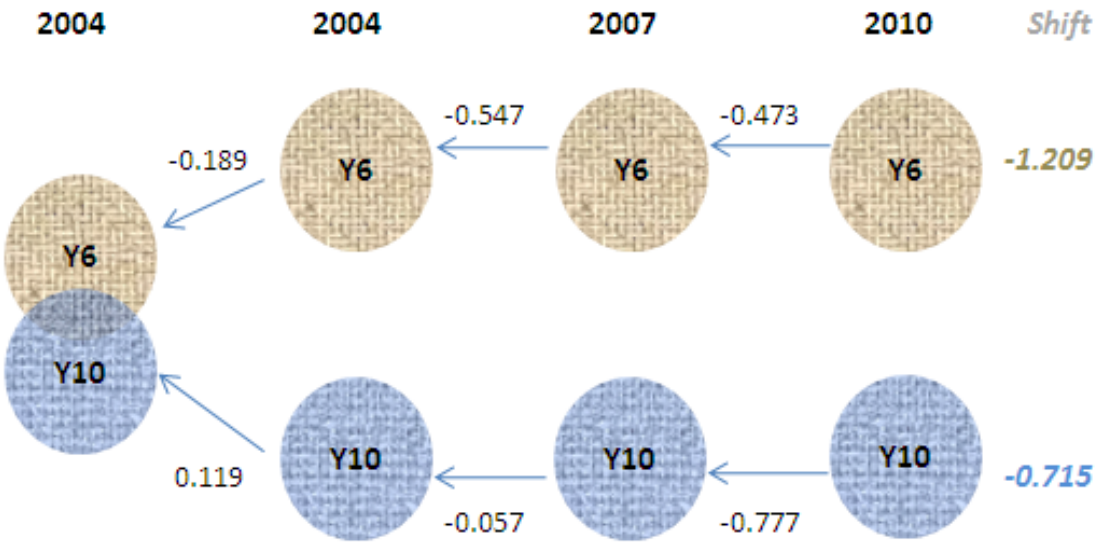
Main study cognitive instruments

The main assessment was conducted using nine booklets at both Year 6 and Year 10. Each booklet contained approximately 36 items at Year 6 and approximately 42 items at Year 10.

As well as balancing the order and combinations of clusters across booklets each individual cluster was matched for reading load (length and difficulty), item type (closed constructed, short extended and dual and multiple choice items), number of items, and use of graphic images. By matching each individual cluster for these characteristics it follows that each booklet can be considered as also matched and equivalent according to the same characteristics.

The 2010 cognitive instrument included a subset of secure (not released to the public) items from the 2007 assessment. These items enabled, through *common item equating*, the equating of the 2010 scale, via the 2007 scale, onto the historical scale from 2004 in order to examine student performance over time. Two intact trend clusters were used at each year level as well as a smaller number of *trend items* that were allocated across the remaining clusters. Year 6 and Year 10 were equated separately from 2010 to 2007. After applying these shifts, the same transformations were used as in 2007. The transformations included: 1) separate equating shifts for Year 6 and Year 10 from 2007 to 2004, 2) separate equating shifts from separate Year 6 and Year 10 scales to a joint scale (the official scale in 2004) and 3) transformation of the logit scale to a scale with a mean of 400 and a standard deviation of 100 for Year 6 students in 2004. The equating process, excluding the transformations to a mean of 400 and a standard deviation of 100, are illustrated in Figure 2.1. Further details on the equating methodology are provided in Chapter 6.

Figure 2.1: Equating method from 2010 to 2004



Secure items were available for use in the 2010 assessment. Of the final pool of 27 possible horizontal link (trend) items for Year 6, 24 were actually used for the common item equating between the 2007 and 2010 assessments. For Year 10, 32 out of 45 possible trend items were used for equating.

Score guide

Draft score guides for the items were developed in parallel with the item development. They were then further developed during the field trial and a subsequent review of the items, which included consultations with the experts and stakeholders on the review committee and discussions with Australian Curriculum, Assessment and Reporting Authority (ACARA).

The dual and multiple-choice items, and some of the closed constructed and short extended response items, have a score value of zero (incorrect) or one (correct).

Short extended response items can elicit responses with varying levels of complexity. The score guides for such items were developed to define and describe different levels of achievement that were meaningful. Empirical data from the field trial were used to confirm whether these semantic distinctions were indicative of actual differences in student achievement. In the cases where hierarchical differences described by the score guides were not evident in the field trial data these differences were removed from the score guide. Typically this would involve providing the same credit for responses that previously had been allocated different levels of credit (this is referred to as *collapsing categories).*

Each score point allocation in the score guide is accompanied by a text which describes and characterises the kind of response which would attract each score. These score points are then illustrated with actual student responses. The response characterising text, combined with the response illustrations for each score point for each item, constitute the score guide.

Figure 2.2 shows an item from the 2004 main study (that is also included as Figure 3.5 (Q4ii): Question 4: 'Citizenship Pledge' unit in National Assessment Program – Civics and Citizenship Years 6 and 10 Report 2004; MCEETYA, 2006) and the full score guide for this item.

Figure 2.2: Example item and score guide

CP0L4

Q One principle of democracy is that all people are entitled to hold their own opinions.

The Citizenship Pledge includes the line 'Whose democratic beliefs I share'.

Do you think it is right for the pledge to require people becoming Australian citizens to have democratic beliefs?

❑ Yes OR No ❑

Put a ✓ in one box and explain your answer.

_____

_____

NAP- CC Assessment Framework References

Content: 1.2.1

Cognitive process: 2.2

SCORING

Full Credit

RECOGNISES APPARENT CONTRADICTION

Code 3: Answers YES and identifies that the common good (or social stability) is more important than an individual's rights in this case.
- YES. You can still believe what you want, but you can't change the political system.
- If they do not believe, there will be more chaos due to belief conflicts.

Partial Credit

Code2: Answers YES OR NO and identifies that the pledge is symbolic rather than binding.
- YES: You say the pledge to commit to Australia, you don't have to believe all the words.
- NO: Even though it is only symbolic and you don't have to believe it, it is still stupid to make people say something that they don't believe.

FAILS TO RECOGNISE APPARENT CONTRADICTION

Code1: Answers YES and identifies that people must accept the Australian way of life if they are going to be citizens.
- YES: Because Australia is Democratic, so people must understand and agree with it.
- Yes they need to respect what we believe.

OR

Code 1: Answers NO: Suggests that people should not be compelled to share democratic beliefs.
- NO: In a democracy people should be allowed to think what they want.

No Credit
- YES: Who cares what they want?
- NO: Because they don't have to if they don't want to.

The score guide included the following information:

- the reference to the relevant content and cognitive process in the assessment framework;
- descriptions of the content and concepts that characterise responses scored at each level; and
- sample student responses that illustrate the properties of the responses at each level.

Student questionnaire

Previous NAP – CC assessments included fairly brief student questionnaires dealing primarily with student civics and citizenship experiences within and out of school. The development of the assessment framework with reference to explicit and implicit expectations of the SOL – CC as well as the Melbourne Declaration resulted in the inclusion of a significantly expanded questionnaire in NAP – CC 2010, which was endorsed by the review committee.

The student questionnaire items were developed to focus on Aspects 3 and 4 of the assessment framework. The items were reviewed by the review committee and refined on the basis of their feedback.

Students' attitudes towards civic and citizenship issues were assessed with questions covering five constructs:

- importance of conventional citizenship behaviour;
- importance of social movement related citizenship behaviour;
- trust in civic institutions and processes;
- attitudes towards Australian Indigenous culture; and
- attitudes towards Australian diversity (Year 10 students only).

Students' engagement in civic and citizenship activities was assessed with questions concerning the following areas:

- participation in civics and citizenship related activities at school;
- participation in civics and citizenship related activities in the community (Year 10 students only);
- media use and participation in discussion of political or social issues;
- interest in political or social issues;
- confidence to actively engage in civic action;
- valuing civic action;
- intentions to promote important issues in the future; and
- expectations of future civic engagement (Year 10 students only).

A copy of the student questionnaire can be found in Appendix A.

Student background information

Information about individual and family background characteristics was collected centrally through schools and education systems (see Chapter 4 for more information on the method of collection). The background variables were gender, age, Indigenous status, cultural background (country of birth and main language other than English spoken at home), socio-economic background (parental education and parental occupation) and geographic location. The structure of these variables had been agreed upon by the PMRT as part of NAP and follows the guidelines

given in the 2010 Data Standards Manual – Student Background Characteristics (MCEECDYA, 2009, referred to as 2010 Data Standards Manual in this report).

CHAPTER 3:
SAMPLING AND WEIGHTING

Eveline Gebhardt & Nicole Wernert

This chapter describes the NAP – CC 2010 sample design, the achieved sample, and the procedures used to calculate the sampling weights. The sampling and weighting methods were used to ensure that the data provided accurate and efficient estimates of the achievement outcomes for the Australian Year 6 and Year 10 student populations.

Sampling

The target populations for the study were Year 6 and Year 10 students enrolled in educational institutions across Australia.

A *two-stage stratified cluster sample design* was used in NAP – CC 2010, similar to that used in other Australian national sample assessments and in international assessments such as the Trends in International Mathematics and Science Study (TIMSS). The first stage consists of a sample of schools, stratified according to state, sector, geographic location, a school postcode based measure of socio-economic status and school size; the second stage consists of a sample of one classroom from the target year level in sampled schools. Samples were drawn separately for each year level.

The sampling frame

The national school sampling frame is a comprehensive list of all schools in Australia, which was developed by the Australian Council for Educational Research (ACER) and includes information from multiple sources, including the Australian Bureau of Statistics and the Commonwealth, state and territory education departments.

School exclusions

Only schools containing Year 6 or Year 10 students were eligible to be sampled. Some of these schools were excluded from the sampling frame. Schools excluded from the target population included: non-mainstream schools (such as schools for students with intellectual disabilities or hospital schools), schools listed as having fewer than five students in the target year levels and very remote schools (except in the Northern Territory). These exclusions account for 1.7 per cent of the Year 6 student population and 1.2 per cent of the Year 10 student population.

The decision to include very remote schools in the Northern Territory sample for 2010 corresponds to the procedure used in 2007. The decision to include remote schools in this jurisdiction was made on the basis that, in 2007, very remote schools constituted over 20 per cent of the Year 6 population and over 10 per cent of the Year 10 population in the Northern Territory (in contrast to less than 1% when considering the total population of Australia). The inclusion of very remote schools in the Northern Territory in the NAP – CC 2010 sample does not have any impact on the estimates for Australia or the other states.

The designed sample

For both the Year 6 and Year 10 samples, *sample sizes* were determined that would provide accurate estimates of achievement outcomes for all states and territories. The expected 95 per cent confidence intervals were estimated in advance to be within approximately ±0.15 to ±0.2 times the population standard deviation for estimated means for the larger states. This expected loss of precision was accepted given the benefits in terms of the reduction in the burden on individual schools and in the overall costs of the survey. Confidence intervals of this magnitude require an *effective sample size* (i.e., the sample size of a simple random sample that would produce the same precision as a complex sample design) of around 100-150 students in the larger states. Smaller sample sizes were deemed as sufficient for the smaller states and territories because of their relative small student populations. As the proportion of the total population surveyed becomes larger the precision of the sample increases for a given sample size, this is known as the *finite population correction factor*.

In a complex, multi-stage sample such as the one selected for this study, the students selected within classes tend to be more alike than students selected across classes (and schools). The effect of the complex sample design (for a given assessment) is known as the *design effect.* The design effect for the NAP – CC 2010 sample was estimated based on data from NAP – CC 2007.

The actual sample sizes required for each state and territory were estimated by multiplying the desired effective sample size by the estimated design effect (Kish, 1965, p. 162). The process of estimating the design effect for NAP – CC 2010 and the consequent calculation of the actual sample size required is described below.

Any within-school homogeneity reduces the effective sample size. This homogeneity can be measured with the *intra-class correlation*, ρ, which reflects the proportion of the total variance in a characteristic in the population that is accounted for by clusters (classes within schools). Knowing the size of ρ and the size of each cluster's sample size *b*, the design effect for an estimate of a mean or percentage for a given characteristic *y* can be approximated using

$$deff(y) = 1 + (b-1)\rho$$

Achievement data from NAP – CC 2007 were used to estimate the size of the intra-class correlation. The intra-class correlations for a design with one classroom per school were estimated at 0.36 and 0.37 for Year 6 and Year 10 respectively. The average *cluster sample size* (taking into account student non-response) was estimated as 20 from the 2007 survey, leading to design effects of approximately 7.8 for Year 6 and 8.0 for Year 10. Target sample sizes were then calculated by multiplying the desired effective sample size by the estimated design effect. Target sample sizes of around 900 students at both year levels were determined as sufficient for larger states. However, the target sample size in the larger states was increased at Year 10 (compared to that used in 2004 and 2007) due to some larger than desired confidence intervals that had been observed at this year level in the 2007 results.

Table 3.1 shows the population of schools and students and the designed sample.

Table 3.1: Year 6 and Year 10 target population and designed samples by state and territory

	Year 6				Year 10			
	Population		Planned Sample		Population		Planned Sample	
	Schools	*Students*	*Schools*	*Students*	*Schools*	*Students*	*Schools*	*Students*
NSW	2095	86255	45	900	778	85387	45	900
VIC	1707	65053	45	900	566	65448	45	900
QLD	1154	55412	45	900	441	57433	45	900
SA	562	18940	45	900	195	19577	45	900
WA	665	16360	45	900	240	28503	45	900
TAS	211	6647	45	900	87	6801	40	800
NT	109	2883	30	600	47	2481	30	600
ACT	97	4492	28	560	34	4773	25	500
Australia	6600	256042	328	6560	2388	270404	320	6400

First sampling stage

The school sample was selected from all non-excluded schools in Australia which had students in Year 6 or Year 10. Stratification by state, sector and small schools was explicit, which means that separate samples were drawn for each sector within states and territories. Stratification by geographic location, the Socio-Economic Indexes for Areas (SEIFA) (a measure of socio-economic status based on the geographic location of the school) and school size was implicit, which means that schools within each state were ordered by size (according to the number of students in the target year level) within sub-groups defined by a combination of geographic location and the SEIFA index. The selection of schools was carried out using a systematic *probability-proportional-to-size* (PPS) method.

The number of students at the target year (the *measure of size*, or MOS) was accumulated from school to school and the running total was listed next to each school. The total cumulative MOS was a measure of the size of the population of sampling elements. Dividing this figure by the number of schools to be sampled provided the *sampling interval*.

The first school was sampled by choosing a random number between one and the sampling interval. The school, whose cumulative MOS contained the random number was the first sampled school. By adding the sampling interval to the random number, a second school was identified. This process of consistently adding the sampling interval to the previous selection number resulted in a PPS sample of the required size.

On the basis of an analysis of small schools (schools with a MOS lower than the assumed cluster sample size of 20 students) undertaken prior to sampling, it was decided to increase the school sample size in some strata in order to ensure that the number of students sampled was close to expectations. As a result, the actual number of schools sampled (see Table 3.4 and Table 3.5 below) was slightly larger than the designed sample (see Table 3.1 above). The actual sample drawn is referred to as the *implemented sample*.

As each school was selected, the next school in the sampling frame was designated as a *replacement school* to be included in cases where the sampled school did not participate. The school previous to the sampled school was designated as the second replacement. It was used if neither the sampled nor the first replacement school participated. In some cases (such as secondary schools in the Northern Territory) there were not enough schools available for the

replacement samples to be drawn. Because of the use of stratification, the replacement schools were generally similar (with respect to geographic location, socio-economic location and size) to the school for which they were a replacement.

After the school sample had already been drawn, a number of sampled schools were identified as meeting the criteria for exclusion. When this occurred, the sampled school and its replacements were removed from the sample and removed from the calculation of participation rates. One school was removed from the Year 6 sample and two schools were removed from the Year 10 sample. These exclusions are included in the exclusion rates reported earlier.

Second sampling stage

The second stage of sampling consisted of the random selection of one class within sampled schools. In most cases, one intact class was sampled from each sampled school. Where only one class was available at the target year level, that class was automatically selected. Where more than one class existed, classes were sampled with equal probability of selection.

In some schools, smaller classes were combined to form so-called *pseudo-class* groups prior to sampling. For example, two multi-level classes with 13 and 15 Year 6 students respectively could be combined into a single pseudo-class of 28 students. This procedure helps to maximise the number of students selected per school (the sample design was based on 25 students per school before student non-response), and also to minimise the variation in sampling weights (see discussion below). Pseudo-classes were treated like other classes and had equal probabilities of selection during sampling.

Student exclusions

Within the sampled classrooms, individual students were eligible to be exempted from the assessment on the basis of the criteria listed below.

- *Functional disability*: Student has a moderate to severe permanent physical disability such that he/she cannot perform in the assessment situation.
- *Intellectual disability*: Student has a mental or emotional disability and is cognitively delayed such that he/she cannot perform in the assessment situation.
- *Limited assessment language proficiency*: The student is unable to read or speak the language of the assessment and would be unable to overcome the language barrier in the assessment situation. Typically, a student who has received less than one year of instruction in the language of the assessment would be excluded.

Table 3.2 and Table 3.3 detail the numbers and percentages of students excluded from the NAP – CC 2010 assessment, according to the reason given for their exclusion.

The number of student-level exclusions was 91 at Year 6 and 80 at Year 10. This brought the final *exclusion rate* (combining school and student exclusions) to 2.8 per cent at Year 6 and 2.3 per cent at Year 10.

Table 3.2: Year 6 breakdown of student exclusions according to reason by state and territory

	Functional Disability	Intellectual Disability	Limited English Proficiency	Total	%
NSW	3	3	0	6	0.5
VIC	0	6	0	6	0.6
QLD	6	4	3	13	1.2
SA	0	8	1	9	0.9
WA	0	6	1	7	0.6
TAS	1	12	11	24	2.3
NT	1	12	10	23	4.1
ACT	0	2	1	3	0.4
Australia	11	53	27	91	1.1

Table 3.3: Year 10 breakdown of student exclusions according to reason by state and territory

	Functional Disability	Intellectual Disability	Limited English Proficiency	Total	%
NSW	1	2	0	3	0.3
VIC	0	4	10	14	1.4
QLD	2	5	7	14	1.3
SA	0	4	22	26	2.4
WA	0	0	0	0	0.0
TAS	0	9	5	14	1.5
NT	0	0	3	3	0.9
ACT	3	2	1	6	0.8
Australia	6	26	48	80	1.1

Weighting

While the multi-stage stratified cluster design provides a very economical and effective data collection process in a school environment, oversampling of sub-populations and non-response cause differential probabilities of selection for the ultimate sampling elements, the students. Consequently, one student in the assessment does not necessarily represent the same number of students in the population as another, as would be the case with a simple random sampling approach. To account for differential probabilities of selection due to the design and to ensure unbiased population estimates, a *sampling weight* was computed for each participating student. It was an essential characteristic of the sample design to allow the provision of proper sampling weights, since these were necessary for the computation of accurate population estimates.

The overall sampling weight is the product of weights calculated at the three stages of sampling:

- the selection of the school at the first stage;
- the selection of the class or pseudo-class from the sampled schools at the second stage; and
- the selection of students within the sampled classes at the third stage.

First stage weight

The first stage weight is the inverse of the probability of selection of the school, adjusted to account for school non-response.

The probability of selection of the school is equal to its *MOS* divided by the sampling interval (*SINT*) or one, whichever is the lower. (A school with a *MOS* greater than the *SINT* is a *certain selection*, and therefore has a probability of selection of one. Some very large schools were selected with certainty into the sample.)

The *sampling interval* is calculated at the time of sampling, and for each explicit stratum it is equal to the cumulative *MOS* of all schools in the stratum, divided by the number of schools to be sampled from that stratum. The *MOS* for each school is the number of students recorded on the sampling frame at the relevant year level (Year 6 or Year 10).

This factor of the first stage weight, or the school base weight, was the inverse of this probability

$$BW_{sc} = \frac{SINT}{MOS}$$

Following data collection, counts of the following categories of schools were made for each explicit stratum:

- the number of schools that participated (n_p^{sc});
- the number of schools that were sampled but should have been excluded (n_x^{sc}); and
- the number of non-responding schools (n_n^{sc}).

Note that $n_p^{sc} + n_x^{sc} + n_n^{sc}$ equals the total number of sampled schools from the stratum.

Examples of the second class (n_x^{sc}) were:

- a sampled school that no longer existed; and
- a school that, following sampling, was discovered to have fitted one of the criteria for school level exclusion (e.g. very remote, very small), but which had not been removed from the frame prior to sampling.

In the case of a non-responding school (n_n^{sc}), neither the originally sampled school nor its replacements participated.

Within each explicit stratum, an adjustment was made to account for school non-response. This *non-response adjustment* (*NRA*) for a stratum was equal to

$$NRA_{strt} = \frac{\left(n_p^{sc} + n_n^{sc}\right)}{n_p^{sc}}$$

The first stage weight, or the final school weight, was the product of the inverse of the probability of selection of the school and the school non-response adjustment

$$FW_{sc} = (SINT/MOS) \times \frac{\left(n_p^{sc} + n_n^{sc}\right)}{n_p^{sc}}$$

Second stage weight

The second stage weight was the inverse of the probability of selection of the classes from the sampled school.

In some schools, smaller classes were combined to form a pseudo-class group prior to sampling. This was to maximise the potential yield, and also to reduce the variation in the weights allocated to students from different classes of the same school.

Classes or pseudo-classes were then sampled with equal probability of selection. In most cases, one intact class was sampled from each sampled school.

The second stage weight was calculated as: n_t^{cl}/n_s^{cl}, where n_t^{cl} is the total number of classes or pseudo-classes at the school, and n_s^{cl} is the number of sampled classes. For most schools, n_s^{cl} was equal to one.

$$FW_{cl} = \frac{n_t^{cl}}{n_s^{cl}}$$

Third stage weight

The first factor in the third stage weight was the inverse of the probability of selection of the student from the sampled class. As all students in the sampled class were automatically sampled, the student base weight was equal to one for all students.

Following data collection, counts of the following categories of students were made for each sampled class:

- the number of students from the sampled classroom that participated (n_p^{st});
- the number of students from the sampled classroom that were exclusions (n_x^{st}); and
- the number of non-responding students from the sampled classroom (n_n^{st}).

Note that $n_p^{st} + n_x^{st} + n_n^{st}$ equals the total number of students from the sampled classroom.

The student level non-response adjustment was calculated as

$$NRA_{st} = \frac{n_p^{st} + n_n^{st}}{n_p^{st}}$$

The final student weight was

$$FW_{st} = 1 \times \frac{n_p^{st} + n_n^{st}}{n_p^{st}}$$

Overall sampling weight and trimming

The full sampling weight (*FWGT*) was simply the product of the weights calculated at each of the three sampling stages

$$FWGT = FW_{\text{sc}} \times FW_{\text{cl}} \times FW_{\text{st}}$$

After computation of the overall sampling weights, the weights were checked for outliers, because outliers can have a large effect on the computation of the standard errors. A weight was regarded as an outlier if the value was more than four times the median weight within a year level, state or

territory and sector (a stratum). Only the weights of eight Year 10 students from one school in Victoria were outliers. These outliers were trimmed by replacing their value with four times the median weight of the stratum.

Participation rates

Separate participation rates were computed (1) with replacement schools included as participants and (2) with replacement schools regarded as non-respondents. In addition, each of these rates was computed using unweighted and weighted counts. In any of these methods, a school and a student response rate was computed and the overall response rate was the product of these two response rates. The differences in computing the four response rates are described below. These methods are consistent with the methodology used in TIMSS (Olson, Martin & Mullis, 2008).

Unweighted response rates including replacement schools

The unweighted school response rate, where replacement schools were counted as responding schools, was computed as follows

$$RR_1^{sc} = \frac{n_s^{sc} + n_{r1}^{sc} + n_{r2}^{sc}}{n_s^{sc} + n_{r1}^{sc} + n_{r2}^{sc} + n_{nr}^{sc}}$$

where n_s^{sc} is the number of responding schools from the original sample, $n_{r1}^{sc} + n_{r2}^{sc}$ is the total number of responding replacement schools, and n_{nr}^{sc} is the number of non-responding schools that could not be replaced.

The student response rate was computed over all responding schools. Of these schools, the number of responding students was divided by the total number of eligible, sampled students.

$$RR_1^{st} = \frac{n_r^{st}}{n_r^{st} + n_{nr}^{st}}$$

where n_r^{st} is the total number of responding students in all responding schools and n_{nr}^{st} is the total number of eligible, non-responding, sampled students in all responding schools.

The overall response rate is the product of the school and the student response rates.

$$RR_1 = RR_1^{sc} \times RR_1^{st}$$

Unweighted response rates excluding replacement schools

The difference of the second method with the first is that the replacement schools were counted as non-responding schools.

$$RR_2^{sc} = \frac{n_s^{sc}}{n_s^{sc} + n_{r1}^{sc} + n_{r2}^{sc} + n_{nr}^{sc}}$$

This difference had an indirect effect on the student response rate, because fewer schools were included as responding schools and student response rates were only computed for the responding schools.

$$RR_2^{st} = \frac{n_r^{st}}{n_r^{st} + n_{nr}^{st}}$$

The overall response rate was again the product of the two response rates.

$$RR_2 = RR_2^{sc} \times RR_2^{st}$$

Weighted response rates including replacement schools

For the weighted response rates, sums of weights were used instead of counts of schools and students. School and student base weights (BW) are the weight values before correcting for non-response, so they generate estimates of the population being represented by the responding schools and students. The final weights (FW) at the school and student levels are the base weights corrected for non-response. Since there was no class-level non-response, the class level response rates were equal to one and for simplicity excluded from the formulae below.

School response rates are computed as follows

$$RR_3^{sc} = \frac{\sum_i^{s+r1+r2}\left(BW_i \times \sum_j^{r_i}(FW_{ij})\right)}{\sum_i^{s+r1+r2}\left(FW_i \times \sum_j^{r_i}(FW_{ij})\right)}$$

where i indicates a school, $s + r1 + r1$ all responding schools, j a student and r_i the responding students in school *i.* First, the sum of the responding students' FW was computed within schools. Second, this sum was multiplied by the school's BW (numerator) or the school's FW (denominator). Third, these products were summed over the responding schools (including replacement schools). Finally, the ratio of these values was the response rate.

As in the previous methods, the numerator of the school response rate is the denominator of the student response rate

$$RR_3^{st} = \frac{\sum_i^{s+r1+r2}\left(BW_i \times \sum_j^{r_i}(BW_{ij})\right)}{\sum_i^{s+r1+r2}\left(BW_i \times \sum_j^{r_i}(FW_{ij})\right)}$$

The overall response rate is the product of the school and student response rates

$$RR_3 = RR_3^{sc} \times RR_3^{st}$$

Weighted response rates excluding replacement schools

Practically, replacement schools were excluded by setting their school BW to zero and applying the same computations as above. More formally, the parts of the response rates are computed as follows

$$RR_4^{sc} = \frac{\sum_i^{s}\left(BW_i \times \sum_j^{r_i}(FW_{ij})\right)}{\sum_i^{s+r1+r2}\left(FW_i \times \sum_j^{r_i}(FW_{ij})\right)}$$

$$RR_4^{st} = \frac{\sum_i^{s}\left(BW_i \times \sum_j^{r_i}(BW_{ij})\right)}{\sum_i^{s}\left(BW_i \times \sum_j^{r_i}(FW_{ij})\right)}$$

$$RR_4 = RR_4^{sc} \times RR_4^{st}$$

Reported response rates

The Australian school participation rate in both Year 6 and Year 10 was 98 per cent including replacement schools and 97 per cent excluding replacement schools. When including replacement

schools, the lowest unweighted school participation rates were recorded in the Northern Territory (93% in Year 6 and 82% in Year 10). Four states and territories had a school response rate of 100 per cent in Year 6 and five in Year 10. Table 3.4 and Table 3.5 detail Year 6 and Year 10 school exclusions, refusals and participation information, including the unweighted school participation rates nationally and by state or territory.

Of the sampled students in responding schools (including replacement schools), 93 per cent of Year 6 students and 87 per cent of Year 10 students participated in the assessment. Therefore, combining the school and student participation rates, the NAP – CC 2010 achieved an overall participation rate of 91 per cent at Year 6 and 85 per cent at Year 10. Table 3.6 and

Table 3.7 show student exclusions, information on absentees and participation, as well as the student and overall participation rates nationally and by state or territory in Year 6 and Year 10.

The values of the weighted participation rates are very similar to the unweighted participation rates and are therefore provided in Appendix B.

Table 3.4: Year 6 numbers and percentages of participating *schools* by state and territory

	Sample	Excluded Schools	Not in Sample	Eligible Schools	Participating Schools - Sampled Schools	Participating Schools - Replacement Schools	Non - Participating Schools (Refusals)	Total Number of Participating Schools	Unweighted School Participation Rate (%)[1]
NSW	46	0	0	46	44	1	1	45	98
VIC	47	0	0	47	46	1	0	47	100
QLD	46	0	1	45	44	0	1	44	98
SA	47	0	0	47	47	0	0	47	100
WA	48	0	0	48	48	0	0	48	100
TAS	49	0	0	49	47	0	2	47	96
NT	29	1	0	28	25	1	2	26	93
ACT	31	0	0	31	31	0	0	31	100
Australia	343	1	1	341	332	3	6	335	98

Table 3.5: Year 10 numbers and percentages of participating *schools* by state and territory

	Sample	Excluded Schools	Not in Sample	Eligible Schools	Participating Schools - Sampled Schools	Participating Schools - Replacement Schools	Non - Participating Schools (Refusals)	Total Number of Participating Schools	Unweighted School Participation Rate (%)[1]
NSW	45	0	0	45	45	0	0	45	100
VIC	45	0	0	45	42	2	1	44	98
QLD	46	0	0	46	46	0	0	46	100
SA	45	0	0	45	44	1	0	45	100
WA	45	0	0	45	45	0	0	45	100
TAS	41	0	0	41	39	0	2	39	95
NT	26	2	2	22	17	1	4	18	82
ACT	31	0	1	30	30	0	0	30	100
Australia	324	2	3	319	308	4	7	312	98

[1] *Percentage of eligible (non-excluded) schools in the final sample. Participating replacement schools are included.*

Table 3.6: Year 6 numbers and percentages of participating *students* by state and territory

	Number of sampled students in participating schools	Number of Exclusions	Number of Eligible students	Number of Absentees (including parental refusal[1])	Number of Participating students	Unweighted Student Participation Rate[2]	Unweighted Overall Participation Rate (%)[3]
NSW	1162	6	1156	78	1078	93%	91
VIC	1047	6	1041	89	952	91%	91
QLD	1080	13	1067	80	987	93%	90
SA	1033	9	1024	72	952	93%	93
WA	1266	7	1259	78	1181	94%	94
TAS	1049	24	1025	80	945	92%	88
NT	565	23	542	64	478	88%	82
ACT	722	3	719	46	673	94%	94
Australia	7924	91	7833	587	7246	93%	91

Table 3.7: Year 10 numbers and percentages of participating *students* by state and territory

	Number of sampled students in participating schools	Number of Exclusions	Number of Eligible students	Number of Absentees (including parental refusal[1])	Number of Participating students	Unweighted Student Participation Rate[2]	Unweighted Overall Participation Rate (%)[3]
NSW	1169	3	1166	132	1034	89%	89
VIC	1011	14	997	136	861	86%	84
QLD	1076	14	1062	131	931	88%	88
SA	1089	26	1063	165	898	84%	84
WA	1160	0	1160	133	1027	89%	89
TAS	919	14	905	131	774	86%	81
NT	322	3	319	58	261	82%	67
ACT	730	6	724	101	623	86%	86
Australia	7476	80	7396	987	6409	87%	85

[1] *Parental refusals make up 0.2% of absentees overall. State and territory rates range from 0%-0.8%.*
[2] *Percentage of participating eligible (non-excluded) students in the final sample.*
[3] *Product of the unweighted school participation rate and the unweighted student participation rates. Participating replacement schools are included.*

CHAPTER 4:
DATA COLLECTION PROCEDURES

Nicole Wernert

Well-organised and high quality data collection procedures are crucial to ensuring that the resulting data is also of high quality. This chapter details the data collection procedures used in NAP – CC 2010.

The data collection, from the first point of contacting schools after sampling through to the production of school reports, contained a number of steps that were undertaken by ACER and participating schools. These are listed in order in Table 4.1 and further described in this chapter.

Table 4.1: Procedures for data collection

	Contractor Activity	School Activity
1	Contact sampled schools.	
2		Nominate a school contact officer and complete the online *Class list form*.
3	Sample one class from the *Class list*.	
4	Notify schools of the selected class and provide them with the *School contact officer's manual* and the *Assessment administrator's manual*.	
5		Complete the *Student list template* for the sampled classes.
6		Complete the online *Assessment date form*.
7		Make arrangements for the assessment: - appoint an assessment administrator - organise an assessment room - notify students and parents
8	Send the assessment materials to schools.	
9	Send national quality monitors to 5% of schools to observe the conduct of the assessment.	Conduct the assessment according to the *Assessment administrator's manual*.
10		Record participation status on the *Student participation form*; complete the *Assessment administration form*.
11		Return the assessment materials to the contractor.
12	Scanning	
13	Marking	
14	Data cleaning	
15	Create and send school reports to the schools.	

Contact with schools

The field administration of NAP – CC 2010 required several stages of contact with the sampled schools to request or provide information.

In order to ensure the participation of sampled schools, *education authority liaison officers* were appointed for each jurisdiction. The liaison officers were expected to facilitate communication between ACER and the schools that were selected in the sample from their respective jurisdiction. The liaison officers helped to achieve a high participation rate for the assessment, which ensured valid and reliable data.

The steps involved in contacting schools are described in the following list.

- Initially, the principals of the sampled schools were contacted to inform them of their selection. If the sampled school was unable to take part (as confirmed by an education authority liaison officer), the replacement school had to be contacted.
- The initial approach to the principal of sampled schools included a request to name a *school contact officer*, who would coordinate the assessment in the school, and to list all of the Year 6 or Year 10 classes in the school along with the number of students in each class (using the *Class list form*).
- Following their nomination, school contact officers were sent the *School contact officer's manual* as well as a notification of the randomly selected class for that school. At this time they were asked to provide student background details for the students in the selected class via the *Student list form*, as well as the school's preferred dates for testing (on the *Assessment date form*). A copy of the *Assessment administrator's manual* was also provided.
- The assessment materials were couriered to schools at least a week before the scheduled assessment date. The school contact officer was responsible for their secure storage while they were in the school and was also responsible for making sure *all* materials (whether completed or not) were returned through the prepaid courier service provided.
- The final contact with schools was to send them the results for the participating students and to thank them for their participation.

At each of those stages requiring information to be sent *from* the schools, a definite timeframe was provided for the provision of this information. If the school did not respond in the designated timeframe, follow-up contact was made via fax, email and telephone.

The NAP – CC Online School Administration Website

In 2010, all information provided by schools was submitted to ACER via a secure website. The NAP – CC Online School Administration Website contained the following forms:

- the *School details form* (to collect the contact details for the school and the school contact officer);
- the *Class list form* (a list of all of the Year 6 or Year 10 classes in the school along with the number of students in each class);
- the *Student list form* (a list of all students in the selected class or pseudo-class, along with the standard background information required by MCEECDYA – see below); and
- the *Assessment date form* (the date that the school has scheduled to administer the assessment within the official assessment period).

The collection of student background information

In 2004, Australian Education Ministers agreed to implement standard definitions for student background characteristics (detailed in the 2010 Data Standards Manual (MCEECDYA, 2009)), to collect student background information from parents and to supply the resulting information to testing agents so that it can be linked to students' test results. The information collected included: sex, date of birth, country of birth, Indigenous status, parents' school education, parents' non-school education, parents' occupation group, and students' and parents' home language.

By 2010, all schools were expected to have collected this information from parents for all students and to be storing this data according to the standards outlined in the 2010 Data Standards Manual (MCEECDYA, 2009). To collect this data from schools, an EXCEL template was created, into which schools could paste the relevant student details for each student in the sampled class or pseudo-class. This template was then uploaded onto the NAP – CC Online School Administration Website.

Where possible, education departments undertook to supply this data directly to ACER, rather than expecting the school to provide it. In these cases, schools were simply required to verify the student details provided by the education department.

Information management

In order to track schools and students, different databases were constructed. The *sample database* identified the sampled schools and their matching replacement schools and also identified the participation status of each school. The *school database* contained a record for each participating school and contact information as well as details about the school contact officer and participating classes. The *student tracking database* contained student identification and participation information. The *final student database* contained student background information, responses to test items, achievement scale scores, responses to student questionnaire items, attitude scale scores, final student weights and replicate weights.

Further information about these databases and the information that they contained is provided in Chapter 5.

Within-school procedures

As the NAP – CC 2010 assessment took place within schools, during schools hours, the participation of school staff in the organisation and administration of the assessment was an essential part of the field administration. This section outlines the key roles within schools.

The school contact officer

Participating schools were asked to appoint a school contact officer to coordinate the assessment within the school. The school contact officer's responsibilities were to:

- liaise with ACER on any issues relating to the assessment;
- provide ACER with a list of Year 6 or Year 10 classes;
- complete names and student background information for students in the class or pseudo-class selected to participate;
- schedule the assessment and arrange a space for the session(s);
- notify teachers, students and parents about the assessment according to the school's policies;
- select assessment administrator(s);
- receive and securely store the assessment materials;

- assist the assessment administrator(s) as necessary;
- check the completed assessment materials and forms;
- arrange a follow-up session if needed; and
- return the assessment materials.

Each school contact officer was provided with a manual (the *School contact officer's manual*) that described in detail what was required and provided a checklist of tasks and blank versions of all of the required forms. Detailed instructions were also provided regarding the participation and exclusion of students with disabilities and students from non-English speaking backgrounds.

The assessment administrator

Each school was required to appoint an assessment administrator. In most cases this was the regular class teacher. This was done to minimise the disruption to the normal class environment.

The primary responsibility of the assessment administrator was to administer NAP – CC 2010 to the sampled class, according to the standardised administration procedures provided in the *Assessment administrator's manual*. The assessment administrator's responsibilities included:

- ensuring that each student received the correct assessment materials which had been specially prepared for them;
- recording student participation on the *Student participation form*;
- administering the test and the questionnaire in accordance with the instructions in the manual;
- ensuring the correct timing of the testing sessions, and recording the time when the various sessions start and end on the *Assessment administration form*; and
- ensuring that *all* testing materials, including all unused as well as completed assessment booklets, were returned following the assessment.

The teachers were able to review the *Assessment administrator's manual* before the assessment date and raise any questions they had about the procedures with ACER or the state and territory liaison officers responsible for the program. As a result, it was expected that a fully standardised administration of the assessments would be achieved.

The assessment administrator was expected to move around the room while the students were working to see that students were following directions and answering questions in the appropriate part of the assessment booklet. They were allowed to read questions to students but could not help the students with the interpretation of any of the questions or answer questions about the content of the assessment items.

Assessment administration

Schools were allowed to schedule the assessment on a day that suited them within the official assessment period. In 2010 the assessment period was between the 11th of October and the 22nd of October in Tasmania, the Northern Territory, Victoria and Queensland; and between the 18th of October and the 29th of October in New South Wales, the ACT, South Australia and Western Australia.

The timing of the assessment session was standardised. Year 6 students were expected to be given exactly 60 minutes to complete the assessment items while Year 10 students were given 75 minutes. The administration and timing of the student questionnaire and breaks were more flexible. To ensure that these rules were followed, the assessment administrator was required to

write the timing of the sessions on the *Assessment administration form.* Table 4.2 shows the suggested timing of the assessment session.

Table 4.2: The suggested timing of the assessment session.

	Minutes	
Session	**Year 6**	**Year 10**
Initial administration: reading the instructions, distributing the materials and completing the Student Participation Form	±5	±5
Part A: Practice Questions	±10	±10
Part A: Assessment Items	60	75
Break (students should not leave the assessment room)	5	5
Part B: Student Questionnaire	±15	±15
Final administration: collecting the materials, completing the Assessment Administration Form (Sections 1, 2 and 3) and ending the session.	±3-5	±3-5

As mentioned above, the assessment administrator was required to administer NAP – CC 2010 to the sampled class according to the standardised administration procedures provided in the *Assessment administrator's manual*, including a script which had to be followed[4].

Quality control

Quality control was important in NAP – CC 2010 in order to minimise systematic error and bias. Strict procedures were set for test development (see Chapter 2), sampling (see Chapter 3), test administration, scoring, data entry, cleaning and scaling (see Chapters 4, 5 and 6). In addition to the procedures mentioned in other chapters, certain checks and controls were instituted to ensure that the administration within schools was standardised. These procedures included:

- random sampling of classes undertaken by ACER rather than letting schools choose their own classes;
- providing detailed manuals;
- asking the assessment administrator to record student participation on the *Student participation form* (a check against the presence or absence of data);
- asking the assessment administrator to complete an *Assessment administration form* which recorded the timing of the assessment and any problems or disturbances which occurred; and
- asking the school contact officer to verify the information on the *Student participation form* and the *Assessment administration form.*

A *quality-monitoring program* was also implemented to gauge the extent to which class teachers followed the administration procedures. This involved trained monitors observing the administration of the assessments in a random sample of 5 per cent of schools across the nation. Thirty-two of the 647 schools were observed. The quality monitors were required to fill in a report for each school they visited (see Appendix C). Their reports testify to a high degree of conformity by schools with the administration procedures (see Appendix D for detailed results).

[4] A modified example of the assessment guidelines is provided in the documents NAP – CC 2010 Year 6 School Assessment and NAP – CC 2010 Year 10 School Assessment, available from http://www.nap.edu.au/.

Online scoring procedures and scorer training

In 2010, completed booklets were scanned and the responses to multiple- or dual-choice questions were captured and translated into an electronic dataset. The student responses to the questionnaire were also scanned and the data translated into the electronic dataset.

Student responses to the constructed response questions were cut and presented to the team of scorers using a computer-based scoring system. Approximately half of the items were constructed response and, of these, most required a single answer or phrase.

Score guides were prepared by ACER and refined during the field trial process. Three teams of experienced scorers were employed and trained by ACER. Most of the scorers had been involved in scoring for the 2007 assessment. Two teams of six and one team of five scorers were established and each team was led by a *lead scorer*.

Scoring and scorer training was conducted by cluster. Each item appeared in one cluster at its target year level. Each common item (vertical link) between Year 6 and Year 10 therefore appeared in one cluster at each year level. The clusters were scored in a sequence that maximised the overlap of vertical link items between consecutive clusters. This was done to support consistency of marking of the vertical link items and to minimise the training demands on scorers.

The training involved scorers being introduced to each constructed response item with its score guide. The scoring characteristics for the item were discussed and scorers were then provided between five and 10 example student responses to score (the number of example responses used was higher for items that were known—on the basis of experience from the field trial or previous NAP – CC cycles—to be more difficult to score). The scorers would then discuss their scores in a group discussion with a view to consolidating a consensus understanding of the item, the score guide and the characteristics of the student responses in each score category.

Throughout the scoring process, scorers continued to compare their application of the scores to individual student responses and sought consistency in their scoring through consultation and by moderation within each scoring team. Since the number of scorers was small enough to fit in a single room, the scorers were able to seek immediate clarification with the ACER scoring trainer and, where appropriate, the lead scorers.

The lead scorer in each team undertook check scoring and was thus constantly monitoring the reliability of the individual scorers and the team as a whole. Over 7 per cent (7.3%) of all items were double-scored by lead scorers. Less than 6 per cent of the double-scored scripts required a score change. Throughout the scoring process, advice to individual scorers and the team about clarification and alteration of scoring approaches was provided by ACER staff and by the scoring leaders. This advisory process was exercised with a view to improve reliability where it was required.

School reports

Following data entry and cleaning (see Chapter 5), reports of student performance were sent to each participating school. As each Year 6 and Year 10 student completed one of the nine different year level test booklets, nine reports were prepared for each school (one for each booklet).

The reports provided information about each student's achievement on the particular test booklet that they completed. These reports contained the following information:

- a description of the properties of a high quality response to each item;
- the maximum possible score for each item;

- the percentage of students who achieved the maximum score on each item (weighted to be proportionally representative of the Australian population); and
- the achievement of each student on each item in the test booklet.

An example of a Year 6 and a Year 10 report (for one test booklet only), and the accompanying explanatory material can be found in Appendix E.

CHAPTER 5:
DATA MANAGEMENT

Nicole Wernert

As mentioned in Chapter 4, several databases were created to track schools and students in the NAP – CC 2010: the *sample database*; the *school database*; the *student tracking database* and the *final student database*. The integrity and accuracy of the information contained in these databases was central to maintaining the quality of the resulting data. This chapter provides details of the information contained in these databases, how the information was derived and what steps were taken to ensure the quality of the data.

A system of IDs was used to track information in these databases. The *sampling frame ID* was a unique ID for each school that linked schools in the sample back to the sampling frame. The *school ID* comprised information about cohort, state and sector as well as a unique school number. The *student ID* included the school ID and also a student number (unique within each school).

Sample database

The sample database was produced by the sampling team, and comprised a list of all schools sampled and their replacements. Information provided about each school included contact details, school level variables of interest (*sector*, *geolocation*, and *SEIFA*), sampling information such as *MOS*, and their participation status.

The participation status of each school was updated as needed by the survey administration team. After the assessment, this information was essential to compute the school sample weights needed to provide accurate population estimates (see Chapter 3).

School database

The school database was derived from the sample database, containing information about the participating schools only. It contained relevant contact details, taken from the sample database, as well as information obtained from the school via the NAP – CC Online School Administration Website. This information included data about the school contact officer, the class or pseudo-class sampled to participate, and the assessment date.

Student tracking database

The student tracking database was derived from the student list (submitted by schools via the NAP – CC Online School Administration Website) and, following the return of completed assessment materials, from information on the *Student participation form*.

Prior to testing, the student tracking database contained a list of all students in the selected class or pseudo-class for each of the participating schools, along with the background data provided via the student list. Student IDs were assigned and booklets allocated to student IDs before this information (student ID and booklet number) was used to populate the *Student participation forms*.

After the assessment had concluded, the information from the completed *Student participation form* was manually entered into the *Student tracking form*. A single variable was added that recorded the participation status of each student (participated, absent, excluded or no longer in the sampled class). In addition, any new students that had joined the class and had completed a spare booklet were added. Where new students had been added, their background details were also added, taken from the *Record of student background details form*, which was designed to capture these data for unlisted students. If this information had not been provided by the school, and could not be obtained through contact with the school, it was recorded as missing, except in the case of gender, where gender was entered if it could be imputed from the school type (i.e. where single-sex) or deduced from the name of the student.

Final student database

The data that comprise the final student database came from three sources: the cognitive assessment data and student questionnaire data captured from the test booklets, the student background data and student participation data obtained from the student tracking database, and school level variables transferred from the sample database. In addition to these variables, student weights and replicate weights were computed and added to the database.

Scanning and data-entry procedures

The cognitive assessment data were derived from the scanned responses to multiple- and dual-choice questions and the codes awarded to the constructed response questions by scorers through the computerised scoring system. The data from the student questionnaire were also captured via scanning.

Data captured via scanning were submitted to a two-stage verification process. Firstly, any data not recognised by the system were submitted to manual screening by operators. Secondly, a percentage of all scanned data was submitted for verification by a senior operator.

In order to reduce the need for extensive data cleaning, the scanning software was constructed with forced validation of codes according to the codebook. That is, only codes applicable to the item would be allowed to be entered into the database.

Any booklets that could not be scanned (due to damage or late arrival) but still had legible student responses were manually entered into the data capturing system and were subject to the same verification procedures as the scanned data.

Data cleaning

While the achievement and questionnaire data did not require data cleaning due to the verification procedures undertaken, once combined with the student background and participation data further data cleaning was undertaken to resolve any inconsistencies, such as the ones listed below.

- Achievement and questionnaire data were available for a student but the student was absent according to the student participation information.
- A student completed a booklet according to the student participation data but no achievement or questionnaire data were available in the test.
- Achievement and questionnaire data were available for students with Student IDs that should not be in the database.
- In some cases the year of assessment was entered as 2011. This was corrected into 2010.

- After computing the age of students in years, all ages outside a range of six years for each year level (from nine to 13 years in Year 6 and from 13 to 18 years in Year 10) were set to missing.

Student background data

The student list contained the student background variables that were required. Table 5.1 presents the definitions of the variables used for collection.

Table 5.1: Variable definitions for student background data

Question	Name	Format
Gender	GENDER	Boy (1) Girl (2)
Date of Birth	DOB	Free response, dd/mm/yyyy
Indigenous status	ATSI	No (i.e. not Indigenous) (1) Aboriginal (2) Torres Strait Islander (3) Both Aboriginal AND Torres Strait Islander (4) Missing (9)
Student Country of Birth	SCOB	The 4-digit code from the Standard Australian Classification of Countries (SACC) Coding Index 2nd Edition.
Language other than English at home (3 questions = Student/ Mother/ Father)	LBOTES LBOTEP1 LBOTEP2	The 4-digit code from the Australian Standard Classification of Languages (ASCl) Coding Index 2nd Edition.
Parent's occupation group (2 questions = Mother/ Father)	OCCP1 OCCP2	Senior Managers and Professionals (1) Other Managers and Associate Professionals (2) Tradespeople & skilled office, sales and service staff (3) Unskilled labourers, office, sales and service staff (4) Not in paid work (8) Missing (9)
Parent's highest level of schooling (2 questions = Mother/ Father)	SEP1 SEP1	Year 12 or equivalent (1) Year 11 or equivalent (2) Year 10 or equivalent (3) Year 9 or equivalent or below (4) Missing (0)
Parent's highest level of non-school education (2 questions = Mother/ Father)	NSEP1 NSEP2	Bachelor degree or above (8) Advanced diploma/diploma (7) Certificate I to IV (inc. trade cert.) (6) No non-school qualification (5) Missing (0)

Variables were also derived for the purposes of reporting achievement outcomes. In most cases, these variables are variables required by MCEECDYA. The transformations undertaken followed the guidelines in the 2010 Data Standards Manual (MCEECDYA, 2009). Table 5.2 shows the derived variables and the transformation rules used to recode them.

Table 5.2: Transformation rules used to derive student background variables for reporting

Variable	Name	Transformation rule
Geolocation - School	GEOLOC	Derived from MCEETYA Geographical Location Classification
Gender	GENDER	Classified by response; missing data treated as missing unless the student was present at a single-sex school or unless deduced from student name.
Age – Years	AGE	Derived from the difference between the Date of Assessment and the Date of Birth, transformed to whole years.
Indigenous Status	INDIG	Coded as Indigenous if response was 'yes' to Aboriginal, OR Torres Strait Islander OR Both.
Country of Birth	COB	The reporting variable (COB) was coded as 'Australia' (1) or 'Not Australia' (2) according to the SACC codes.
LBOTE	LBOTE	Each of the three LOTE questions (Student, Mother or Father) was recoded to 'LOTE' (1) or 'Not LOTE' (2) according to ASCL codes. The reporting variable (LBOTE) was coded as 'LBOTE' (1) if response was 'LOTE' for any of Student, Mother or Father. If all three responses were 'Not LOTE' then the LBOTE variable was designated as 'Not LBOTE' (2). If any of the data were missing then the data from the other questions were used. If all of the data were missing then LBOTE was coded as missing.
Parental Education	PARED	Parental Education equalled the highest education level (of either parent). Where one parent had missing data the highest education level of the other parent was used. Only if parental education data for both parents were missing, would Parental Education be coded as 'Missing'.
Parental Occupation	POCC	Parental Occupation equalled the highest occupation group (of either parent). Where one parent had missing data or was classified as 'Not in paid work', the occupation group of the other parent was used. Where one parent had missing data and the other was classified as 'Not in paid work', Parental Occupation equalled 'Not in paid work'. Only if parental occupation data for both parents were missing, would Parental Occupation be coded as 'Missing'.

Cognitive achievement data

The cognitive achievement test was designed to assess the content and concepts described in Aspects 1 and 2 of the assessment framework. Responses to test items were scanned and data were cleaned. Following data cleaning, the cognitive items were used to construct the NAP – CC proficiency scale. Chapter 6 details the scaling procedures used. The final student database contained original responses to the cognitive items and the scaled student proficiency scores. In total, 105 items were used for scaling Year 6 students and 113 items were used for scaling Year 10 students.

Four codes were applied for missing responses to cognitive items. Code **8** was used if a response was *invalid* (e.g. two responses to a multiple choice item), code **9** was used for *embedded missing* responses, code **r** was used for *not reached* items (consecutive missing responses at the end of a booklet with exception of the first one which was coded as embedded missing) and code **n** for *not administered* (when the item was not in a booklet).

Student questionnaire data

The student questionnaire was included to assess the affective and behavioural processes described in Aspects 3 and 4 of the assessment framework. The questionnaire included items measuring constructs within two broad areas of interest: students' *attitudes* towards civics and citizenship issues, and students' *engagement* in civics and citizenship activities. The content of the constructs are described in Table 5.3 and the questionnaire is provided in Appendix A.

Student responses to the questionnaire items were, when appropriate, scaled to derive attitude scales. The methodology for scaling questionnaire items is consistent with the one used for cognitive test items and is described in Chapter 6.

Missing responses to the questions were coded in the database as **8** for *invalid* responses, **9** for *missing* responses and **n** for *not administered*. Missing scale scores were coded as **9999** for students that responded to less than two items in a scale and **9997** for scales that were not administered for a student.

Student weights

In addition to students' responses, scaled scores and background data, student sampling weights were added to the database. Computation of student weights is described in Chapter 3. In order to compute unbiased standard errors, 165 replication weights were constructed and added to the database. Chapter 8 describes how these replication weights were computed and how they were, and should be used for computing standard errors.

Table 5.3: Definition of the constructs and data collected via the student questionnaire

Description	Name	Question	Variables	Year	Number of items	Response 1	Response 2	Response 3	Response 4
Students' attitudes towards civic and citizenship issues									
The importance of conventional citizenship	IMPCCON	9	P333a-e	Both	5	Very important	Quite important	Not very important	Not important at all
The importance of social movement related citizenship	IMPCSOC	9	P333f-i	Both	4	Very important	Quite important	Not very important	Not important at all
Trust in civic institutions and processes	CIVTRUST	10	P334	Both	6(5)[1]	Completely	Quite a lot	A little	Not at all
Attitudes towards Indigenous culture	ATINCULT	11	P313	Both	5	Strongly Agree	Agree	Disagree	Strongly disagree
Attitudes towards Australian diversity	ATAUSDIF	12	P312	Year 10	7	Strongly Agree	Agree	Disagree	Strongly disagree
Students' engagement in civics and citizenship activities									
Civics and citizenship-related activities at school	No IRT	1	P412	Both	9	Yes	No	This is not available at my school	
Civics and citizenship-related activities in the community	No IRT	2	P411	Year 10	5	Yes, I have done this within the last year	Yes, I have done this but more than a year ago	No, I have never done this	
Media use and participation in discussion of political or social issues	No IRT	3	P413	Both	7	Never or hardly ever	At least once a month	At least once a week	More than three times a week
Civic Interest	CIVINT	6	P331	Both	6	Very interested	Quite interested	Not very interested	Not interested at all
Confidence to engage in civic action	CIVCONF	7	P322	Both	6	Very well	Fairly well	Not very well	Not at all
Beliefs in value of civic action	VALCIV	8	P321	Both	4/5[2]	Strongly Agree	Agree	Disagree	Strongly disagree
Intentions to promote important issues in the future	PROMIS	4	P421	Both	8	I would certainly do this	I would probably do this	I would probably not do this	I would certainly not do this
Student intentions to engage in civic action	CIVACT	5	P422	Year 10	5	I will certainly do this	I will probably do this	I will probably not do this	I will certainly not do this

[1] *Question f was excluded from the scale*
[2] *Question e was only used for Year 10*

CHAPTER 6:
SCALING PROCEDURES

Eveline Gebhardt & Wolfram Schulz

Both cognitive and questionnaire items were scaled using *item response theory* (IRT) scaling methodology. The cognitive items formed one NAP – CC proficiency scale, while a number of different scales were constructed from the questionnaire items.

The scaling model

Test items were scaled using IRT scaling methodology. Use of the *one-parameter model* (Rasch, 1960) means that in case of dichotomous items, the probability of selecting a correct response (value of one) instead of an incorrect response (value of zero) is modelled as

$$P_i(\theta) = \frac{\exp(\theta_n - \delta_i)}{1 + \exp(\theta_n - \delta_i)}$$

where $P_i(\theta)$ is the probability of person n to score 1 on item i, θ_n is the estimated ability of person n and δ_i is the estimated location of item i on this dimension. For each item, item responses are modelled as a function of the latent trait θ_n.

In the case of items with more than two (k) categories (as for example with Likert-type items) the above model can be generalised to the *Rasch partial credit model* (Masters & Wright, 1997), which takes the form of

$$P_{x_i}(\theta) = \frac{\exp \sum_{k=0}^{x} (\theta_n - \delta_i + \tau_{ij})}{\sum_{h=0}^{m_i} \exp \sum_{k=0}^{k} (\theta_n - \delta_i + \tau_{ij})} \qquad x_i = 0,1,\ldots,m_i$$

where $P_{xi}(\theta)$ denotes the probability of person n to score x on item i, θ_n denotes the person's ability, the item parameter δ_i gives the location of the item on the latent continuum and τ_{ij} denotes an additional step parameter.

The ACER ConQuest Version 2.0 software (Wu, Adams, Wilson, & Haldane, 2007) was used for the estimation of model parameters.

Scaling cognitive items

This section outlines the procedures for analysing and scaling the cognitive test items. They are somewhat different from scaling the questionnaire items, which will be discussed in the subsequent section.

Assessment of item fit

The model fit for cognitive test items was assessed using a range of item statistics. The *weighted mean-square statistic* (infit), which is a residual based fit statistic, was used as a global indicator of item fit. Weighted infit statistics were reviewed both for item and step parameters. The ACER ConQuest Version 2.0 software was used for the analysis of item fit. In addition to this, the software provided item characteristic curves (ICCs). ICCs provide a graphical representation of item fit across the range of student abilities for each item (including dichotomous and partial credit items). The functioning of the partial credit score guides was further analysed by reviewing the proportion of responses in each response category and the correct ordering of mean abilities of students across response categories. The following five items were removed from the scale due to poor fit statistics: AF31 and AF32 for Year 6, CO31, CS21 and WP11 for Year 10 (the last two items were also deleted in 2007).

There were no strict criteria for removing items from the test. Items were flagged for discussion based on a significant higher infit mean square combined with low discrimination (item-rest correlation of about 0.2 or lower). The item development and data analysis team considered the ICC and the content of the item before a decision was made about removal of the item for scaling.

Differential item functioning by gender

The quality of the items was also explored by assessing differential item functioning (DIF) by gender. Differential item functioning occurs when groups of students with the same ability have different probabilities of responding correctly to an item. For example, if boys have a higher probability than girls with the same ability on an item, the item shows gender DIF in favour of boys. This constitutes a violation of the model, which assumes that the probability is only a function of ability and not of any group membership. DIF results in the advantaging of one group over another group. The item in this example advantages boys. Two item units (SE for Years 6 and 10 and QT for Year 10), each consisting of four items, were removed from the scale because they favoured one gender group.

Item calibration

Item parameters were calibrated using the full sample. The student weights were rescaled, to ensure that each state or territory was equally represented in the sample. Items were calibrated separately for Year 6 and Year 10.

In 2010 for the first time, a so-called *booklet effect* was detected. Since the assignment of booklets to students is random, the average ability is expected to be equal across. However, the average ability varied significantly across booklets. This indicated that item difficulties varied across booklet and constituted a violation of the scaling model which assumes that the probability of correct item responses depends only on the students' ability (and not on the booklet they have completed). To take the booklet effect into account, booklet was added to the scaling model as a so-called *facet*. Including booklet as a facet leads to the estimation of an additional parameter reflecting the differences in overall average difficulty among booklets.

Although the average ability for each booklet changes, the overall mean ability is not affected, because the booklet parameters sum up to zero. In addition, the item parameters hardly change by adding booklet parameters. Therefore, including booklets as a facet does not have a systematic effect on trends.

Table 6.1 shows that the range in booklet means is larger in 2010 than in 2007, especially for Year 10 students. The table also shows that the facet model accounts for these differences between booklets and decreases the range in booklet means.

Table 6.1: Booklet means in 2007 and 2010 from different scaling models

	Booklet	2007 No facet	2010 No facet	2010 Facet
Year 6	1	383	406	400
	2	384	394	401
	3	386	396	396
	4	383	396	399
	5	388	394	401
	6	392	394	400
	7	378	406	397
	8		394	395
	9		411	399
	Range	14	17	7
Year 10	1	497	510	506
	2	494	495	506
	3	493	518	507
	4	488	507	506
	5	495	505	502
	6	499	501	504
	7	492	510	508
	8		515	510
	9		507	506
	Range	11	23	8

Missing student responses that were likely to be due to problems with test length (not reached items)[5] were omitted from the calibration of item parameters but were treated as incorrect for the scaling of student responses. All embedded missing responses were included as incorrect responses for the calibration of items.

Appendix F shows the item difficulties on the historical scale with a response probability of 0.62 in logits and on the reporting scale. It also shows their respective per cent correct for each year sample (equally weighted states and territories). In addition, column three indicates if an item was used as a horizontal link item.

Plausible values

Plausible values methodology was used to generate estimates of students' civics and citizenship knowledge. Using item parameters anchored at their estimated values from the calibration process, plausible values are random draws from the marginal posterior of the latent distribution (Mislevy, 1991; Mislevy & Sheehan, 1987; von Davier, Gonzalez, & Mislevy, 2009). Here, not reached items were included as incorrect responses, just like the embedded missing responses. Estimations are based on the conditional item response model and the population model, which includes the regression on background and questionnaire variables used for *conditioning* (see a detailed description in Adams, 2002). The ACER ConQuest Version 2.0 software was used for drawing plausible values.

[5] *Not reached* items were defined as all consecutive missing values at the end of the test except the first missing value of the missing series, which was coded as *embedded missing,* like other items that were presented to the student but not responded to.

Twenty-one variables were used as direct regressors in the conditioning model for drawing plausible values. The variables included school mean performance adjusted for the student's own performance[6] and dummy variables for the school level variables sector, geographic location of the school, and SEIFA levels. All other student background variables and responses to questions in the student questionnaire were recoded into dummy variables and transformed into components by a principle component analysis (PCA). Two-hundred-and-forty-nine variables were included in the PCA for Year 6 and 322 for Year 10. The principle components were estimated for each state or territory separately. Subsequently, the components that explained 99 per cent of the variance in all the original dummy variables were included as regressors in the conditioning model. Details of the coding of regressors are listed in Appendix G.

Horizontal equating

Both Year 6 and Year 10 items consisted of new and old items. The old items were developed and used in previous cycles and could be used as *link items*. To justify their use as link items, relative difficulties were compared between 2007 and 2010. Twenty-four out of 27 old items were used as link items for Year 6. Thirty-two out of 45 old items were used as link items for Year 10. During the selection process, the average discrimination of the sets of link items was compared across year levels and assessments to ensure that the psychometric properties of link items were stable across the assessment cycles. In addition, the average gender DIF was kept as similar and as close to zero as possible between the two assessments (-0.012 in 2007 and -0.005 in 2010 for Year 6 and -0.035 in 2007 and -0.023 in 2010 for Year 10).

Figure 6.1 and Figure 6.2 show the scatter plots of the item difficulties for the selected link items. In each plot, each dot represents a link item. The average difficulty of each set of link items was set to zero. The dotted line represents the identity line, which is the expected location on both scales. The solid lines form the 95 per cent confidence interval around the expected values. The standard errors were estimated on a self-weighted calibration sample with 300 students per jurisdiction.

Item-rest correlation is an index of *item discrimination* which is computed as the correlation between the scored item and the raw score of all other items in a booklet. It indicates how well an item discriminates between high and low performing students. The 2007 and 2010 values of these discrimination indices are presented in Figure 6.3 and Figure 6.4. The average item-rest correlation of the 24 link items for Year 6 was 0.39 in 2007 and also in 2010. For Year 10, the average item-rest correlation was 0.41 in 2007 and 0.42 in 2010.

After the selection of link items, *common item equating* was used to shift the 2010 scale onto the historical scale for each year level separately. The value of the shift is the difference in average difficulty of the link items between 2007 and 2010 (-0.473 and -0.777 for Year 6 and Year 10, respectively). After applying these shifts, the same transformation was applied as in 2007 (see Wernert, Gebhardt & Schulz, 2009) for the Year 6 students

$$\theta_n^* = \left\{\left(\theta_n - 0.473 - 0.547 - 0.189 - \overline{\theta}_{04}\right)/\sigma_{04}\right\}\times 100 + 400$$

and for the Year 10 students

$$\theta_n^* = \left\{\left(\theta_n - 0.777 - 0.057 + 0.119 - \overline{\theta}_{04}\right)/\sigma_{04}\right\}\times 100 + 400$$

[6] So called *weighted likelihood estimates* (WLE) were used as ability estimates in this case (Warm, 1989).

Figure 6.1: Relative item difficulties in logits of horizontal link items for Year 6 between 2007 and 2010

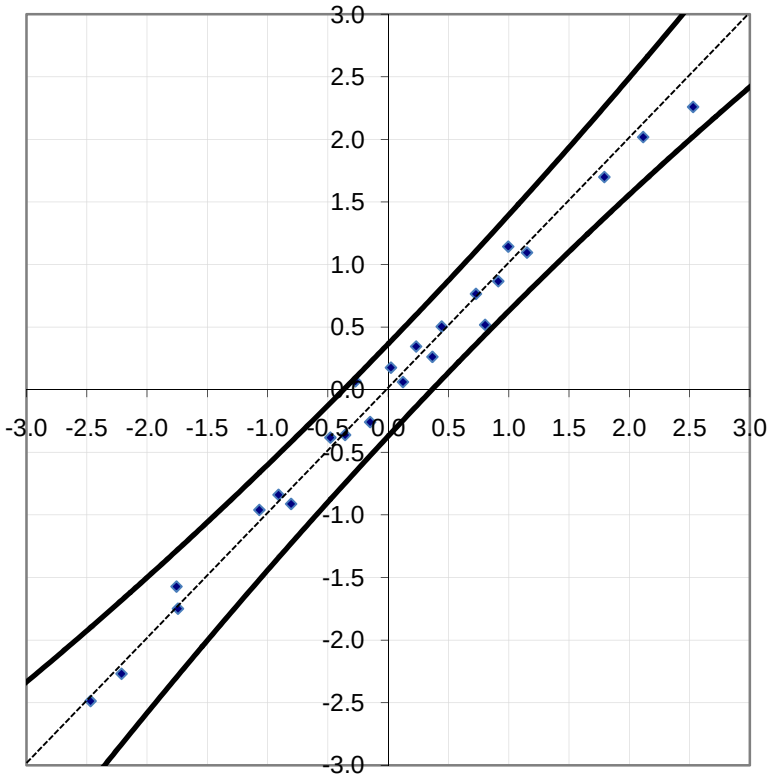


Figure 6.2: Relative item difficulties in logits of horizontal link items for Year 10 between 2007 and 2010

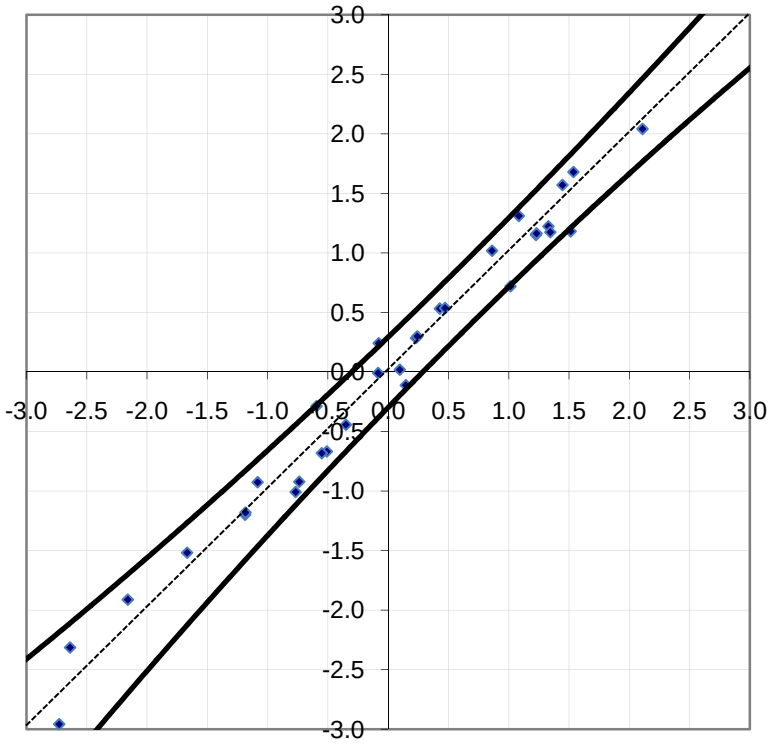


Figure 6.3: Discrimination of Year 6 link items in 2007 and 2010

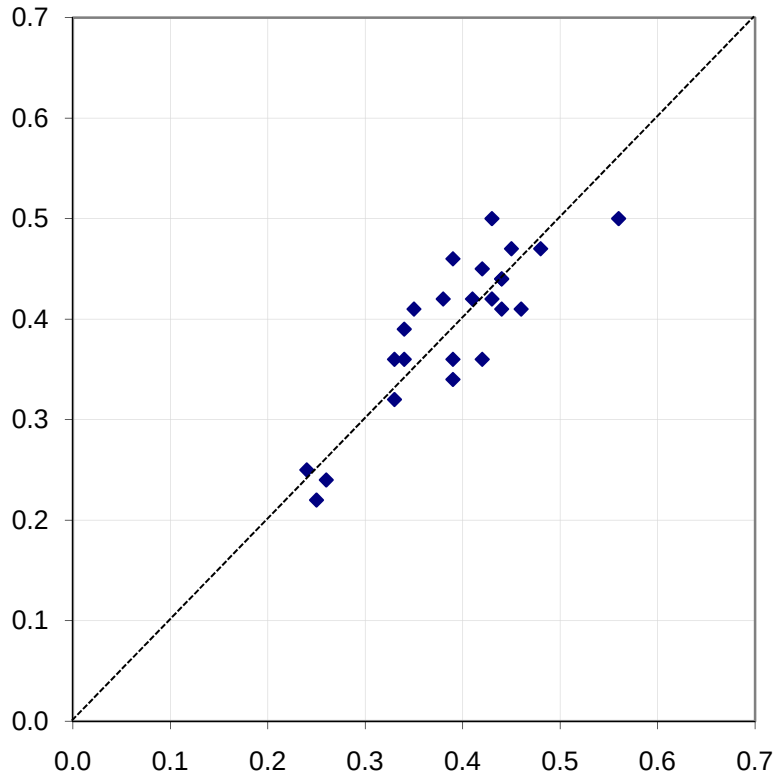
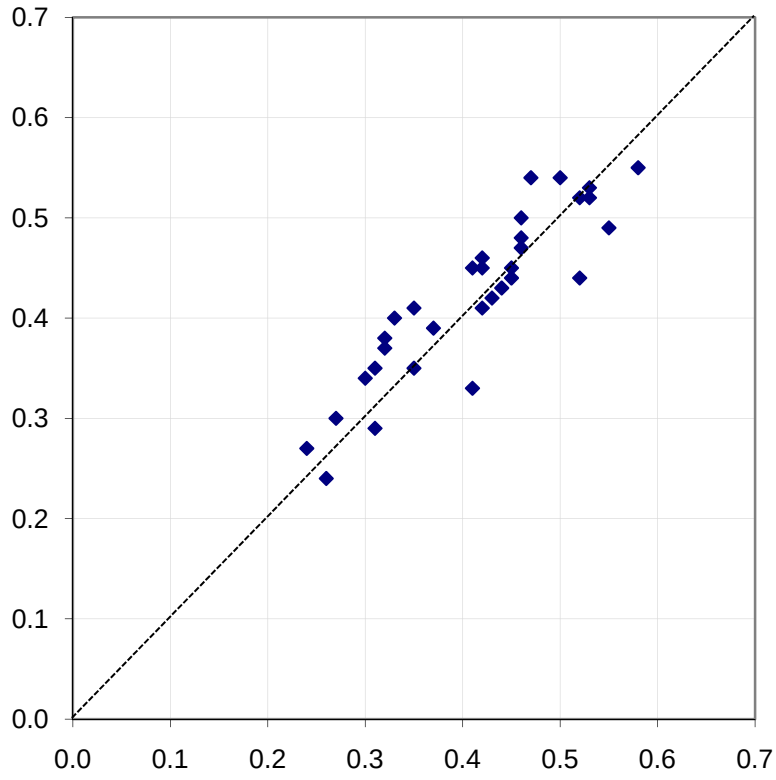


Figure 6.4: Discrimination of Year 10 link items in 2007 and 2010



where θ_n^* is the transformed knowledge estimate for student *n*, θ_n is the original knowledge estimate for student *n* in logits, $\bar{\theta}_{04}$ is the mean ability in logits of the Year 6 students in 2004 (-0.6993) and σ_{04} is the standard deviation in logits of the Year 6 students in 2004 (0.7702).

Uncertainty in the link

The shift that equates the 2010 data with the 2007 data depends upon the change in difficulty of each of the individual link items. As a consequence, the sample of link items that have been chosen will influence the estimated shift. This means that the resulting shift could be slightly different if an alternative set of link items had been chosen. The consequence is an uncertainty in the shift due to the sampling of the link items, just as there is an uncertainty in values such as state or territory means due to the use of a sample of students.

The uncertainty that results from the selection of a subset of link items is referred to as *linking error* (also called *equating error*) and this error should be taken into account when making comparisons between the results from different data collections across time. Just as with the error that is introduced through the process of sampling students, the exact magnitude of this linking error cannot be determined. We can, however, estimate the likely range of magnitudes for this error and take this error into account when interpreting results. As with sampling errors, the likely range of magnitude for the combined errors is represented as a standard error of each reported statistic.

The estimation of the linking error for trend comparisons between the 2010 and the 2007 assessments was carried out following a method proposed by Monseur and Berezner (2007, see also OECD, 2009a). This method takes both the clustering of items in units and the maximum score of partial credit items into account and is described below.

Suppose one has a total of *L* score points in the link items in *K* units. Use *i* to index items in a unit and *j* to index units so that $\hat{\delta}_{ij}^{y}$ is the estimated difficulty of item *i* in unit *j* for year *y*, and let

$$c_{ij} = \hat{\delta}_{ij}^{2007} - \hat{\delta}_{ij}^{2004}$$

The size (total number of score points) of unit *j* is m_j so that

$$\sum_{j=1}^{K} m_j = L$$ and

$$\bar{m} = \frac{1}{K}\sum_{j=1}^{K} m_j$$

Further let

$$c_{\bullet j} = \frac{1}{m_j}\sum_{i=1}^{m_j} c_{ij}$$ and

$$\bar{c} = \frac{1}{N}\sum_{i=1}^{K}\sum_{j=1}^{m_j} c_{ij}$$

Then the link error, taking into account the clustering, is as follows

$$error_{2007,2010} = \sqrt{\frac{\sum_{j=1}^{K} m_j^2 (c_{\bullet j} - \bar{c})^2}{K(K-1)\bar{m}^2}} = \frac{\sum_{j=1}^{K} m_j^2 (c_{\bullet j} - \bar{c})^2}{L^2} \frac{K}{K-1}$$

Apart from taking the number of link items into account, this method also accounts for partial credit items with a maximum score of more than one and the dependency between items within a unit. The respective equating errors between 2007 and 2010 were 5.280 for Year 6 and 4.305 for Year 10.

Scaling questionnaire items

The questionnaire included items measuring constructs within two broad areas of interest: students' *attitudes* towards civics and citizenship issues (five scales) and students' *engagement* in civics and citizenship activities (five scales). The content of the constructs was described in Chapter 5. This section describes the scaling procedures and the psychometric properties of the scales.

Before estimating student scale scores for the questionnaire indices, confirmatory factor analyses were undertaken to evaluate the dimensionality of each set of items. Four questions of the attitudes towards Australian diversity (P312b, c, f and g) had to be reverse coded to make their direction consistent with the other questions of this construct. Factorial analyses largely confirmed the expected dimensional structure of item sets and the resulting scales had satisfactory reliabilities. One item, originally expected to measure *trust in civic institutions and processes* (trust in the media), had relatively low correlations with the other items in this item set and was therefore excluded from scaling. Table 6.2 shows scale descriptions, scale names and number of items for each derived scale. In addition, the table includes scale reliabilities (Cronbach's alpha) as well as the correlations with student test scores for each year level.

Table 6.2: Description of questionnaire scales

Description	Name	Number of items	Cronbach's alpha		Correlation with achievement	
			Year 6	*Year 10*	*Year 6*	*Year 10*
Students' attitudes towards civic and citizenship issues						
The importance of conventional citizenship	IMPCCON	5	0.73	0.76	0.06	0.12
The importance of social movement related citizenship	IMPCSOC	4	0.76	0.81	0.16	0.16
Trust in civic institutions and processes	CIVTRUST	5[1]	0.78	0.81	0.08	0.11
Attitudes towards Australian Indigenous culture	ATINCULT	5	0.84	0.89	0.29	0.23
Attitudes towards Australian diversity	ATAUSDIF	7		0.82		0.32
Students' engagement in civic and citizenship activities						
Civic Interest	CIVINT	6	0.79	0.83	0.19	0.34
Confidence to engage in civic action	CIVCONF	6	0.82	0.85	0.36	0.42
Valuing civic action	VALCIV	4/5[2]	0.66	0.77	0.27	0.21
Intentions to promote important issues in the future	PROMIS	8	0.78	0.85	0.22	0.33
Student Intentions to engage in civic action	CIVACT	5		0.74		0.13

[1] *One question (f) was excluded from the scale*
[2] *Four questions for Year 6, five for Year 10*

Student and item parameters were estimated using the ACER ConQuest Version 2.0 software. If necessary, items were reverse coded so that a high score on that item reflects a positive attitude. Items were scaled using the Rasch partial credit model (Masters & Wright, 1997). Items were calibrated for Year 6 and Year 10 separately on a self-weighted calibration sample with 300 students per state or territory for each year level. Subsequently, students' scale scores were estimated for each individual student with item difficulties anchored at their previously estimated values. Weighted likelihood estimation was used to obtain the individual student scores (Warm, 1989).

When calibrating the item parameters, for each scale the average item difficulty was fixed to zero. Therefore, under the assumption of equal measurement properties at both year levels, there was no need for a vertical equating of questionnaire scales.

However, one scale, *valuing civic action* (VALCIV), consisted of four items in Year 6 and five items in Year 10. Hence, the average of the four link items in Year 10 (-0.031 logits) was subtracted from the Year 10 student scores to equate the Year 10 scale to the Year 6 scale.

In addition, after comparing the relative difficulty of each item between year levels (differential item functioning between year levels), it was decided that three items showed an unacceptable degree of DIF (more than half a logit difference between the two item parameters) and that consequently they should not be used as link items. These items were item *c* from *confidence to engage in civic action* (CIVCONF), item *c* from *trust in civic institutions and processes* (CIVTRUST) and item *g* from *intentions to promote important issues in the future* (PROMIS).

For these three scales, the average difficulty of the remaining items of the scale was subtracted from the student scores in order to set Year 6 and Year 10 scale scores on the same scale.

The estimated transformation parameters that were used for the scaling of questionnaire items are presented in Table 6.3. After vertically equating the scales, the scores were standardised by setting the mean of the Year 10 scores to 50 and the standard deviation to 10. The transformation was as follows

$$\theta_n^* = \left\{\left(\theta_n + Shift - \overline{\theta}_{Y10}\right) / \sigma_{Y10}\right\} \times 10 + 50$$

where θ_n^* is the transformed attitude estimate for student *n*, θ_n is the original attitude estimate for student *n* in logits, *Shift* is the equating shift for Year 6 or Year 10 student scores where applicable, $\overline{\theta}_{Y10}$ is the mean estimate in logits of the Year 10 students and σ_{Y10} is the standard deviation in logits of the Year 10 students.

Table 6.3: Transformation parameters for questionnaire scales

SCALE	Shift Year 6	Shift Year 10	Mean Year 10	SD Year 10
ATAUSDIF			0.620	1.443
ATINCULT			2.415	2.495
CIVACT			-0.979	1.563
CIVCONF	-0.140	0.022	0.101	1.742
CIVINT			0.280	1.694
CIVTRUST	0.000	-0.134	-0.070	1.915
COMPART			-0.885	1.112
COMSCHL			-0.416	1.405
IMPCCON			0.554	1.631
IMPCSOC			1.027	2.148
PROMIS	0.046	-0.027	-0.148	1.464
VALCIV		0.031	1.377	1.630

CHAPTER 7:
PROFICIENCY LEVELS AND THE PROFICIENT STANDARDS

Julian Fraillon

Proficiency levels

One of the key objectives of NAP – CC is to monitor trends in civics and citizenship performance over time. The NAP – CC scale forms the basis for the empirical comparison of student performance. In addition to the metric established for the scale, a set of proficiency levels with substantive descriptions was established in 2004. These described levels are syntheses of the item contents within each level. In 2004 descriptions for Level 1 to Level 5 were established based on the item contents. In 2007 an additional description of Below Level 1 was derived. Comparison of student achievement against the proficiency levels provides an empirically and substantively convenient way of describing profiles of student achievement.

Students whose results are located within a particular level of proficiency are typically able to demonstrate the understandings and skills associated with that level, and also typically possess the understandings and skills defined as applying at lower proficiency levels.

Creating the proficiency levels

The proficiency levels were established in 2004 and were based on an approach developed for the OECD's Project for International Student Assessment (PISA). For PISA, a method was developed that ensured that the notion of *being at a level* could be interpreted consistently and in line with the fact that the achievement scale is a continuum. This method ensured that there was some common understanding about what *being at a level* meant and that the meaning of *being at a level* was consistent across levels. Similar to the approach taken in the PISA study (OECD, 2005, p.255) this method takes the following three variables into account:

- the expected success of a student at a particular level on a test containing items at that level;
- the width of the levels in that scale; and
- the probability that a student in the middle of a level would correctly answer an item of average difficulty for that level.

To achieve this for NAP – CC, the following two parameters for defining proficiency levels were adopted by the PMRT:

- setting the response probability for the analysis of data at $p = 0.62$; and
- setting the width of the proficiency levels at 1.00 logit.

With these parameters established, the following statements can be made about the achievement of students relative to the proficiency levels.

- A student whose result places him/her at the lowest possible point of the proficiency level is likely to get approximately 50 per cent correct on a test made up of items spread uniformly across the level, from the easiest to the most difficult.
- A student whose result places him/her at the lowest possible point of the proficiency level is likely to get 62 per cent correct on a test made up of items similar to the easiest items in the level.
- A student at the top of the proficiency level is likely to get 82 per cent correct on a test made up of items similar to the easiest items in the level.

The final step is to establish the position of the proficiency levels on the scale. This was done together with a standards setting exercise in which a *Proficient Standard* was established for each year level. The Year 6 Proficient Standard was established as the cut-point between Level 1 and Level 2 on the NAP – CC scale and the Year 10 Proficient Standard was established as the cut-point between Level 2 and Level 3.

Clearly, other solutions with different parameters defining the proficiency levels and alternative inferences about the likely per cent correct on tests could also have been chosen. The approach used in PISA, and adopted for NAP – CC, attempted to balance the notions of mastery and 'pass' in a way that is likely to be understood by the community.

Proficiency level cut-points

Six proficiency levels were established for reporting student performances from the assessment. Table 7.1 identifies these levels by cut-point (in logits and scale score) and shows the percentage of Year 6 and Year 10 students in each level in NAP – CC 2010.

Table 7.1: Proficiency level cut-points and percentage of Year 6 and Year 10 students in each level in 2010

	Cut-points		Percentage	
Proficiency Level	Logits	Scale Scores	Year 6	Year 10
Level 5	2.34	795	0	1
Level 4	1.34	665	1	12
Level 3	0.34	535	13	36
Level 2	-0.66	405	38	32
Level 1	-1.66	275	35	14
Below Level 1			13	5

Describing proficiency levels

To describe the proficiency levels, a combination of experts' knowledge of the skills required to answer each civics and citizenship item and information from the analysis of students' responses was utilised.

Appendix H provides the descriptions of the knowledge and skills required of students at each proficiency level. The descriptions reflect the skills assessed by the full range of civics and citizenship items covering Aspects 1 and 2 of the assessment framework.

Setting the standards

The process for setting standards in areas such as primary science, information and communications technologies, civics and citizenship and secondary (15-year-old) reading, mathematics and science was endorsed by the PMRT at its 6 March 2003 meeting and is described in the paper, Setting National Standards (PMRT, 2003).

This process, referred to as the *empirical judgemental technique*, requires stakeholders to examine the test items and the results from the national assessments and agree on a proficient standard for the two year levels.

The standards for NAP – CC were set in March 2005, following the 2004 assessment. A description of this process is given in the NAP – CC 2004 Technical Report (Wernert, Gebhardt, Murphy and Schulz, 2006).

The cut-point of the Year 6 Proficient Standard was located at -0.66 logits on the 2004 scale. This defined the lower edge of Proficiency Level 2 in Table 7.1. The Year 10 Proficient Standard is located at the lower edge of Proficiency Level 3.

The Proficient Standards for Year 6 and Year 10 civics and citizenship achievement were endorsed by the Key Performance Measures subgroup of the PMRT in 2005.

CHAPTER 8:
REPORTING OF RESULTS

Eveline Gebhardt & Wolfram Schulz

Student samples were obtained through two-stage cluster sampling procedures: in the first stage schools were sampled from a sampling frame with a probability proportional to their size; in the second stage intact classes were randomly sampled within schools (see Chapter 3 on sampling and weighting). Cluster sampling techniques permit an efficient and economic data collection. However, these samples are not *simple random samples* and using the usual formulae to obtain standard errors of population estimates would not be appropriate.

This chapter describes the method that was used to compute standard errors. Subsequently it describes the types of statistical analyses and significance tests that were carried for reporting of results in the NAP – CC Years 6 and 10 Report 2010.

Computation of sampling and measurement variance

Unbiased standard errors include both *sampling variance* and *measurement variance*. Replication techniques provide tools to estimate the correct sampling variance on population estimates (Wolter, 1985; Gonzalez and Foy, 2000) when subjects were not selected through simple random sampling. For NAP – CC the *jackknife repeated replication technique* (JRR) is used to compute the sampling variance for population means, differences, percentages and correlation coefficients. The other component of the standard error of achievement test scores, the measurement variance, can be computed using the variance between the five plausible values. In addition, for comparing achievement test scores with those from previous cycles, equating error is added as a third component of the standard error.

Replicate weights

Generally, the JRR method for stratified samples requires the pairing of *primary sampling units* (PSUs)—here: schools—into pseudo-strata. Assignment of schools to these so-called *sampling zones* needs to be consistent with the sampling frame from which they were sampled. Sampling zones were constructed within explicit strata and schools were sorted in the same way as in the sampling frame so that adjacent schools were as similar to each other as possible. Subsequently pairs of adjacent schools were combined into sampling zones. In the case of an odd number of schools within an explicit stratum or the sampling frame, the remaining school was randomly divided into two halves and each half assigned to the two other schools in the final sampling zone to form pseudo-schools. One-hundred-and-sixty-five sampling zones were used for the Year 6 and 154 for the Year 10 data in 2010.

For each of the sampling zones a so-called *replicate weight* variable was computed so that one random school of the paired schools had a contribution of zero (*jackknife indicator* is zero) and the other a double contribution (jackknife indicator equals two) whereas all other schools remained the same (jackknife indicator equals one). One replicate weight for each sampling zone replicate weights is computed by simply multiplying student weights with the jackknife indicators.

For each year level sample 165 replicate weights were created. In Year 10, which had only 154 sampling zones, the last 11 replicate weights were equal to the final sampling weight. This was done to have a consistent number of replicate weight variables in the final database.

Standard errors

In order to compute the sampling variance for a statistic *t*, *t* is estimated once for the original sample *S* and then for each of the jackknife replicates J_h. The JRR variance is computed using the formula

$$Var_{jrr}(t) = \sum_{h=1}^{H} \left[t(J_h) - t(S) \right]^2$$

where *H* is the number of sampling zones, *t(S)* the statistic t estimated for the population using the final sampling weights, and $t(J_h)$ the same statistic estimated using the weights for the h^{th} jackknife replicate. For all statistics that are based on variables other then student test scores (plausible values) the standard error of *t* is equal to

$$\sigma(t) = \sqrt{Var_{jrr}(t)}$$

The computation of JRR variance can be obtained for any statistic. Standard statistical software does not generally include any procedures for replication techniques. Specialist software, the SPSS® Replicates Add-in[7], was used to run tailored SPSS® macros which are described in the PISA Data Analysis Manual SPSS®, Second Edition (OECD, 2009b) to estimate JRR variance for means and percentages.

Population statistics on civics and citizenship achievement scores were always estimated using all five plausible values. If θ is any computed statistic and θ_i is the statistic of interest computed on one plausible value, then

$$\theta = \frac{1}{M} \sum_{i=1}^{M} \theta_i$$

with *M* being the number of plausible values.

The sampling variance *U* is calculated as the average of the sampling variance for each plausible value U_i

$$U = \frac{1}{M} \sum_{i=1}^{M} U_i$$

Using five plausible values for data analysis also allows the estimation of the amount of error associated with the measurement of civics and citizenship ability due to the lack of precision of the test. The measurement variance or imputation variance B_M was computed as

$$B_M = \frac{1}{M-1} \sum_{i=1}^{M} \left(\theta_i - \theta \right)^2$$

[7] The SPSS® add-in is available from the public website https://mypisa.acer.edu.au

The sampling variance and measurement variance were combined in the following way to compute the standard error

$$SE = \sqrt{U + \left(1 + \frac{1}{M}\right) B_m}$$

with U being the sampling variance.

The 95 per cent *confidence interval*, as presented in the NAP – CC Years 6 and 10 Report 2010, is 1.96 times the standard error. The actual confidence interval of a statistic is from the value of the statistic *minus* 1.96 times the standard error to the value of the statistic *plus* 1.96 times the standard error.

Reporting of mean differences

The NAP – CC Years 6 and 10 Report 2010 included comparisons of achievement test results across states and territories, that is, means of scales and percentages were compared in graphs and tables. Each population estimate was accompanied by its 95 per cent confidence interval. In addition, tests of significance for the difference between estimates were provided, in order to describe the probability that differences were just a result of sampling and measurement error.

The following types of significance tests for achievement mean differences in population estimates were reported:

- between states and territories;
- between student background subgroups; and
- between assessment cycles 2007 and 2010.

Mean differences between states and territories and year levels

Pair wise comparison charts allow the comparison of population estimates between one state or territory and another or between Year 6 and Year 10. Differences in means were considered significant when the test statistic t was outside the critical values ±1.96 (α = 0.05). The t value is calculated by dividing the difference in means by its standard error that is given by the formula

$$SE_{dif\_ij} = \sqrt{SE_i^2 + SE_j^2}$$

where SE_{dif_ij} is the standard error of the difference and SE_i and SE_j are the standard errors of the compared means i and j. The standard error of a difference can only be computed in this way if the comparison is between two *independent samples* like states and territories or year levels. Samples are independent if they were drawn separately.

Mean differences between dependent subgroups

The formula for calculating the standard error provided above is only suitable when the subsamples being compared are independent (see OECD 2009b for more detailed information). In case of dependent subgroups, the covariance between the two standard errors needs to be taken into account and JRR should be used to estimate the sampling error for mean differences. As subgroups other than state or territory and year level are dependent subsamples (for example gender, language background and country of birth subgroups), the difference between statistics for subgroups of interest and the standard error of the difference were derived using the SPSS® Replicates Add-in. Differences between subgroups were considered significant when the test

statistic t was outside the critical values ±1.96 (α = 0.05). The value t was calculated by dividing the mean difference by its standard error.

Mean differences between assessment cycles 2007 and 2010

The NAP – CC Years 6 and 10 Report 2010 also included comparisons of achievement results across cycles. As the process of equating the tests across the cycles introduces some additional error into the calculation of any test statistic, an equating error term was added to the formula for the standard error of the difference (between cycle means, for example). The computation of the equating errors is described in Chapter 6.

The value of the equating error between 2007 and 2010 is 5.280 units on the NAP – CC scale for Year 6 and 4.305 for Year 10 (see also Chapter 6). When testing the difference of a statistic between the two assessments, the standard error of the difference is computed as follows

$$SE\left(\mu_{10}-\mu_{07}\right)=\sqrt{SE_{10}^{2}+SE_{07}^{2}+EqErr^{2}}$$

where μ can be any statistic in units on the NAP – CC scale (mean, percentile, gender difference, but *not* percentages) and *SE* is the respective standard error of this statistic.

To report the significance of differences between percentages at or above Proficient Standards, the equating error for each year level could not directly be applied. Therefore, the following replication method was applied to estimate the equating error for percentages at Proficient Standards.

For each year level cut-point that defines the corresponding Proficient Standard (405 for Year 6 and 535 for Year 10), a number of n replicate cut-points were generated by adding a random error component with a mean of 0 and a standard deviation equal to the estimated equating error (5.280 for Year 6 and 4.305 for Year 10). Percentages of students at or above each replicate cut-point (ρ_n) were computed and an equating error for each year level was estimated as

$$EquErr(\rho)=\sqrt{\frac{\left(\rho_n-\rho_o\right)^2}{n}}$$

where ρ_o is the percentage of students at or above the (reported) Proficient Standard. The standard errors of the differences between percentages at or above Proficient Standards were calculated as

$$SE\left(\rho_{10}-\rho_{07}\right)=\sqrt{SE\left(\rho_{10}\right)^{2}+SE\left(\rho_{07}\right)^{2}+EqErr\left(\rho\right)^{2}}$$

where ρ_{10} is the percentages at or above the Proficient Standard in 2010 and ρ_{07} in 2007.

For NAP – CC 2010, 5000 replicate cut-points were created. Equating errors were estimated for each sample or subsample of interest. The values of these equating errors are in Table 8.1.

Other statistical analyses

While most tables in the NAP – CC Years 6 and 10 Report 2010 present means and mean differences, some also included a number of additional statistical analyses.

Table 8.1: Equating errors on percentages between 2007 and 2010

	Year 6	Year 10
Australia	1.739	0.878
NSW	1.877	0.662
VIC	1.608	0.990
QLD	1.501	0.843
SA	2.373	1.502
WA	1.889	0.994
TAS	1.660	1.203
NT	1.570	1.770
ACT	1.389	0.700
Males	1.713	0.951
Females	1.779	0.814
Metropolitan	1.736	0.811
Provincial	1.844	1.099
Remote	1.367	0.825

Percentiles

Percentiles were presented in order to demonstrate the spread of scores around the mean. In most cases the 5th, 10th, 25th, 75th, 90th and 95th percentiles were presented graphically. Appendix I presents, in tabular form, the scale scores that these percentiles represent, for Australia and all states and territories.

Correlations

Analyses were conducted to investigate associations between variables measuring student participation in different civics and citizenship-related activities. The Pearson product-moment correlation coefficient, *r*, was used as the measure of correlation. The SPSS® Replicates Add-in was used to compute the correlation coefficients and their standard errors.

Tertile groups

In addition to the usually reported means and differences in mean scores of subgroups mentioned in the previous section, subgroups of students were created based on their scores on attitude scales. For NAP – CC 2010, three groups of equal size representing students with the lowest scores, middle scores and highest scores (the so-called *tertile groups*) on each attitude scale were formed and compared on their civics and citizenship achievement. Standard errors of the difference between two tertile groups need to be computed in the same way as a standard error of a mean difference between two dependent subsamples (for example males and females). The SPSS® Replicates Add-in was used to compute the respective standard errors.

REFERENCES

Adams, R. J., & Wu, M. L. (2002). *PISA 2000 Technical Report*. Paris: OECD.

Curriculum Corporation (2006). *Statements of Learning for Civics and Citizenship.* Carlton South: Curriculum Corporation.

Gonzalez, E. J., & Foy, P. (2000). Estimation of sampling variance. In: M.O. Martin, K.D. Gregory & S.E. Semler (Eds.), *TIMSS 1999 Technical Report.* Chestnut Hill, MA: Boston College.

Kish, L. (1965). *Survey Sampling.* New York: John Wiley & Sons.

Masters, G. N., & Wright, B. D. (1997). The partial credit model. In: W.J Van der Linden & R.K. Hambleton (Eds.), *Handbook of Modern Item Response Theory* 101–122. New York/Berlin/Heidelberg: Springer.

MCEECDYA (2009). *2010 Data Standards Manual – Student Background Characteristics.* Carlton South: MCEECDYA.

ACARA (2011). *National Assessment Program – Civics and Citizenship Years 6 and 10 Report 2010*. Sydney: ACARA.

MCEETYA (2006). *National Assessment Program – Civics and Citizenship Years 6 and 10 Report 2004*. Melbourne: MCEETYA.

MCEETYA (2008). *Melbourne Declaration on Educational Goals for Young Australians.* Melbourne: MCEETYA

Mislevy, R. J. (1991). Randomization-based inference about latent variables from complex samples. *Psychometrika, 56*, 177–196.

Mislevy, R. J., & Sheehan, K. M. (1987). Marginal estimation procedures. In: A.E. Beaton (Ed.), *The NAEP 1983-1984 Technical Report,* 293–360. Princeton, NJ: Educational Testing Service.

Monseur, C., & Berezner, A. (2007). The computation of equating errors in international surveys in education. *Journal of Applied Measurement, 8*(3), 323–335.

OECD (2005). *PISA 2003 Technical Report*. Paris: OECD.

OECD (2009a). *PISA 2006 Technical Report*. Paris: OECD.

OECD (2009b). *PISA Data Analysis Manual SPSS® Second Edition.* Paris: OECD.

Olson, J. F., Martin, M. O., & Mullis, I. V. S. (Eds.). (2008). *TIMSS 2007 Technical Report.* Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

PMRT (2003). Setting National Standards. Paper presented at the March 2003 meeting of the Performance Measurement and Reporting Taskforce.

Rasch, G. (1960). *Probabilistic Models for Some Intelligence and Attainment Tests.* Copenhagen: Nielsen and Lydiche.

Schulz, W., Fraillon, J., Ainley, J., Losito, B., & Kerr, D. (2008). *International Civic and Citizenship Education Study : Assessment Framework.* Amsterdam: IEA.

Von Davier, M., Gonzalez, E., & Mislevy, R. (2009). What are plausible values and why are they useful? *IERI Monograph Series*, (Vol. 2, pp 9–36). Hamburg and Princeton: IERInstitute and ETS.

Warm T. A. (1989). Weighted likelihood estimation of ability in Item Response Theory. *Psychometrika, 54,* 427–450.

Wernert, N., Gebhardt, E., & Schulz, W. (2009). *National Assessment Program – Civics and Citizenship Year 6 and Year 10 Technical Report 2007*. Melbourne: ACER.

Wernert, N., Gebhardt, E., Murphy, M., & Schulz, W. (2006). *National Assessment Program – Civics and Citizenship Years 6 and 10 Technical Report 2004*. Melbourne: ACER.

Wolter, K. M. (1985). *Introduction to Variance Estimation*. New York: Springer-Verlag.

Wu, M. L., Adams, R. J., Wilson, M. R., & Haldane, S. A. (2007). *ACER ConQuest Version 2.0: Generalised item response modelling software* [computer program]. Melbourne: ACER.

Appendix A: Student questionnaire

The questions from the Year 10 student questionnaire are presented on the following pages. The Year 6 student questionnaire contained mostly the same set of questions. However Year 6 students were not administered questions: 2a-e; 5a-e; 8e; and 12a-g.

STUDENT QUESTIONNAIRE

In this section you will find questions about activities you do at school and outside of school, about yourself, and your views on issues related to Australian society.

Please read each question carefully and answer as accurately as you can.

You may ask for help if you do not understand something or are not sure how to answer a question.

If you make a mistake when answering a question, erase your error and make the correction by colouring in the correct bubble.

In this section, there are no 'right' or 'wrong' answers. Your answers should be the ones that you decide are best for you.

Q1 At this school, I ...

(Please colour in **only one bubble** in each row)

	Yes	No	This is not available at my school
a) have voted for class representatives.	○	○	○
b) have been elected on to a Student Council, Student Representative Council (SRC) or class/school parliament.	○	○	○
c) have helped to make decisions about how the school is run.	○	○	○
d) have helped prepare a school paper or magazine.	○	○	○
e) have participated in peer support, 'buddy' or mentoring programs.	○	○	○
f) have participated in activities in the community.	○	○	○
g) have represented the school in activities outside of class (such as drama, sport, music or debating).	○	○	○
h) have been a candidate in a Student Council, Student Representative Council (SRC) or class/school parliament election.	○	○	○
i) have participated in an excursion to a parliament, local government or law court.	○	○	○

Q2 Outside of school have you ever participated in activities associated with each of the following?

(Please colour in **only one bubble** in each row)

	Yes, I have done this within the last year	Yes, I have done this but more than a year ago	No, I have never done this
a) An environmental organisation	○	○	○
b) A human rights organisation	○	○	○
c) A voluntary group doing something to help the community	○	○	○
d) Collecting money for a charity or social cause	○	○	○
e) A youth development organisation (e.g. Scouts, Australian Services Cadets, Police and Community Youth Clubs)	○	○	○

Q3 Outside of school, how often do you …

(Please colour in **only one bubble** in each row)

	Never or hardly ever	At least once a month	At least once a week	More than three times a week
a) read about current events in the newspaper?	○	○	○	○
b) watch the news on television?	○	○	○	○
c) listen to news on the radio?	○	○	○	○
d) use the internet to get news of current events?	○	○	○	○
e) talk about political or social issues with your family?	○	○	○	○
f) talk about political or social issues with your friends?	○	○	○	○
g) take part in internet-based discussions about political or social issues?	○	○	○	○

Q4 There are many different ways to express your opinions about important issues.

Would you do any of the following in the future?

(Please colour in **only one bubble** in each row)

	I would certainly do this	I would probably do this	I would probably not do this	I would certainly not do this
a) Write a letter or an email to a newspaper	○	○	○	○
b) Wear a badge, hat or t-shirt expressing your opinion	○	○	○	○
c) Contact a member of parliament or local council	○	○	○	○
d) Take part in a peaceful march or rally	○	○	○	○
e) Collect signatures for a petition	○	○	○	○
f) Choose not to buy certain products or brands of product as a protest	○	○	○	○
g) Sign an online petition	○	○	○	○
h) Write your opinion about an issue on the internet (e.g. on a blog or web-forum)	○	○	○	○

Q5 There are many different ways people can participate in the community.

Which of the following will you do in the future?

(Please colour in **only one bubble** in each row)

	I will certainly do this	I will probably do this	I will probably not do this	I will certainly not do this
a) Find information about candidates before voting in an election	○	○	○	○
b) Help a candidate or party during an election campaign	○	○	○	○
c) Join a political party	○	○	○	○
d) Join a trade or other union	○	○	○	○
e) Stand as a candidate in local council or shire elections	○	○	○	○

Q6 How interested are you in the following?

(Please colour in **only one bubble** in each row)

	Very interested	Quite interested	Not very interested	Not interested at all
a) What is happening in your local community	○	○	○	○
b) Australian politics	○	○	○	○
c) Social issues in Australia	○	○	○	○
d) Environmental issues in Australia	○	○	○	○
e) What is happening in other countries	○	○	○	○
f) Global (worldwide) issues	○	○	○	○

Q7 How well do you think you could do each of the following?

(Please colour in **only one bubble** in each row)

	Very well	Fairly well	Not very well	Not at all
a) Discuss news about a conflict between countries	○	○	○	○
b) Argue your opinion about a political or social issue	○	○	○	○
c) Be a candidate in a school or class election	○	○	○	○
d) Organise a group of students in order to achieve changes at school	○	○	○	○
e) Write a letter or an email to a newspaper giving your view on a current issue	○	○	○	○
f) Give a speech to your class about a social or political issue	○	○	○	○

Q8 How much do you agree or disagree with each of the following statements?

(Please colour in **only one bubble** in each row)

	Strongly agree	Agree	Disagree	Strongly disagree
a) If students act together at school they can make real change happen.	○	○	○	○
b) Elected student representatives (such as student council or SRC members) contribute to school decision making.	○	○	○	○
c) Student participation in how schools are run can make schools better.	○	○	○	○
d) Organising groups of students to express their opinions could help solve problems in schools.	○	○	○	○
e) Citizens can have strong influence on government policies in Australia.	○	○	○	○

Q9 How important do you think the following are for being a good citizen in Australia?

(Please colour in **only one bubble** in each row)

	Very important	Quite important	Not very important	Not important at all
a) Supporting a political party	○	○	○	○
b) Learning about Australia's history	○	○	○	○
c) Learning about political issues in the newspaper, on the radio, on TV or on the internet	○	○	○	○
d) Learning about what happens in other countries	○	○	○	○
e) Discussing politics	○	○	○	○
f) Participating in peaceful protests about important issues	○	○	○	○
g) Participating in activities to benefit the local community	○	○	○	○
h) Taking part in activities promoting human rights	○	○	○	○
i) Taking part in activities to protect the environment	○	○	○	○

Q10 How much do you trust each of the following groups or institutions in Australia?

(Please colour in **only one bubble** in each row)

	Completely	Quite a lot	A little	Not at all
a) The Australian Parliament	○	○	○	○
b) Your state or territory parliament	○	○	○	○
c) Law courts	○	○	○	○
d) The police	○	○	○	○
e) Australian political parties	○	○	○	○
f) The media (i.e. television, newspapers, radio)	○	○	○	○

Q11 How much do you agree or disagree with the following statements about Indigenous Australians?

(Please colour in **only one bubble** in each row)

	Strongly agree	Agree	Disagree	Strongly disagree
a) Australia should support the cultural traditions and languages of Indigenous Australians.	○	○	○	○
b) Australia has a responsibility to improve the quality of life of Indigenous Australians.	○	○	○	○
c) It is important to recognise the traditional ownership of land by Indigenous Australians.	○	○	○	○
d) All Australians have much to learn from Indigenous Australian cultures and traditions and people.	○	○	○	○
e) All Australians should be given the chance to learn about reconciliation between Indigenous and other Australians.	○	○	○	○

Q12 How much do you agree or disagree with the following statements about Australian society?

(Please colour in **only one bubble** in each row)

	Strongly agree	Agree	Disagree	Strongly disagree
a) Immigrants should be encouraged to keep their cultural traditions and languages.	○	○	○	○
b) When there are not many jobs available immigration should be cut.	○	○	○	○
c) Australia will become less peaceful as more people from different backgrounds come to live here.	○	○	○	○
d) Australia benefits greatly from having people from many cultures and backgrounds.	○	○	○	○
e) All Australians should learn about different cultures and traditions at school.	○	○	○	○
f) Having people from many different cultures and backgrounds makes it difficult for a country to be united.	○	○	○	○
g) Australia would be a better place in the future if only people with similar backgrounds were allowed to come and live here.	○	○	○	○

Appendix B: Weighted participation rates

	Year 6 participation rates			Year 10 participation rates		
	School	Student	Overall	School	Student	Overall
Including replacement schools						
Australia	99	93	92	99	87	87
NSW	98	93	91	100	88	88
VIC	100	92	92	98	86	84
QLD	98	93	91	100	88	88
SA	100	93	93	100	85	85
WA	100	93	93	100	89	89
TAS	96	92	88	95	86	81
NT	93	89	83	81	82	66
ACT	100	93	93	100	86	86
Excluding replacement schools						
Australia	98	93	91	98	87	86
NSW	96	93	90	100	88	88
VIC	99	92	91	94	86	80
QLD	98	93	91	100	88	88
SA	100	93	93	98	85	83
WA	100	93	93	100	89	89
TAS	96	92	88	95	86	81
NT	90	89	81	81	82	66
ACT	100	93	93	100	86	86

Appendix C: Quality monitoring report

NAP-C&C 2010 – QUALITY MONITOR REPORT

Quality Monitor				
School Name				
Jurisdiction			**Sector**	
Year Level		**Class Name**		
School Contact Officer				
Assessment Administrator				
Date of Assessment				

(1) Timing

(a) Please record the start and finish times of the various sections of the assessment in the table below.

Section (timing)	**Start**	**Finish**
Instructions (approx. 5 minutes)		
Practice Questions (approx. 5 - 10 minutes)		
Part A: Assessment Items (Y6 = 60 min. / Y10 = 75 min.)		
Break (approx. 5 minutes)		
Part B: Student Questionnaire (approx. 15 minutes)		

(b) How long did it take most of the students to complete Part A? _____ (in minutes)

(c) How long did it take the slowest student to complete Part A? _____ (in minutes)

(d) How many students were unable in the allocated time to complete Part A? _____

(e) How long did it take most of the students to complete Part B? _____ (in minutes)

(f) How long did it take the slowest student to complete Part B? _____ (in minutes)

(g) How many students were unable in the allocated time to complete Part B? _____

(2) Location for the Assessment

(a) Did the location of the Assessment Session meet the requirements set out in the School Contact Officer's Manual (Section 2.8)?

☐ No ☐ Yes If No, please comment

_____

_____

_____

_____

_____

1

(3) Administration: Part A and B

(a) Was the script followed according to the manual? ☐ No *Go 3b* ☐ Yes *Go to 3c*

(b) If changes were made, were they… Minor ☐ Major ☐ *Go to 3c*

(c) Were the instructions regarding timing of the assessment session followed according to the manual? ☐ No *Go 3d* ☐ Yes *Go to 3e*

(d) If the instructions regarding timing of the assessment session were **not** followed, were they…. Minor ☐ Major ☐ *Go to 3e*

(e) Did the variation to the script and/or the timing instructions affect the performance of students?

☐ No ☐ Yes If **Yes**, please comment

(4) Completion of the Student Participation Form

Please note: you will need to scrutinise the Student Participation Form *after it has been completed, in order to complete this question properly.*

(a) Did the Assessment Administrator record attendance correctly on the *Student Participation Form* (according to the directions in Section 3.3 of the *Assessment Administrator's Manual)*?

☐ No ☐ Yes If **No**, please comment

(b) Did the Assessment Administrator allocate the additional booklets correctly to:

i. any new students in the class? ☐ No ☐ Yes ☐ N/A

ii. any student whose assigned booklet was lost or damaged? ☐ No ☐ Yes ☐ N/A

If **No** (for either i. or ii.), please comment

2

(5) Assessment Booklet Format and Content

(a) Were there any problems with the Assessment Booklets (e.g., missing pages, item errors or omissions, difficulties with pre-printed student details, unclear directions, confusing format, too long, too hard, etc.)?

☐ No ☐ Yes Specify (include booklet number and whether Part A or B)

(b) Were there any problems with specific questions in Part A of any Assessment Booklet?

☐ No ☐ Yes Specify (include booklet and question number)

Booklet Number	Question Number	Problem

(6) Assistance given

The Assessment Administrator is instructed not to answer any questions about the content of the assessment items (Part A). They must not provide any specific information, answers, or instructions about any assessment item. They are, however, allowed to read a question to a student and the Assessment Administrator may answer questions about what students are to do and how they are to record their answers and follow general instructions.

(a) In your opinion, did the Assessment Administrator address students' questions appropriately?

☐ No ☐ Yes If **No**, please comment

(b) Was any extra assistance given to any students with special needs?

☐ No ☐ Yes If **Yes**, please comment

(7) Student Questionnaire (Part B)

(a) Were there any problems with the administration of the questionnaire?

☐ No ☐ Yes If Yes, please comment

(b) Were there any particular items in the questionnaire which required teacher assistance or support?

☐ No ☐ Yes Specify (include booklet and question number)

Booklet Number	Question Number	Problem

(8) Student Behaviour	**No Students**	**Some Students**	**Most Students**
a) How many students talked to other students before the end of the assessment session?	☐1.	☐2.	☐3.
b) How many students made noise or moved around, causing disruption to other students?	☐1.	☐2.	☐3.
c) How many students read books after they had finished the assessment, before the end of the session?	☐1.	☐2.	☐3.
d) How many students became restless towards the end of the session?	☐1.	☐2.	☐3.

(9) Disruptions

Did any of the following affect the assessment session?	**No**	**Yes**
a) Announcements over the loud speaker	☐1.	☐2.
b) Alarms	☐1.	☐2.
c) Class changeover in the school	☐1.	☐2.
d) Other students not participating in the assessment session	☐1.	☐2.
e) Students or teachers visiting the assessment room	☐1.	☐2.

4

(10) Follow-up Session

(a) Was attendance less than 85% of the eligible students (i.e. non-excluded) listed on the Student Participation and therefore a Follow-up Session is required?

☐ No ☐ Yes If **Yes**, please go on to 10b.

(b) In your opinion, is the Follow-up Session likely to be held by the school?

☐ No ☐ Yes If **No**, please comment

Other Comments

Please note other comments that you think would help improve the assessment:

THANK YOU VERY MUCH FOR RECORDING THESE OBSERVATIONS

Please make a copy of this report for your records and return to ACER (with all of the NAP-C&C NQM materials) when all of your schools visits are concluded.
An Express Post Envelope has been included for this purpose.

Appendix D: Detailed results of quality monitor's report

This appendix contains a summary of the findings from the NAP – CC 2010 quality monitoring program. Thirty-two schools were visited (17 primary schools and 15 secondary schools), equalling five per cent of the sample. The schools in the quality monitoring program included schools from all states and territories, all sectors and also covered metropolitan, regional and remote areas.

Timing

While much of the timing of the different assessment administration tasks are given as a guide, the time for Part A (the cognitive assessment) was to be no more than 60 minutes at Year 6 and no more than 75 minutes at Year 10 (the assessment could finish earlier if all students had finished before then). Therefore, the quality monitors were asked to record the start and finish times for Part A. While Part B (the student questionnaire) did not have bounded times, the start and finish times for this were also recorded.

Table D.1 presents the average time taken for Parts A and B at Year 6 and Year 10, as well as the shortest and longest recorded times for each part at each year level.

Table D.1: Average, minimum and maximum times taken for parts A and B of NAP – CC 2010

	Year 6		Year 10	
	Part A	Part B	Part A	Part B
Recorded administration time				
Average	52	16	52	17
Shortest recorded	37	8	33	13
Longest recorded	60	20	67	30

As well as recording the actual time taken, quality monitors were asked to indicate how long ‘most of the students’ took to complete each of Parts A and B, and also how long the slowest students took to complete each of Parts A and B. Table D.2 presents the average time taken as well as the shortest and longest times recorded for each part at each year level, for each of these questions.

Table D.2: Average, minimum and maximum times recorded for ‘most students’ and for the ‘slowest students’ for parts A and B of NAP – CC 2010

	Year 6		Year 10	
	Part A	Part B	Part A	Part B
Time Taken by 'most students'				
Average	38	12	38	11
Shortest recorded	28	8	30	6
Longest recorded	50	15	50	13
Time Taken by 'the slowest students'				
Average	50	15	51	15
Shortest recorded	38	8	33	10
Longest recorded	60+	20	67	20

Location for the assessment

At all schools visited, the location of the assessment was judged to match the requirements set out in the *School contact officer's manual*.

Administration of the assessment (Parts A and B)

A total of four schools (two at each year level) were noted as having varied from the script given in the *Assessment administrator's manual*. In all cases these variations were considered to have been minor (e.g. addition or deletion of single words or omitting to ask for student responses to the practice questions).

Similarly, only five schools were said to have departed from the instructions on the timing of the assessment and all but one of these variations was considered to have been minor (mainly to do with the administration tasks). In the case where the variation was considered to have been major, the teacher had underestimated the time required, so each student was moved onto Part B as they finished Part A.

In none of these situations was it judged that the variations made to the script or timing of the assessment affected the performance of the students.

Completion of the Student participation form

In all cases the assessment administrator was judged to have recorded attendance properly on the *Student participation form*. The assignment of the spare booklets to new students was only required in seven schools and in all cases this was done correctly. There were no instances of the spare booklets being needed for lost or damaged booklets.

Assessment booklet content and format

There were two recorded instances of problems with the assessment booklets. In both cases, this was to do with the names on the pre-printed label – in one case the names were not all from the selected class, in the other, surnames had been printed before first names.

There were no recorded instances of problems with specific items.

Assistance given

Assessment administrators were instructed to give only limited assistance to students – they could read a question aloud if required, or answer any general questions about the task, but not answer any questions about any specific questions. In all cases but three (all at Year 6) the quality monitor judged that the assessment administrator had answered all questions appropriately. Where they had not, the assessment administrator provided some interpretation of the intent of the question but this was not judged to have provided the answer to the question.

Extra assistance was given to students with special needs in five schools (four at Year 6 and one at Year 10). The assistance, in most cases, was provided by a teacher assistant who read the questions to the student in another room. In some cases the student was also given a little longer to complete the assessment. One student, with a vision impairment, was allowed to use a magnifying glass and ruler to enable him to complete the assessment independently.

Student questionnaire

There was one recorded instance of problems with the administration of the student questionnaire. This was simply disruption by a restless student.

There were two recorded instances of problems with specific questionnaire items. These included some confusion about the time reference for Question 1 and a misunderstanding about the intent of Question 5 (as to whether people 'have to' belong to a political party).

Student behaviour

In general, there were low levels of disruptive behaviour on the part of participating students. Table D.3 provides the numbers of schools with no, some, most or all students participating in certain behaviours (please note, the reading of books is considered a positive, non-disruptive behaviour).

Table D.3: Recorded instances of aspects of student behaviour during administration of the NAP – CC 2010

	No Students	Some Students	Most Students	All Students
Year 6				
Students talked to other students before the session was over	15	2		
Students made noise or moved around	15	2		
Students read books after they had finished the assessment[1]	3	1	10	3
Students became restless towards the end of the session	12	4	1	
Year 10				
Students talked to other students before the session was over	13	2		
Students made noise or moved around	14	1		
Students read books after they had finished the assessment[1]	6	7	2	
Students became restless towards the end of the session[2]	11	3		

[1] *Please note that schools were instructed to provide books or quiet activities for students that finished the assessment early.*

[2] *One response was missing for this question.*

Disruptions

Very few disruptions were recorded during the administration of NAP – CC 2010. Table D.4 indicates what disturbances were recorded at each year level.

Table D.4: Recorded instances of disruptions during administration of the NAP – CC 2010

	Year 6	Year 10
Announcements over the loud speaker	0	0
Alarms	0	1
Class changeover in the school	1	1
Other students not participating in the assessment	0	1
Students or teachers visiting the assessment room	1	2

Follow-up session

Schools were required to hold a follow-up session if less than 85 per cent of the eligible students participated in the assessment session. A follow-up session was judged to be required in two Year 6 schools and six Year 10 schools. In all but two cases (both Year 10) the quality monitor made the assessment that these schools would undertake the follow-up session. Where a follow-up session was judged to be unlikely, this was due to either logistics or a high number of regular absentees.

Appendix E: Example school reports and explanatory material

MCEECDYA
Ministerial Council for Education,
Early Childhood Development and Youth Affairs

ACER

National Assessment Program - Civics and Citizenship

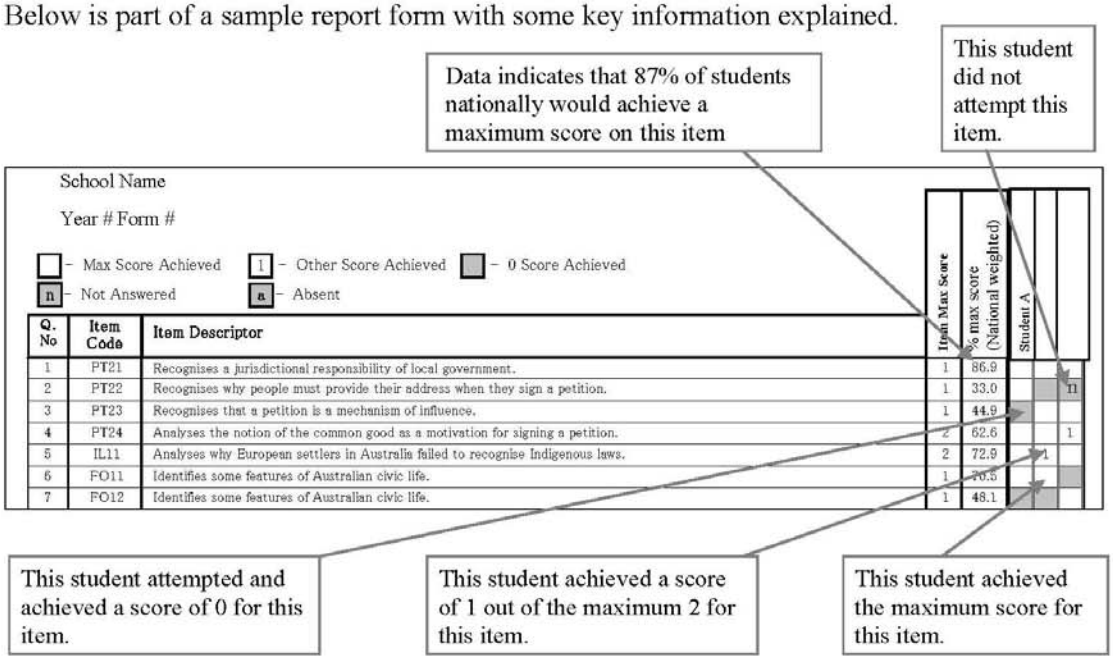
Interpreting the Student Reports

Each Year 6 and Year 10 student completed one of the nine different year-level test forms. The student reports provide information about each student's achievement on the particular test form that they completed.

Each test form report includes the following information:

1. The school name.
2. The Year level and number of the test form described by the report.
3. The question number as it appeared on the test form.
4. A unique item code used to reference each question.
5. A description of the properties of a high quality response to the item.
6. The maximum possible score for each item.
7. The percentage of students in the NAP-C&C 2010 who achieved the maximum score on each item (weighted to be proportionally representative of the Australian population).
8. The name of each student who completed that test form and whose result is being reported.
9. A key for the different student response types.
10. The achievement of each student on each item on the form.

Below is part of a sample report form with some key information explained.



Capital High School

Year 10 Form 1

☐ – Max Score Achieved [1] – Other Score Achieve ▒ – 0 Score Achieved [n] – Not Answered [a] – Absent

Q. No	Item Code	Item Descriptor	Item Max Score	% maximum score (National weighted)	Student A	Student B	Student C	Student D
1	PT21	Recognises a jurisdictional responsibility of local government.	1	92.8				a
2	PT22	Recognises why people must provide their address when they sign a petition.	1	52.7		▒		a
3	PT23	Recognises that a petition is a mechanism of influence.	1	70.9				a
4	PT24	Analyses the notion of the common good as a motivation for signing a petition.	2	75.4	1		1	a
5	AZ11	Identifies the historical event remembered on ANZAC Day.	1	49.5			▒	a
6	AZ12	Explains the significance of ANZAC day in Australia to Australians.	2	71.7		1	1	a
7	HS21	Identifies that sites of historic significance belong to the whole community.	2	82.5		1		a
8	FD11	Recognises a point of dispute between State and Federal governments.	1	64.0				a
9	FD12	Identifies a constitutional issue requiring resolution by the High Court.	1	52.0		▒	▒	a
10	FD13	Analyses the reasons why a High Court decision may be close.	2	41.6	▒	1	1	a
11	FD14	Analyses how voters prioritise issues differently at State and Federal elections.	1	31.9		▒		a
12	IR21	Recognises the concept Terra Nullius as applied in Australia in 1788.	1	77.7	▒			a
13	DM21	Explains that needing a double majority for constitutional change supports stability.	3	51.3	1	▒		a
14	RQ21	Recognises that the Queen is Australia's head of state.	1	21.1	▒	▒	▒	a
15	FO11	Identifies some features of Australian civic life.	1	80.8				a
16	FO12	Identifies some features of Australian civic life.	1	61.3	▒			a
17	FO13	Identifies some features of Australian civic life.	1	70.5				a
18	FO14	Identifies some features of Australian civic life.	1	79.6			▒	a
19	RF11	Recognises that a referendum is a vote by citizens on a proposed change to the constitution.	1	71.5		▒		a
20	IQ11	Recognises the potential for difference between justice and law.	1	39.2	▒			a
21	IQ12	Recognises the value of collective social responsibility.	1	58.1				a
22	IQ13	Analyses the tension between critical citizenship and law abidance.	3	90.0	▒	1	▒	a
23	MP31	Explains the mechanism of influence offered by a petition	1	79.1				a
24	MP32	Identifies the value in preserving symbols of Australian identity and culture	1	78.3				a
25	MP34	Suggests an advantage of e-petitions in supporting civic participation	1	74.4				a
26	MP35	Suggests a disadvantage of e-petitions in supporting civic participation	1	64.8		▒		a
27	AF31	Identifies the process of federation	1	65.7				a
28	AF32	Identifies a defining outcome of Australia's Federation	1	49.8				a
29	AF33	Identifies a main purpose of the Australian Constitution	1	82.8				a
30	AF34	Identifies the underlying principle of a referendum	1	57.6				a
31	SP31	Recognises the key feature of the separation of powers in Australia	1	59.6	▒			a
32	SP32	Connects the separation of powers to the concept of fairness in a democracy	1	92.5			▒	a
33	MG31	Identifies one way in which minority group views are recognised in a democracy	1	80.1				a
34	AA31	Gives a reason for Australia's aid focus in the Asia-Pacific region	1	55.7				a
35	AA32	Gives a reason explaining the contribution of aid to regional security	1	74.7				a
36	AA33	Gives a reason to support the provision of local rather than international aid	1	62.9		▒		a
37	AP31	Interprets an image representing the political dynamic of APEC	1	86.7				a
38	AP32	Recognises the importance of the Asia-Pacific region to Australia	1	89.8				a
39	AP33	Suggests a benefit of consensus decision-making	1	67.2				a
40	AP34	Suggests a disadvantage of consensus decision-making	1	58.8	▒			a
41	RP31	Recognises the role of the voter in a representative democracy	1	66.2	▒			a
42	AC31	Recognises that court decisions found to be wrong can be changed	1	57.2				a
43	AC32	Recognises that different courts have different methods of making decisions	1	71.4				a

Appendix F: Item difficulties and per cent correct for each year level

	Year 6				
	Item	Link	RP62	Scaled	Correct
1	AD31	No	-0.018	488	47%
2	AD35	No	-0.656	406	60%
3	AF33	No	-0.832	383	62%
4	AF34	No	0.655	576	32%
5	AJ31	No	-1.674	273	78%
6	AP21	Yes	-1.858	249	81%
7	AP31	No	-1.488	298	75%
8	AP32	No	-1.649	277	77%
9	AP33	No	0.093	503	44%
10	AP34	No	0.397	542	38%
11	BO21	Yes	-0.129	474	48%
12	BO22	Yes	-0.355	445	52%
13	BO23	No	1.625	702	17%
14	BO24	Yes	1.827	728	14%
15	BO25	Yes	1.717	714	16%
16	CA31	No	-2.821	124	91%
17	CA32	No	-1.405	308	74%
18	CA33	No	-0.231	461	51%
19	CA34	No	0.443	548	38%
20	CC31	No	-1.764	262	79%
21	CC32	No	-0.715	398	61%
22	CG11	No	-1.053	354	67%
23	CV32	No	-1.157	341	69%
24	DR31	No	0.662	577	33%
25	DR32	No	0.294	529	39%
26	ER31	No	-1.808	256	80%
27	ER32	No	-0.621	410	59%
28	FL14	Yes	0.770	591	31%
29	FL17	Yes	0.887	606	32%
30	FL18	Yes	-1.284	324	72%
31	FO11	Yes	-1.115	346	70%
32	FO12	No	-0.033	486	48%
33	FO13	Yes	-0.267	456	53%
34	FO14	Yes	-0.624	410	61%
35	FT31	No	-0.964	366	66%
36	FT32	No	-0.463	431	56%
37	FT33	No	1.701	712	17%
38	GC31	No	0.644	574	33%
39	GC33	No	-0.384	441	54%
40	GC34	No	-0.684	402	60%
41	GS31	No	-0.427	435	55%
42	GS32	No	-1.736	265	79%
43	GS33	No	-0.951	367	65%

	Year 6				
	Item	**Link**	**RP62**	**Scaled**	**Correct**
44	**HS21**	Yes	-0.022	488	48%
45	**HW31**	No	-1.544	290	75%
46	**HW32**	No	-1.915	242	81%
47	**HW33**	No	-2.015	229	82%
48	**IC11**	Yes	1.330	663	23%
49	**IJ21**	Yes	-0.142	472	49%
50	**IL11**	No	0.069	500	46%
51	**LG22**	Yes	-0.679	403	62%
52	**LG31**	No	-0.673	403	60%
53	**LG33**	No	-0.974	364	66%
54	**MA31**	No	-1.617	281	77%
55	**MA32**	No	-0.330	448	53%
56	**MA33**	No	-1.093	349	68%
57	**MA34**	No	-1.430	305	74%
58	**MA35**	No	-0.249	458	51%
59	**PO31**	No	-1.652	276	78%
60	**PO32**	No	1.166	642	29%
61	**PO33**	No	-0.702	400	61%
62	**PP21**	No	-1.378	312	73%
63	**PP22**	Yes	-2.798	127	90%
64	**PT21**	Yes	-2.088	220	85%
65	**PT22**	No	0.722	584	33%
66	**PT23**	Yes	0.176	514	44%
67	**PT24**	No	0.041	496	46%
68	**PT31**	No	-1.422	306	74%
69	**PT32**	No	-1.454	302	75%
70	**PT33**	No	-0.110	476	49%
71	**RE11**	No	-1.155	341	69%
72	**RE13**	No	-1.533	292	75%
73	**RE14**	No	-0.758	392	61%
74	**RF11**	Yes	0.420	545	36%
75	**RL31**	No	-2.556	159	89%
76	**RL32**	No	-3.574	27	95%
77	**RL33**	No	-1.781	259	80%
78	**RP32**	No	-0.063	483	47%
79	**RP34**	No	-0.924	371	65%
80	**RP35**	No	-0.755	393	62%
81	**RR21**	No	0.098	503	46%
82	**RR22**	Yes	-1.204	334	72%
83	**RR23**	Yes	-0.666	404	62%
84	**RR31**	No	0.375	539	38%
85	**RR32**	No	-1.226	332	71%
86	**RS11**	Yes	0.594	568	33%
87	**SG31**	No	-1.325	319	72%
88	**SG32**	No	-1.258	327	71%

Year 6					
	Item	Link	RP62	Scaled	Correct
89	SG33	No	-2.733	136	90%
90	SH21	Yes	0.208	518	44%
91	SU31	No	-2.434	175	87%
92	SU32	No	-0.349	445	52%
93	SU33	No	-1.812	255	79%
94	SU34	No	-2.074	221	83%
95	TE31	No	-1.145	342	69%
96	TE32	No	0.791	593	34%
97	TE33	No	-0.944	368	65%
98	UN31	No	-0.961	366	65%
99	VM21	Yes	-2.449	173	87%
100	VO20	No	-0.521	423	54%
101	WH31	No	-0.380	441	54%
102	WH32	No	0.543	561	36%
103	WH33	No	-1.181	337	70%
104	WH34	No	-2.039	226	83%
105	WH35	No	-2.491	167	88%

Year 10					
	Item	Link	RP62	Scaled	Correct
1	AA31	No	0.455	550	55%
2	AA32	No	-0.415	437	72%
3	AA33	No	0.124	507	62%
4	AC31	No	0.433	547	56%
5	AC32	No	-0.495	426	73%
6	AD31	No	-0.673	403	75%
7	AD35	No	-0.836	382	78%
8	AF31	No	-0.221	462	67%
9	AF32	No	0.727	585	48%
10	AF33	No	-1.126	345	81%
11	AF34	No	0.428	546	54%
12	AJ31	No	-1.920	241	90%
13	AJ34	No	-0.140	473	66%
14	AP21	Yes	-2.409	178	93%
15	AP31	No	-1.418	307	86%
16	AP32	No	-1.946	238	91%
17	AP33	No	-0.055	484	65%
18	AP34	No	0.412	544	56%
19	AZ11	Yes	0.742	587	48%
20	AZ12	Yes	1.602	699	39%
21	BO21	Yes	-0.331	448	68%
22	BO22	Yes	-0.630	409	73%
23	BO23	No	1.205	647	37%
24	BO24	No	1.253	653	37%

	Year 10				
	Item	**Link**	**RP62**	**Scaled**	**Correct**
25	**BO25**	Yes	1.500	685	32%
26	**CA32**	No	-2.625	150	94%
27	**CA33**	No	-0.611	411	74%
28	**CA34**	No	0.337	534	57%
29	**CO32**	No	0.356	537	56%
30	**CO33**	No	1.064	629	42%
31	**CV32**	No	-1.640	278	87%
32	**DM21**	Yes	2.065	759	18%
33	**ER31**	No	-1.841	252	89%
34	**ER32**	No	-1.688	272	88%
35	**ER33**	No	-1.544	290	86%
36	**FD11**	Yes	0.064	499	62%
37	**FD12**	Yes	0.790	593	48%
38	**FD13**	Yes	2.498	815	21%
39	**FD14**	Yes	1.647	705	31%
40	**FI11**	No	1.020	623	43%
41	**FL14**	Yes	0.305	530	57%
42	**FL17**	No	0.028	494	62%
43	**FL18**	Yes	-1.481	298	86%
44	**FO11**	Yes	-1.122	345	81%
45	**FO12**	Yes	0.036	495	62%
46	**FO13**	No	-0.414	437	70%
47	**FO14**	Yes	-0.848	381	77%
48	**FT31**	No	-1.654	276	87%
49	**FT32**	No	-0.952	367	79%
50	**FT33**	No	1.203	647	39%
51	**GC31**	No	0.243	522	59%
52	**GC33**	No	-1.437	304	85%
53	**GC34**	No	-0.726	396	76%
54	**GS31**	No	-0.306	451	69%
55	**GS32**	No	-2.051	224	91%
56	**GS33**	No	-0.985	363	80%
57	**HS21**	No	0.519	558	52%
58	**IC11**	Yes	1.022	623	42%
59	**IF11**	No	1.421	675	32%
60	**IF12**	No	1.093	633	41%
61	**IF13**	Yes	1.682	709	25%
62	**IF14**	No	1.431	677	33%
63	**IF15**	No	1.538	690	31%
64	**IJ21**	Yes	-0.647	407	75%
65	**IQ11**	No	1.217	649	38%
66	**IQ12**	Yes	0.349	536	56%
67	**IQ13**	Yes	1.589	697	32%
68	**IR21**	Yes	-0.670	404	75%

	Year 10				
	Item	Link	RP62	Scaled	Correct
69	IT11	No	0.567	564	51%
70	IT12	Yes	1.544	691	38%
71	IT13	Yes	1.905	738	23%
72	MA31	No	-1.472	300	85%
73	MA32	No	-0.711	398	75%
74	MA33	No	-1.606	282	87%
75	MA34	No	-2.102	218	91%
76	MA35	No	-0.731	396	76%
77	MG31	No	-0.962	366	80%
78	MP31	No	-0.836	382	77%
79	MP32	No	-0.855	380	78%
80	MP34	No	-0.562	418	73%
81	MP35	No	0.020	493	62%
82	PD11	No	0.675	578	48%
83	PD31	No	-1.057	353	81%
84	PD32	No	-0.134	473	66%
85	PS21	Yes	0.897	607	44%
86	PT21	Yes	-2.027	228	91%
87	PT22	Yes	0.587	567	52%
88	PT23	Yes	-0.212	463	67%
89	PT24	Yes	0.356	537	57%
90	PT31	No	-1.322	319	84%
91	PT32	No	-2.025	228	90%
92	PT33	No	-0.434	434	71%
93	RF11	No	-0.299	452	68%
94	RP31	No	-0.199	465	68%
95	RP32	No	0.004	491	63%
96	RP34	No	-1.374	312	85%
97	RP35	No	-0.832	383	78%
98	RQ21	No	2.278	787	20%
99	RR23	Yes	-0.769	391	76%
100	SP31	No	0.313	531	58%
101	SP32	No	-2.193	206	92%
102	TE31	No	-1.469	300	86%
103	TE32	No	1.333	664	41%
104	TE33	No	-0.834	382	78%
105	UN31	No	-1.755	263	88%
106	UN33	No	-0.087	479	65%
107	WH31	No	-0.907	373	79%
108	WH32	No	-0.117	476	66%
109	WH33	No	-1.914	242	90%
110	WH34	No	-1.996	232	90%
111	WH35	No	-2.950	108	96%
112	WP12	Yes	0.896	607	44%
113	WP13	Yes	1.398	672	32%

Appendix G: Student background variables used for conditioning

Variable	Name	Values	Coding	Regressor	Year 10 only
Adjusted school mean achievement	SCH_MN	Logits		Direct	
Sector	Sector	Public	00	Direct	
		Catholic	10	Direct	
		Independent	01	Direct	
Geographic Location	Geoloc	Metro 1.1	0000000	Direct	
		Metro 1.2	1000000	Direct	
		Provincial 2.1.1	0100000	Direct	
		Provincial 2.1.2	0010000	Direct	
		Provincial 2.2.1	0001000	Direct	
		Provincial 2.2.2	0000100	Direct	
		Remote 3.1	0000010	Direct	
		Remote 3.2	0000001	Direct	
SEIFA Levels	SEIFA	SEIFA_1	1000000000	Direct	
		SEIFA_2	0100000000	Direct	
		SEIFA_3	0010000000	Direct	
		SEIFA_4	0001000000	Direct	
		SEIFA_5	0000100000	Direct	
		SEIFA_6	0000010000	Direct	
		SEIFA_7	0000001000	Direct	
		SEIFA_8	0000000100	Direct	
		SEIFA_9	0000000000	Direct	
		SEIFA_10	0000000010	Direct	
		Missing	0000000001	Direct	

Variable	Name	Values	Coding	Regressor	Year 10 only
Gender	GENDER	Male	10	Direct	
		Female	00	Direct	
		Missing	01	Direct	
Age	AGE	Value	Copy,0	PCA	
		Missing	Mean,1	PCA	
LOTE spoken at home	LBOTE	Yes	10	PCA	
		No	00	PCA	
		Missing	01	PCA	
Student Born in Australia	COB	Australia	00	PCA	
		Overseas	10	PCA	
		Missing	01	PCA	
Parental Occupation Group	POCC	Senior Managers and Professionals	00000	PCA	
		Other Managers and Associate Professionals	10000	PCA	
		Tradespeople & skilled office, sales and service staff	01000	PCA	
		Unskilled labourers, office, sales and service staff	00100	PCA	
		Not in paid work in last 12 months	00010	PCA	
		Not stated or unknown	00001	PCA	
Highest Level of Parental Education	PARED	'Not stated or unknown'	1000000	PCA	
		'Year 9 or equivalent or below'	0100000	PCA	
		'Year 10 or equivalent'	0010000	PCA	
		'Year 11 or equivalent'	0001000	PCA	
		'Year 12 or equivalent'	0000100	PCA	
		'Certificate 1 to 4 (inc trade cert)'	0000010	PCA	
		'Advanced Diploma/Diploma'	0000001	PCA	
		'Bachelor degree or above'	0000000	PCA	

Variable	Name	Values	Coding	Regressor	Year 10 only
Indigenous Status Indicator	INDIG	Indigenous	10	PCA	
		Non-Indigenous	00	PCA	
		Missing	01	PCA	
Civic part. at school - vote	P412a	Yes No This is not available at my school Missing	Three dummy variables per question with the national mode as reference category	PCA	
Civic part. at school - elected	P412b			PCA	
Civic part. at school - decisions	P412c			PCA	
Civic part. at school - paper	P412d			PCA	
Civic part. at school - buddy	P412e			PCA	
Civic part. at school - community	P412f			PCA	
Civic part. at school - co-curricular	P412g			PCA	
Civic part. at school - candidate	P412h			PCA	
Civic part. at school - excursion	P412i			PCA	
Civic part. in community - environmental	P411a	Yes, I have done this within the last yearYes, I have done this but more than a year agoNo, I have never done thisMissing	Three dummy variables per question with the national mode as reference category	PCA	Year 10
Civic part. in community - human rights	P411b			PCA	Year 10
Civic part. in community - help community	P411c			PCA	Year 10
Civic part. in community - collecting money	P411d			PCA	Year 10
Civic part. in community - Indigenous group	P411e			PCA	Year 10
Civic communication - newspaper	P413a	Never or hardly ever At least once a month At least once a week More than three times a week Missing	Four dummy variables per question with the national mode as reference category	PCA	
Civic communication - television	P413b			PCA	
Civic communication - radio	P413c			PCA	
Civic communication - internet	P413d			PCA	
Civic communication - family	P413e			PCA	
Civic communication - friends	P413f			PCA	
Civic communication - internet discussions	P413g			PCA	
PROMIS - write to newspaper	P421a	I would certainly do this I would probably do this I would probably not do this	Four dummy variables per question with the	PCA	
PROMIS - wear an opinion	P421b			PCA	
PROMIS - contact an MP	P421c			PCA	

Variable	Name	Values	Coding	Regressor	Year 10 only
PROMIS - rally or march	P421d	I would certainly not do this Missing	national mode as reference category	PCA	
PROMIS - collect signature	P421e			PCA	
PROMIS - choose not to buy	P421f			PCA	
PROMIS - sign petition	P421g			PCA	
PROMIS - write opinion on internet	P421h			PCA	
CIVACT -research candidates	P422a	I would certainly do this I would probably do this I would probably not do this I would certainly not do this Missing	Four dummy variables per question with the national mode as reference category	PCA	Year 10
CIVACT -help on campaign	P422b			PCA	Year 10
CIVACT -join party	P422c			PCA	Year 10
CIVACT -join union	P422d			PCA	Year 10
CIVACT -be a candidate	P422e			PCA	Year 10
CIVINT - local community	P331a	Very interested Quite interested Not very interested Not interested at all Missing	Four dummy variables per question with the national mode as reference category	PCA	
CIVINT - politics	P331b			PCA	
CIVINT - social issues	P331c			PCA	
CIVINT - environmental	P331d			PCA	
CIVINT - other countries	P331e			PCA	
CIVINT - global issues	P331f			PCA	
CIVCONF - discuss a conflict	P322a	Very wellFairly wellNot very wellNot at allMissing	Four dummy variables per question with the national mode as reference category	PCA	
CIVCONF - argue an opinion	P322b			PCA	
CIVCONF - be a candidate	P322c			PCA	
CIVCONF - organise a group	P322d			PCA	
CIVCONF - write a letter	P322e			PCA	
CIVCONF - give a speech	P322f			PCA	
VALCIV - act together	P321a	Strongly agree Agree Disagree Strongly disagree Missing	Four dummy variables per question with the national mode as reference category	PCA	
VALCIV - elected reps	P321b			PCA	
VALCIV - student participation	P321c			PCA	
VALCIV - organising groups	P321d			PCA	
VALCIV - citizens	P321e			PCA	Year 10

Variable	Name	Values	Coding	Regressor	Year 10 only
IMPCCON - support a party	P333a	Very important Quite important Not very important Not important at all Missing	Four dummy variables per question with the national mode as reference category	PCA	
IMPCCON - learn history	P333b			PCA	
IMPCCON - learn politics	P333c			PCA	
IMPCCON - learn about other countries	P333d			PCA	
IMPCCON - discuss politics	P333e			PCA	
IMPCSOC - peaceful protests	P333f			PCA	
IMPCSOC - local community	P333g			PCA	
IMPCSOC - human rights	P333h			PCA	
IMPCSOC - environmental	P333i			PCA	
CIVTRUST - Australian parliament	P334a	Completely Quite a lot A little Not at all Missing	Four dummy variables per question with the national mode as reference category	PCA	
CIVTRUST - state parliament	P334b			PCA	
CIVTRUST - law courts	P334c			PCA	
CIVTRUST - police	P334d			PCA	
CIVTRUST - political parties	P334e			PCA	
CIVTRUST - media	P334f			PCA	
ATINCULT - support traditions	P313a	Strongly agree Agree Disagree Strongly disagree Missing	Four dummy variables per question with the national mode as reference category	PCA	
ATINCULT - improve QOL	P313b			PCA	
ATINCULT - traditional ownership	P313c			PCA	
ATINCULT - learn from traditions	P313d			PCA	
ATINCULT - learn about reconciliation	P313e			PCA	

Variable	Name	Values	Coding	Regressor	Year 10 only
ATAUSDIF - keep traditions	P312a	Strongly agree Agree Disagree Strongly disagree Missing	Four dummy variables per question with the national mode as reference category	PCA	Year 10
ATAUSDIF - employment	P312b			PCA	Year 10
ATAUSDIF - less peaceful	P312c			PCA	Year 10
ATAUSDIF - benefit greatly	P312d			PCA	Year 10
ATAUSDIF - all should learn	P312e			PCA	Year 10
ATAUSDIF - unity difficult	P312f			PCA	Year 10
ATAUSDIF - better place	P312g			PCA	Year 10
ATAUSDIF - better place	P312g			PCA	Year 10

Appendix H: Civics and Citizenship proficiency levels

Proficiency Level	Selected Item Response Descriptors
Level 5	
Students working at Level 5 demonstrate accurate civic knowledge of all elements of the Assessment Domain. Using field-specific terminology, and weighing up alternative views, they provide precise and detailed interpretative responses to items involving very complex Civics and Citizenship concepts and also to underlying principles or issues.	· Identifies and explains a principle that supports compulsory voting in Australia · Recognises how government department websites can help people be informed, active citizens · Analyses reasons why a High Court decision might be close · Explains how needing a double majority for constitutional change supports stability · Explains the significance of Anzac Day · Analyses the capacity of the internet to communicate independent political opinion. · Analyses the tension between critical citizenship and abiding by the law
Level 4	
Students working at Level 4 consistently demonstrate accurate responses to multiple choice items on the full range of complex key Civics and Citizenship concepts or issues. They provide precise and detailed interpretative responses, using appropriate conceptually-specific language, in their constructed responses. They consistently mesh knowledge and understanding from both Key Performance Measures	· Identifies and explains a principle that supports compulsory voting in Australia · Identifies how students learn about democracy by participating in a representative body · Explains a purpose for school participatory programs in the broader community · Explains a social benefit of consultative decision-making · Analyses why a cultural program gained formal recognition · Analyses an image of multiple identities · Identifies a reason against compulsion in a school rule · Recognises the correct definition of the Australian constitution · Identifies that successful dialogue depends on the willingness of both parties to engage

Proficiency Level	Selected Item Response Descriptors
Level 3	
Students working at Level 3 demonstrate relatively precise and detailed factual responses to complex key Civics and Citizenship concepts or issues in multiple choice items. In responding to open-ended items they use field-specific language with some fluency and reveal some interpretation of information.	· Analyses the common good as a motivation for becoming a whistleblower · Identifies and explains a principle for opposing compulsory voting · Identifies that signing a petition shows support for a cause · Explains the importance of the secret ballot to the electoral process · Recognises some key functions and features of the parliament · Recognises the main role of lobby and pressure groups in a democracy · Identifies that community representation taps local knowledge · Recognises responsibility for implementing a UN Convention rests with signatory countries · Identifies the value of participatory decision making processes · Identifies the importance in democracies for citizens to engage with issues
Level 2	
Students working at Level 2 demonstrate accurate factual responses to relatively simple Civics and Citizenship concepts or issues in responding to multiple choice items and show limited interpretation or reasoning in their responses to open-ended items They interpret and reason within defined limits across both Key Performance Measures.	· Recognises that a vote on a proposed change to the constitution is a referendum · Recognises a benefit to the government of having an Ombudsman's Office · Recognises a benefit of having different political parties in Australia · Recognises that legislation can support people reporting misconduct to governments · Identifies a principle for opposing compulsory voting · Recognises that people need to be aware of rules before the rules can be fairly enforced · Recognises the sovereign right of nations to self-governance · Recognises the role of the Federal Budget · Identifies a change in Australia's national identity leading to changes in the national anthem · Recognises that respecting the right of others to hold differing opinions is a democratic principle · Recognises the division of governmental responsibilities in a federation

Proficiency Level	Selected Item Response Descriptors
Level 1	
Students working at Level 1 demonstrate a literal or generalised understanding of simple Civics and Citizenship concepts. Their cognition in responses to multiple choice items is generally limited to civics institutions and processes. In the few open-ended items they use vague or limited terminology and offer no interpretation.	· Identifies a benefit to Australia of providing overseas aid · Identifies a reason for not becoming a whistleblower · Recognises the purposes of a set of school rules · Recognises one benefit of information about government services being available online · Matches the titles of leaders to the three levels of government · Describes how a representative in a school body can effect change · Recognises that 'secret ballot' contributes to democracy by reducing pressure on voters
Below Level 1	
Students working at below Level 1 are able to locate and identify a single basic element of civic knowledge in an assessment task with a multiple choice format.	· Recognises that in 'secret ballot' voting papers are placed in a sealed ballot box · Recognises the location of the Parliament of Australia · Recognises voting is a democratic process · Recognises Australian citizens become eligible to vote in Federal elections at 18 years of age · Recognises who must obey the law in Australia

Appendix I: Percentiles of achievement on the Civics and Citizenship scale

			5th	10th	25th	Mean - 95% CI	Mean	Mean + 95% CI	75th	90th	95th
Year 6	Australia	2004	229	270	334	393	400	407	470	525	558
		2007	220	266	339	400	405	410	479	534	565
		2010	207	254	330	401	408	415	489	559	602
	NSW	2004	241	286	350	402	418	433	491	546	576
		2007	259	306	373	421	432	443	499	553	581
		2010	228	277	348	413	426	439	506	576	619
	VIC	2004	257	294	357	406	417	427	482	531	561
		2007	247	292	356	408	418	429	489	536	564
		2010	234	273	347	408	422	436	497	567	610
	QLD	2004	212	250	310	357	371	384	437	487	516
		2007	194	239	306	363	376	390	453	512	546
		2010	172	221	300	358	374	391	456	520	561
	SA	2004	208	248	315	365	381	398	453	505	534
		2007	198	248	318	369	385	400	454	518	554
		2010	206	252	321	383	396	408	471	542	580
	WA	2004	203	242	305	358	371	385	439	497	532
		2007	181	229	305	358	369	380	445	498	529
		2010	194	240	320	387	402	417	486	556	596
	TAS	2004	210	256	327	378	393	408	466	519	551
		2007	201	242	323	383	401	419	481	546	580
		2010	197	249	331	396	411	425	495	570	613
	NT	2004	187	227	299	354	371	388	448	506	534
		2007	-131	-46	145	233	266	299	418	489	533
		2010	62	122	217	285	316	347	431	497	531
	ACT	2004	243	290	361	412	423	434	494	543	574
		2007	246	288	357	405	425	446	499	558	584
		2010	252	297	364	425	442	458	522	585	625

			5th	10th	25th	Mean - 95% CI	Mean	Mean + 95% CI	75th	90th	95th
Year 10	Australia	2004	289	345	428	489	496	503	575	631	664
		2007	295	345	429	493	502	510	585	646	681
		2010	278	339	436	508	519	530	614	679	716
	NSW	2004	337	381	457	511	521	532	594	648	679
		2007	311	361	456	512	529	546	618	679	714
		2010	319	380	479	534	558	582	652	711	744
	VIC	2004	284	338	424	475	494	513	577	634	665
		2007	288	337	424	477	494	511	577	634	665
		2010	292	350	443	495	514	533	597	657	690
	QLD	2004	259	318	400	452	469	487	549	602	635
		2007	298	341	415	467	481	495	554	610	641
		2010	225	287	390	454	482	511	586	652	685
	SA	2004	242	307	401	449	465	481	546	597	624
		2007	304	358	443	481	505	528	581	639	673
		2010	284	328	412	469	487	506	571	640	679
	WA	2004	270	334	420	469	486	504	567	620	653
		2007	262	320	405	455	478	500	558	617	651
		2010	266	333	427	488	509	530	603	675	714
	TAS	2004	279	334	421	472	489	505	569	624	658
		2007	258	310	400	468	484	500	575	636	674
		2010	280	330	411	477	492	507	581	646	681
	NT	2004	285	345	420	457	490	524	570	635	668
		2007	165	288	408	426	464	502	553	619	649
		2010	204	285	394	451	483	516	598	642	720
	ACT	2004	305	370	452	497	518	540	595	654	687
		2007	285	358	458	504	523	543	608	669	703
		2010	298	358	444	499	523	547	613	673	702

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