



Australian Government



Northern Territory
Government

Report on the
**National Literacy and
Numeracy Diagnostic
Tools Project**
2010



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Foreword

The Northern Territory is proud to share our knowledge and expertise to help raise student outcomes through the *National Literacy and Numeracy Diagnostic Tools Project*. The project gave the Northern Territory Department of Education and Training the opportunity to work collaboratively with all jurisdictions and schooling sectors to identify computer-based diagnostic tools that can be used in a range of remote, rural and provincial settings.

Used in conjunction with National Assessment Program – Literacy and Numeracy (NAPLAN) data and teacher observations, the diagnostic tools provide an invaluable resource to educators in Early, Primary and Middle Years of schooling. The tools not only allow teachers to measure and map a child's literacy and numeracy learning but also provide a supportive framework for them to do so.

The project provided a snapshot of the capability of available diagnostic tools and highlighted the fact there is no one size fits all solution. It is important schools assess the range of tools available and determine the appropriate model to suit their circumstances, their teachers and their students.

Improving teachers' literacy and numeracy assessment capabilities through technology is a key focus of the Northern Territory's Smarter Schools National Partnership plan. The outcomes of this project will form the basis of our future selection of diagnostic tools.

I am pleased the Northern Territory has been able to contribute to the national reform agenda through this very important project. I look forward to seeing the wider use of diagnostic tools across schools in the Northern Territory and nationally as we work collectively to improve literacy and numeracy results for our children.



Dr Chris Burns MLA

Northern Territory Minister for Education and Training
December 2010

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Executive summary

The National Literacy and Numeracy Diagnostic Tools project is one of six national key reform projects that support the implementation of Smarter Schools National Partnership activities and have cross-jurisdictional value and interest.

The Northern Territory led the project in collaboration with all jurisdictions and sectors (project partners) to evaluate literacy and numeracy computer-based diagnostic systems appropriate to the Early, Primary and Middle Years stages of schooling with the objective of determining those most effective for use in Australian school contexts.

The project identified a range of tools, and subsequently trialled, thirteen computer-based literacy and numeracy diagnostic assessment tools in Australian schools. Feedback on tool effectiveness to inform teaching and learning needs was collected from a range of stakeholders including participating teachers, students, project partners and the tool providers. The potential of the tools to support literacy and numeracy assessment and teaching and learning was explored as were the specific features of computer-based assessment that potentially provide an advantage over more traditional delivery modes.

A three-phase evaluation process collected feedback from key stakeholders before, during and on the conclusion of the trial. Before the trial commenced baseline information was collected from participating schools and teachers to determine such factors as the appropriateness of school IT infrastructure and support to trial their tool, the range of teacher experience, and the diversity of the schools and students trialling each tool.

Trial teachers provided feedback after their initial training and tool familiarisation period. This information was used to ascertain such aspects as the ease of familiarisation with the tool, the effectiveness of training and readiness for the trial. Immediately following the trial, feedback on the effectiveness of the tool and its reporting functionality to support teaching and learning was collected from teachers, students and project partners.

Tool providers monitored and reported on trial activity and were invited to comment on feedback themes and pertinent comments about their tool. Tool providers also offered advice on further tool developments since the trial, future development plans and where relevant advice on usage costs.

The tools were trialled in a relatively small number of schools and as a consequence the trial findings provide only a snapshot of tool suitability to particular contexts. While all tools demonstrated elements of strength and best practice assessment, school systems will need to determine the broader applicability of these findings across a larger range of schools.

The trial found there is a limit to the range of off-the-shelf, fit-for-purpose tools available that suit the varied needs and contexts of students across Australia. All three stages of schooling: Early, Primary and Middle Years have a limited range of computer-based assessment tools to support teaching and learning programs. This is particularly evident in the Early Years where currently available tools require one-to-one administration. Whilst this can provide a rich assessment experience for both the teacher and student, it does present potential resourcing constraints.

Trial feedback suggests that teacher assessment literacy may be a factor in the effective use of the assessment tools, particularly for tools that provide more comprehensive testing and reporting options. Teachers who highly valued the rich data that the assessment would provide were better able to overcome barriers such as time required for preparation, tool familiarisation, training requirements and administration time.

The understanding and use of student self-assessment varied immensely across trial schools suggesting this is an area that requires further support and development.

Computer delivery was observed to contribute to high student engagement with many teachers commenting that students enjoyed working on the computers and that they responded well to receiving instant feedback when this was available.

Although the lack of adequate Information Technology (IT) infrastructure and support was an issue at some sites, on the whole trial schools reported an appropriate level of IT infrastructure and support to use their computer-based tool. The relationship between school IT infrastructure and support, teacher IT capabilities and training support play a key role in enabling teachers to use assessment tools effectively.

Recommendations include: the development of a tool selector program to support schools in identifying the most appropriate tool for their purpose and context; that further research be undertaken to determine the potential to develop an Early Years' assessment tool that is student driven; consideration be given to providing access to more schools the tools that are currently available and further research to explore the relationship between assessment literacy and effective assessment tool use be considered.

Structure of this report

The report is organised into the following sections:

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|-----------|--|
| Section 1 | Executive summary, Introduction and Project recommendations and Findings. |
| Section 2 | Overview of the trial methodology and the tools trialled. |
| Section 3 | Summary of key information for each diagnostic assessment tool ordered by target student cohort (Early, Primary and Middle Years). These summary charts are designed for quick perusal by the reader. |
| Section 4 | Detailed chapter for each assessment tool. This includes information such as an overview of the tool, trial data, teacher and student reflections on the trial experience (including quotations in italics) and considerations for future use. |
| Section 5 | Appendices consist of evaluation templates used to collect feedback and acknowledgements. |

SECTION 1

Introduction

At its meeting on 17 April 2009, the then named Ministerial Council for Education, Employment, Training and Youth Affairs (MCEETYA) agreed to work collaboratively across jurisdictions on the design, development and implementation of six key reform strategies that have significant cross jurisdictional benefit and interest. The six reform strategies are:

- development/enhancement of School Performance Improvement Frameworks
- development of strategies to improve outcomes in small and/or remote schools
- development of strategies to engage parents in schooling in low SES communities
- extended service school models
- diagnostic assessment of literacy and numeracy
- leadership development strategies.

The Northern Territory nominated to lead the National Literacy and Numeracy Diagnostic Tools project. The Australian Capital Territory, New South Wales, South Australia and Victoria expressed a specific interest and along with the Australian Government were key partners to the project.

Assessment of student learning that provides valuable diagnostic information to monitor progress and assist in determining appropriate intervention and support strategies is a critical component of the teaching and learning cycle.

Whilst NAPLAN provides individual student achievement data at two year intervals, there is a need for diagnostic assessment tools to enable ongoing assessment for learning. This would be of particular benefit to on-entry and Early Years students prior to Year 3.

The Australian Council for Educational Research (ACER) was commissioned by the Department of Education, Employment and Workplace Relations (DEEWR) to undertake an evaluation of literacy and numeracy diagnostic tools currently in use in Australian schools. The outcomes of this study were used to assist in identifying diagnostic assessment tools for the trial and to inform thinking about the diagnostic qualities of the tools to be trialled.

The objective of this trial was to identify diagnostic systems appropriate to the Early, Primary and Middle Years stages of schooling to assess student achievement in literacy and numeracy that provide:

- performance-based assessments of students to triangulate with data based on teacher judgements and systemic tests, including NAPLAN
- computer-based tools with either instantaneous or quickly available feedback of both individual and groups of students that can be used to inform teaching and track student performance across years of study
- systems with rich diagnostic outputs that recommend explicit teaching within holistic teaching/learning programs rather than atomised and isolated teaching
- systems that ensure no cultural bias and maximum engagement of students.

Recommendations

It is important to note that as the tools were trialled in a relatively small number of schools, the findings can only provide a snapshot of tool suitability to particular contexts. School systems will need to determine the broader applicability of these findings.

Within these limitations the following recommendations are made:

Recommendation 1

An assessment tool selection program that draws from a database be developed to support teachers and schools in the selection of appropriate literacy and numeracy assessment tools that best meet the purpose and context of the assessment.

This assessment tool selection program would include, but not be restricted to, the focus and target year level, assessment purpose, Diagnostic Power of the instrument, training requirements, delivery mode and administration format, reporting and analysis options and subsequent teaching and learning support.

This program could be used to guide schools in choosing the most appropriate assessment for the purpose and context of the assessment need. Advice on the recommended teacher minimum assessment literacy level to support effective use of the assessment tool could also be provided by the program. The New Zealand Ministry of Education Assessment Tool Selector program ¹ is one model that could be considered when developing an Australian tool selector program. This database could include computer and non-computer based tools.

The content in Section 3 of this report provides a sound basis for the development of such a program.

Recommendation 2

Due to the noticeable gap in the Early Years, a literacy and numeracy assessment that is less teacher time intense i.e. does not require one-to-one administration, is developed.

Current Early Years tools require one-to-one administration. These assessments provide rich data that is further enhanced by the observations teachers make during the assessment and were highly valued by many teachers. However they can present resourcing issues and it would be useful to have other options available for Early Years assessment that are less teacher-time intensive.

The development could be informed by tools such as the *Early Literacy and Numeracy Assessment (ELNA)* tool, University of New South Wales (was in development stage) to ascertain the potential of such tools to meet or inform this need in the future.

¹ <http://toolselector.tki.org.nz/>

Recommendation 3

Given the small range of computer-based tools currently available to all Australian schools, that the potential of current tools being made available to more schools be explored.

Four tools are currently available primarily to Victorian schools: the *English Online Interview*, the *Mathematics Online Interview*, the *Fractions and Decimals Online Interview* and *On Demand Testing*. Western Australian Government schools will have access to modules from the *English Online Interview* and *Mathematics Online Interview* from 2011.

Two tools (*Improve* and *SMART*) are under development and their future availability is funding dependent.

An Even Start is already in many schools although it is likely many schools are not familiar with the tool.

Two tools (*e-asTTle* and *Achieve*) are used internationally and require customisation for use in Australia.

As each of these tools meet one or more of the project objectives the tool's potential to be made available to Australian schools could be explored. This would include but not be restricted to a cost-benefit analysis.

Recommendation 4

A set of best practice principles be developed to underpin the development and implementation or roll-out of future computer-based tools building on the principles identified during the trial.

No one computer-based tool trialled met all the project objectives however each tool met one or more of these objectives. Consideration could be given to the strengths observed about computer-based assessment at trial to inform future tool development and tool implementation or roll-out.

The potential of technology to support best assessment practice was noted during trial. A set of best practice principles could inform future tool development. This would include but not be limited to the use of technology to bring efficiencies to the assessment process such as automatic or supported marking, adaptive test components to support better targeting of tests, provision of student friendly feedback, support in the analysis of student response data, provision of a range of reporting options to support data interrogation and focussed teaching and learning support.

To ensure the success of implementation or roll-out programs the level of teacher training and support, attention to IT requirements and helpdesk support should be matched to the complexity of the tool and training requirements. And the inclusion of real time training and orientation should be considered as an important element in any training or orientation program.

Recommendation 5

Further research is conducted to explore the link between teacher assessment literacy competency and the effective use of assessment tools to inform teaching and learning programs.

It was observed during the trial that teachers who valued the rich data more complex tools could provide were more able to meet the tool's training and navigation demands. This suggests that there is a link between teacher assessment literacy competency and the effective use of assessment tools.

Further research could explore the most effective way of supporting teachers and schools in implementing best assessment practice. This could include the development of strong learning partnerships with students and other stakeholders and in the use of assessment data to best inform their teaching and learning programs.

Findings

Tool availability

A range of sources was drawn on to identify computer-based assessment tools available in Australia as this information is not readily accessible. No one computer-based tool trialled met all of the project objectives however each tool met one or more of these objectives.

The small range of computer-based assessment tools currently available are not necessarily mapped to jurisdiction curriculum. Four of the tools in current use are not available to all Australian schools.

Each of the three Early Years tools available requires one-to-one administration and consequently have potential resourcing constraints.

The tools available vary in their complexity both in use and in the teaching and learning application available.

Teacher assessment experience and expertise

Schools reported using a range of assessments for summative and formative purposes.

Teachers' assessment experience and expertise varied across trial sites ranging from limited to advanced.

Trial feedback suggests that teacher assessment literacy may be a factor in the effective use of assessment tools especially tools providing more comprehensive testing and reporting options.

The observation was made that some teachers did not understand the limitations of their specific tool, seeking information it was not designed to provide, or critical of its difficulty level without an appreciation that an instrument needs to provide a range of test item difficulty to effectively assess across different student ability levels.

It was noted that some teachers were better able to overcome barriers such as time required for preparation, tool familiarisation, training requirements, administration time and support requirements (especially for one-to-one administration) because they valued the rich data source the assessment would ultimately provide.

A further observation was that the use and understanding of student self-assessment varied immensely across trial schools with many schools reporting that little or no assessment information is shared with students.

Effective tool use

School IT infrastructure and support varied across trial sites. The quality of the IT infrastructure and support is an important element contributing to effective tool use.

Teachers' computer and IT experience varied across trial sites. The demands on teacher IT and computer expertise vary depending on the range and complexity of the tool elements e.g. accessing web conferences, accessing learning platforms and navigating through tool options.

Training

In theory anytime access provides the greatest flexibility for teachers. However in practice the uptake of flexible training was often slow or not accessed. Some teachers reported the training demands were overwhelming despite little or no site activity being observed by the provider. This suggests some teachers are not yet open to embracing options the technology makes available.

Real-time training whether this was face to face or delivered via the internet was valued by teachers as was access to external technical support such as a helpdesk.

Web conferences were an effective way of providing real-time training and support across diverse geographical locations with access to tool and assessment expertise. Time differences and teacher availability resulted in delivery restrictions. This was able to be met to some degree by the provision of alternative access modes for teachers unable to attend live sessions.

Although user guides or manuals were often clear enough to be used in isolation, real-time training was valuable in orientating teachers to the tool and reporting options.

Effective use of complex tools requires sustained teacher involvement e.g. becoming familiar with the tool, constructing targeted assessments and selecting suitable reports to inform future teaching.

Student engagement

Computer delivery appears to contribute to high student engagement. Students valued receiving instant feedback and enjoyed colourful and interesting test presentations. Many students also appreciated tests that provided a mix of easy and challenging questions.

Technology supporting best practice assessment

It was noted that technology can support best practice assessment through the mechanisation of otherwise time consuming processes. Automatic marking is time efficient and provides immediate results. Machine data collation is time efficient and can be used to identify patterns or trends in data e.g. identify common misconceptions across a student group.

Reporting options are more varied and offer the opportunity to display data in the most suitable format allowing further interrogation of the data e.g. filtering by specific target groups.

Targeted teaching and learning support can be provided based on patterns identified and link teachers to relevant information.

SECTION 2

Diagnostic Power estimate

The ACER report '*Literacy and Numeracy Diagnostic Tools an Evaluation*' which was commissioned by DEEWR² identified four levels of Diagnostic Power. Forster (2009, p17) identified four Diagnostic Power levels that have "*.. the power to expose, identify and/or highlight specific weaknesses and strengths in skills so that interventions can be designed to improve learning...*".

In this report the powers of diagnosis have been applied as follows.

Level 1: collected evidence referenced against a learning framework.

Level 2: broad measure of achievement mapped to a scale, allowing monitoring of growth over time. As a one off test for a class this form of assessment provides a general guide to teaching and learning programs.

These assessments are most useful for providing baseline information to inform class teaching and learning programs at a general level.

Level 3: identifies strengths and weaknesses more narrowly in a domain and may include the capacity to target the assessment to achievement level and may include capacity to monitor growth over time.

These assessments are most useful for providing more detailed information about aspects of a domain. Targeted testing will provide more useful information about low and high achievers and assist to identify appropriate teaching and learning needs.

Level 4: provides very detailed information about narrowly defined skills

These assessments are most useful for providing specific information about narrowly defined aspects of a domain and supporting appropriate teaching strategies to reflect student conceptual development in these specific skills.

Diagnostic tool selection process

The first phase of the project identified possible tools of interest to trial. A number of potential tools of interest were previously identified in the report '*Literacy and Numeracy Diagnostic Tools an Evaluation*'. Project partners identified additional tools and research identified further tools of potential interest to the project, either currently available or close to release.

Assessment tools were only progressed to recommended status where they met the following criteria.

- Computer-based assessment delivery (either fully or delivery supported), response recording (may include teacher response entry), automatic scoring (may include some teacher judgement) and reporting.
- Of interest to the project due to the target group and potential diagnostic value.
- Available, or considered likely to be available, for trialling during Semester 1 2010.
- Currently in use in Australia or internationally, or new tools at an appropriate development point.

² Forster, M, 2009, *Literacy and Numeracy Diagnostic Tools An Evaluation*, Australian Council for Educational Research (ACER), Literacy and Numeracy Strategies Branch, Commonwealth Department of Education, Employment and Workplace Relations (DEEWR), Canberra, Australia

Trial recommendations and a reviewer summary identified points for consideration to ensure the tool could be trialled effectively and formed the basis for project partners to select assessment tools to trial in their jurisdictions.

Information against twenty aspects was compiled to assist in evaluating the tool's potential to meet assessment needs in schools in their jurisdiction.

Aspects included: tool provider information, a brief description of the tool, the focus of the tool (literacy or numeracy), target year levels, current tool usage or phase of development, delivery mode and computer-based components, minimum technical requirements, training requirements, guidance on teacher and student requirements, explicit teaching and learning support provided, tool provider guidance on ease of use and likely level of student engagement and indicative cost. Where available, links to further information about the tool was provided.

Eighteen tools were identified to be of interest to the project.

Diagnostic tools selected

From the final list of tools, 15 of the 18 recommended proceeded to trial with 5 project partners indicating their willingness to undertake trials of these tools in their jurisdiction.

Five tools were nominated for trial in 3 jurisdictions – *Online Placement Instrument (OPI)*, *e-Assessment Tool for Teaching and Learning (e-asTTle)*, *Fractions and Decimals Online Interview* and *Specific Mathematics Assessments that Reveal Thinking (SMART)*.

Four were nominated for trial in 2 jurisdictions – *Early Literacy and Numeracy Assessment (ELNA)*, *English Online Interview*, *Mathematics Online Interview* and *Achieve*.

Six tools were nominated for trial in only 1 jurisdiction – *Performance Indicators in Primary Schools (PIPS)*, *SMEEBU*, *On Demand Testing*, *MY Access*, *An Even Start* and *Compass*.

Interest was also expressed in these tools by other project partners who were unable to participate in the trials due to other jurisdictional commitments. Partners agreed to provide current information they had on the use of any of the trial tools in their jurisdiction.

Before nominating particular tools of interest for trial, project partners considered key factors such as:

- the match to identified needs in their jurisdiction with a view to longer term tool use
- the capacity of schools to meet trial requirements such as the minimum technical requirements and training commitments
- any financial and resourcing constraints that might impact on the trial of the tool.

It was agreed that schools would trial one tool only and that where possible tools would be trialled in different jurisdictions or geolocations. To maximise the range of schools participating in the trial, schools were asked to nominate one, or two as a maximum, trial classes. Where the range of sites was limited, it was agreed that project partners would endeavour to observe the trial and provide further evaluation data to the project.

Subsequent to these nominations two tools were withdrawn by the tool providers. *SMEEBU* was withdrawn due to an inability to meet the trial delivery timelines and *ELNA* was withdrawn as the University of New South Wales was required to defer the tool's development due to other commercial priorities.

Trial participants overview

Project partners invited schools to participate in the trial and provided them with tool summary information. Schools then registered for the trial directly with the project team.

Ninety one schools registered for trial. On registration schools were provided a project pack that included:

- an overview of the project detailing the project aims, objectives and expectations
- teleconference attendance information
- an introduction to the tool they were trialling and the tool provider
- Evaluation 1A (used to collect trial school demographics)
- Evaluation 1B (used to collect trial teacher demographics).

A series of introductory 30 minute teleconferences were conducted to provide an overview of the project's aims and objectives and discuss project participation benefits and expectations. 95% (86 schools) attended one of the 7 sessions held. Project partners followed up with non-attendees from their jurisdiction or sector.

Seventy one schools, 78% of the registered schools, completed the trial and provided evaluation throughout and at conclusion of the trial. Twenty four of these schools were also interviewed by the project team.

A further 2 schools provided feedback on the training element however delivery restrictions did not permit their further participation in the trial.

School sector representation of the 71 schools completing the trial was:

- Government – 55 schools (77%)
- Independent – 9 schools (13%)
- Catholic – 7 schools (10%).

Preparing for trial

Following receipt of registration information tool providers contacted schools and provided the necessary information to enable setup in readiness for the trial. As this process differed for each tool, detailed information is provided for each tool in Section 4. Some aspects of note are:

- checks to ensure minimum IT requirements were met
- provision of a user manual or access to training materials
- self directed or guided training and tool familiarisation
- self directed or guided report interpretation and analysis.

Evaluation methodology

The following criteria formed the basis of the evaluation.

Criteria 1: Trial context – collection of data to provide an understanding of the school context. Information about aspects such as school, student and teacher demographics including assessment experience, school IT structure and support and the implementation of the trial was collected.

Criteria 2: Tool user friendliness – feedback on the ease of use, functionality and accessibility of the tool.

Criteria 3: Assessment appropriateness – feedback on the appropriateness of the tool for the target group it was trialled with and potential to use with other target groups.

Criteria 4: Richness of diagnostic information provided – feedback on the validity and quality of data provided to inform teaching and learning programs and perceived impact on future teaching or future use of assessment data

Criteria 5: Trial experience – feedback on the trial and reflection on future tool use and potential.

Criteria 6: Future use, cost considerations and on-going development. Consideration of the benefits and any limitations of tools to support teaching and learning programs and recommendations based on trial experience. Tool providers gave an indication of costing models, possible customisation options and planned tool development.

Five evaluation forms incorporating these criteria drew information from the key stakeholders (the school contact, trial teachers and students) at each school.

Trial feedback overview

There were three key data collection points: pre-trial, immediately following training and following the assessment and reporting phase. This data was collected via distribution of a series of evaluation forms. The Evaluation templates can be located in the Appendices.

Before the trial commenced information was collected from stakeholders to establish the context of the trial.

- Information was provided by the tool providers about their tools against the project aims and objectives.
- Project partners outlined their interest in specific tools and the potential support each tool might provide in teacher assessment of particular target groups.
- Each school contact provided information about the trial school including the school's IT infrastructure and support and the school's motivation for participation (Evaluation 1A).
- Trial teachers provided information about the student cohort, teacher motivation for trial participation, teacher experience, computer and assessment expertise and current assessment use (Evaluation 1B).

Following the training and tool familiarisation period feedback on the effectiveness of trial preparation was collected.

- Teachers commented on the trial preparation, including time estimates for preparation (including training requirements), training effectiveness, trial student information and trial readiness (Evaluation 2).

On conclusion of the testing and reporting feedback was collected from teachers and students.

- Teachers provided their reflections of the trial, including trial context, time requirements and support provided, feedback on using the tool, target group appropriateness, reporting, student use of results, teacher use of results and recommendations for future tool use (Evaluation 4).
- Students provided feedback after the assessment was conducted. This was completed with teacher assistance if required. The feedback included a rating on ease of use, feedback on what they liked and didn't like about the tool, self assessment guidance they gained through the results and information about their current computer use (Evaluation 3).

- Tool providers provided trial activity reports and also commented on the feedback themes that had emerged during the trial.
- Project partners provided their perceptions based on trial observations and discussions with trial schools.

Training overview

Training requirements varied depending on the complexity of the tool and its reporting options.

An Even Start, *Improve* and *PIPS* provided user guides or manuals to teachers, allowing for training to be self directed. Assistance was available through a helpdesk for *Improve* and *PIPS* participants. Schools using *An Even Start* contacted their jurisdiction or sector officer or the project team for assistance if required.

Compass, *English Online Interview*, *Fractions and Decimals Online Interview*, *Mathematics Online Interview* and *OPI* provided user guides and conducted an introductory teleconference to orientate teachers to the tool and check access. A helpdesk was also available to support any further assistance required.

Achieve, *On Demand Testing* and *SMART* conducted real-time meetings to provide training and guidance to teachers on the tool's use.

Achieve held two online meetings with a local coordinator and an international specialist providing live online tool training and familiarisation in the first session, followed later by a session reviewing the reporting options available. These sessions were taped enabling participants to watch the session at any time to review the information provided. This option was valued by participants.

On Demand Testing conducted half day face-to-face training providing an overview of the tool, orientation to the test options, and reporting available. This face-to-face training was valued by the participants.

SMART conducted two online meetings. The first to orient teachers to formative assessment use, tool familiarisation and test setup while the second focussed on reporting and the identification of misconceptions and links to suggested teaching strategies. Both sessions outlined the research base behind the misconception categories.

A helpdesk was also available for *Achieve*, *On Demand Testing* and *SMART* during the trial period.

e-asTTle provided self directed online training and the opportunity to participate in online forums on a weekly basis during the training period and then later during the reporting phase. Teachers were required to undertake a series of professional development sessions, during a specified period. On a weekly basis teachers could discuss issues or ask questions in a chat room facilitated by an assessment and tool expert.

MY Access provided a range of training models across the 3 trial sites; one-to-one training at one site, a tool expert trained another colleague at the school and the third school drew on the support of a local school expert. In all instances these schools also had access to teacher and student user guides and access to a helpdesk for further assistance. Each school was contacted by the tool provider during the trial period to ensure they had the support required to trial the tool.

Potential for future use

There may be national, jurisdiction or sector interest in the uptake of specific tools or in further investigating the potential of tools. Regarding the potential for national use, the following summarises key information contained in the individual tool summaries provided in Section 3 and Section 4.

Tools already available for national use are *Compass*, *MY Access*, *OPI* and *PIPS*. *Compass*, *MY Access* and *OPI* are delivered via the internet while *PIPS* is provided on a DVD with internet access to more comprehensive reporting.

An Even Start was developed as part of an Australian Government funded tutorial program to support Year 3, 5, 7 and 9 students who had not met minimum standards in literacy or numeracy. In 2008 all Australian primary schools were sent a copy of *An Even Start Tutor Kit*. Tutor Guide II was provided to verified tutors in 2008, many of whom were classroom teachers. Although this program is no longer running it is likely that many schools still have a copy of this resource in their school; in essence, a freely available tool for school use. Further copies of *An Even Start Tutor Guide II* are not available at this time.

The international tools, *Achieve* and *e-asTTie*, are currently mapped to international curriculums (United Kingdom and New Zealand respectively). Items would need to be reviewed to determine their suitability in an Australian context, mapped to the Australian Curriculum and item difficulty recalibrated against an Australian student population. Access to these tools prior to their Australian release will need to be negotiated directly with the tool providers. Contact details are provided in section 4.

Some tools were in development at the time of trial and their future use is largely dependent on funding to complete development e.g. further expansion of test item banks and resources and completion of pre-release field trials.

Improve was in an early phase of development at the time of the trial and feedback gained has been provided to inform development. There are plans to simplify access to *Improve* and build the item bank. Further trials are underway that will further inform development ahead of the tool's release. *Improve* is due for national roll-out late 2011, depending on funding.

SMART has been developed to date primarily for research purposes. Its wider application will require formal web design considerations and the further building of the test bank and research base provided. Given the formative focus of this assessment teachers also require training in the effective use of formative data to maximise the value of the feedback provided. The future availability of *SMART* is funding dependent.

The *On Demand Testing*, *Mathematics Online Interview*, *English Online Interview* and *Fractions and Decimals Online Interview* are currently used in Victoria. The Western Australian Government schools will have access to modules from the *English Online Interview* and the *Mathematics Online Interview* from 2011. The tools are owned by the Victorian Curriculum and Assessment Authority (*On Demand Testing*) and the Victorian Department of Education Employment and Childhood Development respectively. Special access arrangements were provided to enable schools outside Victoria to trial these tools. Future developments may mean these tools become directly available through the internet however in the immediate future negotiations will need to be held directly with the relevant authorities to determine the access and costing models available. Contact details are provided in the appendices.

Diagnostic assessment tools overview

Diagnostic assessments	Tool characteristics								
	Literacy and/or Numeracy	Target cohort	One-to-one Administration	Concrete materials required	Student feedback provided	Instant or prompt reporting	Diagnostic Power * estimate	Explicit teaching advice	Currently available to all schools in Australia
Achieve	N	M			Yes	Yes	3	Yes	
An Even Start	L, N	P, M				Yes	3	Yes	#
Compass	L, N	M			Yes	Yes	2		On purchase
e-asTTle	L, N	P, M			Yes	Yes	2, 3	Yes	
English Online Interview	L	E	Yes	Yes		Yes	3, 4		Vic, WA
Fractions & Decimals Online Interview	N	P, M	Yes	Yes		Yes	4	Yes	Vic
Improve	L, N	P, M			Yes	Yes	2, 3	Yes	
Mathematics Online Interview	N	E, P	Yes	Yes		Yes	3, 4	Yes	Vic
MY Access	L	P, M			Yes	Yes	3	Yes	On purchase
On Demand Testing	L, N	P, M				Yes	2, 3		Vic
OPI	L, N	P, M			Yes	Yes	2		On purchase
PIPS	L, N	E	Yes			Yes	3, 4		On purchase
SMART	N	M				Yes	4	Yes	

L – Literacy N – Numeracy M – Middle Years P – Primary Years E – Early Years

* Refer to p10 of this report

Restricted to copies currently available in schools

SECTION 3

EARLY YEARS TOOLS

English Online Interview

Tool provider	Victorian Department of Employment, Education and Early Childhood Development (Vic DEECD)
Focus	Literacy: Reading, Writing, Speaking and Listening
Diagnostic Power	<i>English Online Interview</i> provides finer grain information about a domain with Diagnostic Power levels 3 and 4.
Target student cohort	Early Years. On-entry (Prep, Reception, Kindergarten, Transition or Foundation) to Year 2.
Brief description	<p>The <i>English Online Interview</i> assesses the English skills of students. Teachers interview students in a one-to-one situation, using texts and downloadable resources designed specifically for the Interview. Teachers enter student responses directly into the online system which is then used to generate a range of reports at student, class or school levels.</p> <p>The time to complete an assessment is on average 40 minutes. Administration may require more than one session.</p>
Tool strengths	<p>Within the context of the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ observations about student learning made during the assessment ▪ detailed reports ▪ professional learning gained through tool use ▪ quality hands-on materials e.g. picture story books ▪ reports and information from student observations inform teaching programs.
Future use and application potential	<p><i>English Online Interview</i> is currently available to Victorian schools. It is considered most useful for:</p> <ul style="list-style-type: none"> ▪ assessing aspects of reading, writing, speaking and listening ▪ tracking student achievement and growth over time ▪ quick access to student reports ▪ professional learning gained through tool use and use of materials.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ teacher time to prepare for the assessment ▪ resourcing to allow one-to-one administration ▪ access to Interview specific resources e.g. texts.
School demographics	<i>English Online Interview</i> was trialled in 5 Government schools in 2 jurisdictions. A common motivation for trial participation was to gain experience in explicit data use to improve literacy skills, make data comparisons and generally to improve teachers' data literacy. The range of IT infrastructure and support within the 5 schools varied from limited to adequate. Despite any IT limitations the trial was effectively conducted.

Teacher demographics	7 teachers completed the trial providing feedback both during and on completion of the trial. Their years of teaching experience ranged from 2 to 10 years. Teachers describe their IT and computer expertise as ranging from fair to good and use a variety of computer applications. The key motivating factors for trial participation were to use an e-tool and to inform teaching practice.
Student demographics	124 students participated in the trial with 46 providing feedback. The gender balance was almost even with 63 boys (51%) and 61 girls (49%). 15% of students were ESL and 10% were Indigenous. 84% of students speak fluent English. Most students regularly use computers, reporting a range of applications.
Tool provider support	A range of support materials were employed during the trial, including a user guide and resources, provision of kit of materials e.g. picture story books. A 30 minute introductory teleconference was held and helpdesk support was available via phone and email contact.
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ High student engagement ▪ Length of time to administer one-to-one assessment needed resourcing ▪ Low level IT support required ▪ Clear text and images ▪ Appropriate age, curriculum and target group ▪ Good capacity to track and monitor students over time ▪ One-to-one aspect considered valuable by teachers <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Easy and fun test ▪ Engaging hands-on activities ▪ Students appreciated one-to-one interaction with their teacher ▪ Assessment was considered time-consuming by some students ▪ Activities highlighted to students what they know and can do

Refer pp 85 – 92 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

Mathematics Online Interview

Tool provider	Victorian Department of Employment, Education and Early Childhood Development (Vic DEECD)
Focus	Numeracy: Number, Measurement and Space
Diagnostic Power	<i>Mathematics Online Interview</i> provides finer grain diagnosis of sub-skills in a domain with Diagnostic Power levels 3 and 4.
Target student cohort	Early Years/Primary. On-entry to Year 4.
Brief description	<p>The <i>Mathematics Online Interview</i> is an assessment tool used by teachers in a one-to-one interview situation to determine a student's existing mathematical knowledge and skills. The Interview consists of hands on tasks through which students demonstrate mathematical understanding and preferred strategies for solving increasingly complex tasks. Student data is presented in detailed profiles in relation to significant points of growth. Analysis of student responses provides teachers with valuable information to use when planning to meet individual student learning needs and progress can be monitored over time.</p> <p>Time to conduct an assessment between 30 to 60 minutes.</p>
Tool strengths	<p>Within the context of the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ observations about student learning made during the assessment ▪ detailed reports ▪ professional learning gained through tool use ▪ quality hands-on materials provided ▪ reports and information from student observations inform teaching programs.
Future use and application potential	<p><i>Mathematics Online Interview</i> is currently available to Victorian schools. It is considered most useful for:</p> <ul style="list-style-type: none"> ▪ enabling teachers and schools to collect detailed information on students' understanding of mathematics ▪ developing a detailed profile of student achievement ▪ informing focused teaching ▪ measure growth over time.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ teacher time to prepare for the assessment ▪ resourcing to allow one-to-one administration ▪ access to interview specific resources ▪ time to analyse reports.

School demographics	<i>Mathematics Online Interview</i> was trialled in 8 schools in 3 jurisdictions (2 Independent and 6 Government). A key motivation for trial participation was to gain experience in explicit data use to improve numeracy skills and to experience the use of an e-assessment tool. The IT infrastructure and support within the schools were adequate to support the trial.
Teacher demographics	11 teachers completed the trial. Teaching experience varied from 6 weeks to 20 years. Each teacher uses a variety of computer applications. A range of computer and IT expertise was reported from poor to average to sound. Despite any limitations teachers considered they may have the trial was effectively conducted.
Student demographics	184 students participated in the trial with 54 providing feedback. The gender balance of students was 86 boys (47%) and 98 girls (53%) with a similar balance reflected in the students providing feedback. 42 (23%) of the trial students are identified as ESL learners (English as a Second Language) and 48 (26%) of students identified as Indigenous. Students regularly use computers, reporting a range of applications.
Tool provider support	A range of support materials were employed during the trial including provision of a kit of materials and access to a user guide. A 30 minute introductory teleconference was held and a helpdesk was available via phone and email contact.
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ Length of time to administer one-to-one assessment needed resourcing ▪ Low level of IT support was required ▪ Comprehensive support provided by Vic DEECD ▪ Adequate support provided within tool ▪ Clear text and images ▪ Appropriate age, curriculum and target group ▪ Good capacity to track and monitor students over time ▪ One-to-one aspect considered valuable by teachers <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Easy and fun tool to use ▪ Engaging hands-on activities ▪ Students appreciated one-to-one interaction with their teacher ▪ Assessment was considered time consuming by some students ▪ Activities highlighted to students what they know and can do

Refer pp 117-124 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

Performance Indicators in Primary School (PIPS)

Tool provider	University of Western Australia
Focus	Literacy: Reading, Writing, Phonics Numeracy: Number, Measurement
Diagnostic Power	A responsive test that identifies strengths and weaknesses in literacy and numeracy. Capacity to track student progress over one year with Diagnostic Power levels 3 and 4.
Target student cohort	Early Years. On-entry students (Prep, Reception, Kindergarten, Transition, Foundation). Note: this trial also focussed on assessing Indigenous students in Years 4, 5 and 6 with the intention of gaining an insight into the content and age appropriateness of the tool for older Indigenous students.
Brief description	<i>PIPS</i> assists teachers to assess the progress of students in literacy and some aspects of numeracy. The test can: <ul style="list-style-type: none"> ▪ diagnose individual students and provide data to indicate what areas students are achieving or underachieving ▪ predict future performance for identifying individuals who might benefit from early intervention ▪ provide comparison charts to inform schools about performance in comparison to other Australian schools.
Tool strengths	Within the context of the trial cohort the following strengths were identified: <ul style="list-style-type: none"> ▪ user friendly with clear instructions ▪ comprehensive user guide ▪ images clear, colourful graphics, attractive and popular amongst students ▪ provides a clear view of where students are at, highlighting areas of need and identifies specific groups ▪ data easy to interpret ▪ observations about student learning made during the assessment.
Future use and application potential	<i>PIPS</i> is currently available to all schools in Australia on purchase. It is considered most useful for: <ul style="list-style-type: none"> ▪ predictive forecasting that alerts teachers to intervention required ▪ providing comparative student literacy and numeracy information at the beginning and end of the year ▪ collecting diagnostic data to inform teaching and learning needs ▪ instant feedback on literacy and numeracy achievement ▪ comparison against state and territory cohorts.
Considerations before use	The following should be considered before using the tool: <ul style="list-style-type: none"> ▪ it is recommended that the classroom teacher is the best person to administer the assessment ▪ time is required to become familiar with the user guide and to enter class and individual student details onto the tool's database ▪ school data is required to be uploaded to enable the provision of

	<p>standardised reports</p> <ul style="list-style-type: none"> ▪ a school fee and an amount per student is charged which includes the baseline and final assessments and covers data analysis.
School demographics	<p><i>PIPS</i> was trialled in 3 schools across 1 jurisdiction. Two schools were in Provincial locations, while 1 was in a Very Remote region. All 3 schools reported adequate school IT infrastructure to conduct the trial successfully. A comprehensive assessment of literacy and numeracy levels to use to identify areas of need when programming and planning for students was a primary motivation for participation.</p>
Teacher demographics	<p>Ten teachers completed the trial. Their years of teaching experience ranged from 2 to 28 years. It was reported that all 10 teachers usually use a computer for email, internet and word processing. The majority of teachers reported their computer and IT expertise as adequate. The use of assessment data that provides an evidence base to inform teaching and learning programs and to enhance understandings of literacy and numeracy levels amongst students was a common motivation for trial participation.</p>
Student demographics	<p>110 Transition to Year 6 students participated in the trial with 46 providing feedback. An aim of this trial was also to gauge feedback from an older student cohort of Indigenous students (30%) having English as their second language. 43% of students in the trial speak fluent English. Students regularly use computers for many reasons including to play music and DVDs, games and for social interaction such as Twitter, Chat, Facebook or email.</p>
Tool provider support	<p>A Manual was provided to all trial schools and access to the <i>AusPIPS</i> website to upload student data. Helpdesk support was available via phone and email contact.</p>
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ High level of student engagement ▪ One-to-one administration considered valuable by teachers ▪ Easy to use ▪ Clear text with attractive images ▪ Data informs planning and programming ▪ Some vocalisations needed to be clearer <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Enjoyed computer delivery ▪ Like the colourful images ▪ Some students had difficulties understanding vocalisations

Refer pp 156-165 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

PRIMARY / MIDDLE YEARS TOOLS

An Even Start

Tool provider	Department of Education, Employment and Workplace Relations (DEEWR)
Focus	Literacy: Reading and Writing Numeracy: Number, Space, Measurement, Chance and Data
Diagnostic Power	<i>An Even Start</i> identifies strengths and weaknesses in narrowly defined domain or sub-domain with a Diagnostic Power level 3.
Target student cohort	Primary/Middle Years – Low achievers (below National Minimum Standard) in Years 3, 5, 7 and 9.
Brief description	<p><i>An Even Start</i> is a tuition program designed to assist educators to identify and address the learning needs of individual students. Students complete reading and numeracy tests through on-screen delivery. Multiple choice items are automatically marked and teachers are guided by the program to mark student constructed responses.</p> <p>Individual and group reports are generated and linked to support materials to guide the development of learning plans for students.</p> <p>The resource includes paper based writing tests for each level and Components of Reading Investigations (CoRI) for students who are well below Year 3 National Minimum Standard.</p> <p>Time to complete assessment is approximately 15 to 35 minutes per student.</p>
Tool strengths	<p>Within the context of the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ user friendly tool with standard IT support needs ▪ students were positive about using <i>An Even Start</i>, engagement was high ▪ tests allow access to low achieving students ▪ capacity to increase font size ▪ good balance between text and visual support ▪ user friendly reporting, clearly highlighted strengths and weaknesses ▪ recommended activities provided for next teaching steps ▪ useful tool to monitor growth over time (provides a pre- and post-test).
Future use and application potential	<p>Many Australian schools were provided with this resource during 2008. Further copies are not available at this point in time. <i>An Even Start</i> is considered most useful for:</p> <ul style="list-style-type: none"> ▪ assessing low achieving students at years 3, 5, 7 and 9 and as appropriate at other year levels. Suitable for some special needs students. ▪ monitoring growth over time including to assist evaluation of intervention programs ▪ teaching support provided to address identified weaknesses.

Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ the resource is already available in many schools ▪ provision of school based IT support ▪ identification of the appropriate student group.
School demographics	<p><i>An Even Start</i> was trialled in 1 jurisdiction by 2 Government schools, both with ICSEA values below the Australian average. Both schools reported good school IT infrastructure and support.</p>
Teacher demographics	<p>3 teachers participated with one having prior experience of the tool. Teaching experience ranged from less than a year, 7 years and 15 years respectively.</p> <p>The teachers rated their IT experience from 'quite average' to very competent. All 3 teachers use a range of computer software packages. Gaining experience in computer based assessment was a motivating factor for trial participation for all 3 teachers.</p>
Student demographics	<p>11 students participated in the trial: 6 Year 3, 1 Year 4, 3 Year 7 and 1 Year 8. 6 students were identified as Indigenous and one as ESL. Most students speak fluent English. Students are below class level or average in their progress.</p> <p>The most reported use of computers was to play music, DVDs and games. Students also use computers to find information and do word processing.</p>
Tool provider support	<p>The <i>An Even Start</i> program was decommissioned in 2009 so no formal support was available. Support was provided through the jurisdiction, sector officers and the project team as required.</p>
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ User friendly tool ▪ High student engagement ▪ Suitable for low achievers ▪ Some older students commented that the content of tests (low level tests) was more appropriate for younger students ▪ Highlights strengths and weaknesses and required teaching support ▪ Useful for monitoring over time ▪ Results were not directly discussed with students ▪ Useful to have control over font size ▪ Backup record of school password recommended <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Easy to use ▪ Liked the colourful tests ▪ Liked the increased font size ▪ Like using the computer ▪ Articulated an element of learning

Refer pp 55-64 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

e-Assessment Tool for Teaching and Learning (e-asTTle)

Tool provider	New Zealand Ministry of Education. Professional development provider was Visible Learning Laboratory
Focus	Literacy: Reading, Writing Numeracy: Space, Measurement, Chance and Data, Number, Algebra
Diagnostic Power	<i>e-asTTle</i> provides broad domain achievement information (adaptive test) with Diagnostic Power level 2. Finer diagnosis at domain level (customised, comprehensive tests) with Diagnostic Power level 3.
Target student cohort	Primary and Middle Years – Years 4-9 (NZ Years 5 – 10).
Brief description	<p>The <i>e-asTTle</i> is a web-based tool designed to enable teachers to create and analyse literacy and numeracy tests. Students are considered significant partners in the teaching, learning and assessment cycle. <i>e-asTTle</i> provides formative and summative diagnostic tests to assist teachers to identify the stage students are at in their learning to inform teaching and learning programs. There are three types of test options: customised, comprehensive and adaptive. Teachers can customise tests by selecting the curriculum or subject areas to be tested. Comprehensive tests are pre-built covering all curriculum levels. Adaptive tests are used to better target the difficulty of questions in a test.</p> <p>The <i>e-asTTle</i> is based on the NZ curriculum. Reports provide teachers with information about what students know and misconceptions or areas for development. Student self-assessment capacity is supported through the feedback provided.</p> <p>Guidance on time to conduct an assessment is 30 to 50 minutes.</p>
Tool strengths	<p>Within the context of the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ ease of constructing assessments ▪ clear report layout ▪ provides various ways to display results ▪ engaging tool for students ▪ students enjoyed IT aspect in preference to pen and paper tests ▪ potential to develop teachers' assessment and data literacy.
Future use and application potential	<p><i>e-asTTle</i> is currently available to New Zealand schools. It is considered most useful:</p> <ul style="list-style-type: none"> ▪ for ongoing assessment to support teacher and student learning partnerships ▪ for professional learning gained through tool use and use of materials and resources ▪ in supporting teacher assessment literacy development ▪ in supporting student self-assessment development.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ Australian availability and customisation ▪ the time required to familiarise with the tool and reporting options ▪ the assessment need is ongoing and students are partners in the

<p>School demographics</p>	<p>learning process</p> <ul style="list-style-type: none"> ▪ training required to support effective use of the tool. <p><i>e-asTTle</i> was trialled in 2 jurisdictions by 6 Government schools. Schools included Metropolitan, Provincial, Remote and Very Remote locations. IT infrastructure was considered adequate at 5 of the 6 schools. The IT support was reported to be satisfactory or good.</p>
<p>Teacher demographics</p>	<p>9 teachers formally completed the trial. Teaching experience ranged from less than 2 years teaching experience to more than 20 years teaching experience.</p> <p>Each teacher uses a variety of computer applications describing their IT expertise as ranging from basic to sound.</p> <p>Developing assessment knowledge and practice and to inform future teaching and learning programs were key motivating factors for teacher trial participation.</p>
<p>Student demographics</p>	<p>Of the 155 students from years 4 to 9 who participated in the trial, 55 provided feedback. 9% of students were identified as ESL students and 21% were identified as Indigenous students. Ability ranges varied with most classes having a range of low achievers through to students at year level or slightly above. Most students use computers regularly including at school and at home.</p>
<p>Tool provider support</p>	<p>Access to a learning platform (Moodle) including online training modules, chat room and virtual tool use (Sandpit). A teleconference was held for individual schools to support report analysis. Helpdesk support via email contact.</p>
<p>Feedback summary</p>	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ Ease of constructing a test ▪ Clear report layout ▪ Provides various ways to display results ▪ Reports provide clear breakdown of strengths and weaknesses ▪ Useful for targeting individual needs ▪ Provides information on individual student pathways ▪ Assists ability grouping ▪ Time to complete professional development and training requires resourcing <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Easy to use ▪ Computer delivery popular ▪ Visual representations clear ▪ Engaging tool for the students ▪ Students enjoyed IT aspect rather than pen and paper tests

Refer pp 73 -84 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

Improve

Tool provider	Education Services Australia
Focus	Literacy: Reading, Language Conventions Numeracy: Number, Algebra, Function and Pattern, Measurement, Chance and Data, Space
Diagnostic Power	<i>Improve</i> provides broad domain proficiency information with a Diagnostic Power level 2. Capacity to create own tests including finer diagnosis at domain level with Diagnostic Power levels 2 or 3 depending on test composition.
Target student cohort	Primary and Middle Years – Years 3 to 9.
Brief description	<p><i>Improve</i> is designed to support ongoing formative assessment of individual students. Learning paths are generated that match the learning needs of students to appropriate digital resources with links provided to the appropriate digital resources where 'gaps' are identified.</p> <p><i>Improve</i> was still in development at the time of trial so teachers had access to a small item bank of test items mostly at Year 3 and 5 levels. Teachers choose a published test or use the search engine to help them identify and select items to construct a test on a specific aspect they wish to assess.</p> <p>Students indicate their confidence in the correctness of their responses and receive instant feedback on their results.</p> <p>Approximate time to conduct an assessment is 10 to 45 minutes, depending on the length of test assigned.</p>
Tool strengths	<p>Within the context of the development status of the tool and the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ ease of use once some functional issues experienced during the trial are resolved ▪ flexibility of testing options ▪ links to digital resources to support individual learning needs identified ▪ prompts students to state their confidence level in the accuracy of their responses.
Future use and application potential	<p><i>Improve</i> is under development and is due for release late 2011. It is considered most useful for:</p> <ul style="list-style-type: none"> ▪ identifying broad strengths and weaknesses (using existing tests available) ▪ finer grain diagnosis at domain level (existing or teacher created quizzes) ▪ building student self assessment and learning partnerships ▪ test familiarisation activity e.g. using past NAPLAN papers ▪ flexibility of testing options.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ tool release timeline - due for national roll-out late in 2011 ▪ training requirements to support effective use of the tool ▪ student support requirements – password and other access information support

School demographics	<ul style="list-style-type: none"> familiarity with the digital resources available. <p><i>Improve</i> was trialed in 13 schools (7 Government and 6 non-Government), in 2 jurisdictions. Eight schools are in Metropolitan locations and 5 Provincial. A high number of ESL students were noted in some of the schools. A common motivation for trial participation was the opportunity to use an assessment tool with some schools particularly interested in the benefits technology might provide.</p>
Teacher demographics	<p>17 teachers formally completed the trial providing feedback during the trial and on its completion. 4 of these teachers hold leadership positions in addition to their teaching roles. Teaching experience ranged from 1 to 30 years with 3 teachers having 1 or 2 years experience and 11 teachers with more than 10 years experience. Teacher IT expertise was rated as limited (6), average (10) and excellent (1). The most common motivation for trial participation was to use an assessment tool and to inform teaching.</p>
Student demographics	<p>523 students participated with 237 providing feedback. Year 2 to 7 students participated in the trial with most students being in Year 5 and Year 3. 25% of trial students were identified as ESL learners. Students regularly use computers for playing games and music, finding information and word processing.</p>
Tool provider support	<p>User guides were provided for teachers, students and parents and care givers. Access to Scootle was also provided. Helpdesk support provided throughout the trial via phone and email contact.</p>
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> Teacher feedback varied immensely across schools and sometimes even within schools with 6 teachers noting inadequate IT infrastructure and support to effectively use <i>Improve</i>. Tool functionality such as load time, complexity of logins and test PINS caused some schools issues however other schools found the tool to be user friendly for themselves and students. Some issues noted appear to be due to the developmental phase of the tool, teachers could often see past these concerns to the potential of the tool. Teachers like the automatic marking and being able to view student confidence levels against actual results. Test results were generally as expected, triangulated against class assessment, NAPLAN results and 2009 student information. <p><i>Student feedback</i></p> <ul style="list-style-type: none"> Easy to use Liked using the computer Liked the activities after the test Didn't like slow load time(experienced at some schools) Liked and disliked test difficulty being too easy or too hard Most students identified something they had learnt about what they knew or could do.

Refer pp 103-116 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

MY Access

Tool provider	Vantage Learning
Focus	Literacy: Writing
Diagnostic Power	<i>MY Access</i> provides an overview of writing achievement and supports improvement in writing skills with a Diagnostic Power level 3.
Target student cohort	Primary and Middle Years – Years 5 to 10 (suitable up to Year 12).
Brief description	<p><i>MY Access</i> is an instructional writing program with an automated marking system that has been developed to replicate the scoring of expert markers.</p> <p>Students respond to a writing prompt (over 1000 prompts are available). The student's response is marked against the following criteria: focus, development, organisation, language, mechanics and conventions.</p> <p>Teachers determine the level of scaffolding that could be provided to students during their writing. The support options include highlighting spelling, grammar and punctuation errors and access to other resources such as word banks.</p> <p>Teachers also determine the number of resubmits allowed thus providing the potential for students to improve their writing and receive instant feedback on their success in doing this.</p> <p>Guidance on time to conduct an assessment is 30 to 60 minutes.</p>
Tool strengths	<p>Within the context of the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ supports students' understanding of 'good' writing ▪ provision of instant feedback to teachers and students identifying strengths and weaknesses ▪ students motivated to improve their writing ▪ improvement observed across a range of students including less motivated students ▪ resources provided to assist writing improvement.
Future use and application potential	<p><i>MY Access</i> is currently available to any school in Australia on purchase. It is considered most useful:</p> <ul style="list-style-type: none"> ▪ as part of a teaching program to support improvement in writing skills ▪ to provide students and teachers with instant feedback on writing achievement progress ▪ to promote student motivation to improve their writing ▪ to complement other teaching approaches ▪ to further promote the teacher-student partnership in improving writing.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ the assessment and learning applications – the tool is designed to support learning rather than to be used in isolation as an assessment tool ▪ how this tool will best complement other writing teaching approaches in the school

School demographics	<ul style="list-style-type: none"> ▪ the sophistication of the level of feedback and its suitability for student cohorts ▪ dedicated time requirements for training and tool familiarisation. ▪ the cost of the program <p><i>MY Access</i> was trialled in 3 Metropolitan non-Government schools in the same jurisdiction. A key motivation for trial participation was to support the effective teaching of writing. All 3 schools reported adequate school IT infrastructure and IT support to conduct the trial effectively.</p>
Teacher demographics	<p>Three teachers (2 classroom teachers and a literacy coordinator) provided feedback during and on completion of the trial. One teacher has 2 years experience while the others had 9 and 18 years of experience respectively.</p> <p>IT and computer experience varied from limited to very good.</p> <p>The teachers reported interest in diagnosing student writing proficiency and in support for their teaching of writing.</p>
Student demographics	<p>80 Year 6 to 10 students participated in the trial with 45 providing feedback. Approximately 60% of students were girls.</p> <p>The ability range of students was diverse, 21% having English as their second language. Students regularly use computers for a range of applications.</p>
Tool provider support	<p>Teacher and student user manuals were provided. New users were supported through either face to face training or by a local current tool user. A helpdesk was available throughout the trial via email and phone contact.</p>
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ User friendly ▪ Average or below average IT support required ▪ Feedback provided to students was highly motivating ▪ Student improvements were noted including less motivated students ▪ Teachers need dedicated time to familiarise themselves with the tool options ▪ Provides useful resources for teachers and students to support improvements in writing ▪ Useful as a teaching tool <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Easy tool to use ▪ Liked the support provided to improve writing quality ▪ Liked receiving instant feedback ▪ Didn't like slow load time (experienced by some students) ▪ Most students identified a strength or area for improvement

Refer pp 125-135 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

On Demand Testing

Tool provider	Victoria Curriculum and Assessment Authority (VCAA)
Focus	Literacy: Reading, Writing, Spelling Numeracy: Number, Measurement, Chance & Data, Space, Structure Dimension
Diagnostic Power	<i>On Demand</i> provides adaptive tests that give student proficiency estimates with a Diagnostic Power level 2. Linear tests provide diagnostic information. Diagnostic Power level 3.
Target student cohort	Primary/Middle Years – Years 3 to 9.
Brief description	<i>On Demand</i> includes linear and adaptive tests. Linear tests present the same set of questions in each administration. Adaptive testing is responsive to student answers presenting more difficult or easier items as required to ascertain a student's achievement level. The teacher selects and downloads required tests to the school server and assigns test sessions. Students log in and complete the assigned tests. Practice questions illustrative of item types in the test are either included within the test administration or available to use before the test. Tests are mapped to the Victorian Essential Learnings (VELS). Guidance on time to conduct an assessment is 20 to 50 minutes.
Tool strengths	Within the context of the trial cohort the following strengths were highlighted: <ul style="list-style-type: none"> ▪ high quality training ▪ high student engagement ▪ instant results for teachers with no marking required ▪ provided snapshot of progress across Years 3-8 ▪ comparative results enabled staff to discuss requirements for individual students and supported professional discussion.
Future use and application potential	<i>On Demand</i> is currently available to Victorian schools. It is considered most useful for: <ul style="list-style-type: none"> ▪ adaptive test capacity that targets each individual, particularly useful for low and high achievers ▪ establishing comparative student literacy and numeracy baseline information within and across year level groups (adaptive tests) ▪ monitoring student progress over time or across years of schooling (adaptive tests) ▪ highlighting strengths and areas for improvement for individuals and groups of students (linear tests).
Considerations before use	The following should be considered before using the tool: <ul style="list-style-type: none"> ▪ access to the tool ▪ adequate IT support to complete the initial setup ▪ training requirements ▪ time to review testing and reporting options available to support effective use of the tool ▪ reporting is mapped to the VELs.

School demographics	<i>On Demand Testing</i> was trialled in 1 Government school in a Metropolitan location. The student population is described as low socio-economic. The school reported outstanding school IT infrastructure and IT support. A source of student data was a primary motivation for participation.
Teacher demographics	One teacher coordinated the trial and administered assessments across year levels. A further 8 teachers administered tests to their class during the trial period. Teachers rated their computer and IT expertise between limited and competent. Use of student self assessment was reported as limited. The key motivation for teacher participation was to collect student assessment data and provide diagnostic information.
Student demographics	Approximately 600 students, from years 3 to 8, participated in the trial with 41 students providing feedback. Most of the feedback was from Years 4 and 7 students and was gender balanced. The most regular computer use students reported was playing games. Most students also used computers to find information and use word processors.
Tool provider support	Half day face-to-face hands-on training was conducted. A training guide, test availability and report interpretation documentation was provided. Helpdesk support was available via phone and email contact.
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ High student engagement, student support required was manageable and time to conduct assessment was as expected ▪ IT support was an important requirement ▪ Comprehensive support provided by VCAA, in-tool support more than adequate ▪ User friendly tool and reporting ▪ High target group appropriateness ▪ Supported evidence based professional dialogue <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Tool easy to use ▪ Liked tool being on the computer ▪ Liked test being quick ▪ Enjoyed not having to write ▪ Articulated what they learnt about what they know and can do

Refer pp 136-144 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

Online Placement Instrument (OPI)

Tool provider	Australian Council for Educational Research (ACER)
Focus	Literacy: Reading, Vocabulary, Grammar, Punctuation and Spelling Numeracy: Number, Measurement, Space, Chance and Data
Diagnostic Power	Broad domain achievement information with the capacity to target test difficulty to individual students with a Diagnostic Power level 2.
Target student cohort	Primary and Middle Years – Years 3-10.
Brief description	<p><i>OPI</i> is designed to provide broad information about literacy and numeracy proficiency against expected performance at a specific year level. Proficiency levels are indicated through the use of colour coding to allow test targeting to student achievement levels rather than just to their current year level.</p> <p>It is ideal for using as pre- and post-tests as each test has a parallel form and is mapped to the same scale so results can be compared.</p> <p>Guidance on time to conduct an assessment is 15 to 60 minutes.</p>
Tool strengths	<p>Within the context of the trial cohort the following strengths of <i>OPI</i> were identified:</p> <ul style="list-style-type: none"> ▪ easy tool to administer with no external training required ▪ easy for students to use ▪ easy data collection ▪ provides capacity to pre- and post-test to measure growth over time ▪ instant feedback to students and teachers ▪ reporting provides broad snapshot of student and group strengths and weaknesses.
Future use and application potential	<p><i>OPI</i> is currently available to any school in Australia on purchase. It is considered most useful for:</p> <ul style="list-style-type: none"> ▪ monitoring student progress over time e.g. a pre-test early in the year and a post-test later in the year ▪ the easy collection of broad domain achievement data ▪ providing an overview of class or group progress against a standardised scale ▪ providing students with an instant snapshot of their progress.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ the assessment purpose is to provide broad achievement data ▪ the need to scroll through longer texts during the test ▪ time for the teacher to review the test before administration ▪ appropriate time period between pre- and post-testing ▪ the cost of the program.
School demographics	<p><i>OPI</i> was trialled in 7 schools (4 Government and 3 non-Government) across 3 jurisdictions. 4 schools are in Provincial and 3 in Metropolitan locations. A common motivation for trial participation was the opportunity to use a new assessment tool.</p> <p>School IT infrastructure and support varied across the sites.</p>

Teacher demographics	Seven teachers completed the trial and provided feedback both during the trial and on its completion. Teaching experience ranged from 4 to 39 years. All 7 teachers use a range of computer applications and rated their IT and computer expertise as average or above, only one teacher rated their IT expertise as limited. The most common motivation for teacher trial participation was to inform their teaching.
Student demographics	376 students in Years 3-6 and Year 9 participated in the trial with 127 providing feedback. The ability range of students was diverse: 12% were ESL and 3% identified as Indigenous. Students regularly use computers for a range of activities including: playing games, music or DVDs, word processing and the use of graphics programs.
Tool provider support	A user guide and site licence was provided. A 20 minute introductory teleconference was conducted. Helpdesk support was available throughout the trial via phone and email contact.
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ Low level IT support required ▪ Student support required manageable or easily managed ▪ Students enjoyed being tested on computer ▪ Quick and easy method of collecting data ▪ Reports provided broad view of strengths and weaknesses of individuals and across groups ▪ Noted students didn't always scroll down to read text before answering questions ▪ Recommend passwords are made more user friendly <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Easy to use ▪ Liked being on the computer ▪ Liked questions being easy and challenging ▪ Most students could identify self assessment outcome

Refer pp 145-155 for more comprehensive information including minimum IT requirements and guidance

Middle years tools

Achieve

Tool provider	Pearson Research and Assessment (PRA), United Kingdom
Focus	Numeracy: End Key Stage 3, UK curriculum
Diagnostic Power	<i>Achieve</i> provides broad domain achievement information (summative test) and a finer diagnosis at domain level (adaptive diagnostic test) with a Diagnostic Power level 3.
Target student cohort	Middle Years – Years 6, 7 and 8.
Brief description	<p><i>Achieve</i> provides summative and diagnostic tests to assist teachers to identify the stage students are at in their learning to inform teaching and learning programs. The tests cover a range of levels, and can be presented as the same test for all students (summative tests) or individualised for each student through computer adaptive administration (diagnostic tests).</p> <p>Reports provide teachers with information about what students already know and misconceptions or areas for development. Student self assessment capacity is supported through the feedback provided. Guidance on time to conduct an assessment is 20 to 40 minutes.</p>
Tool strengths	<p>Within the context of the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ flexibility of the training model comprising a web conference ▪ user friendliness of tool and reporting, although time is required to explore rich options available ▪ student self assessment potential ▪ instant results and feedback ▪ teaching support provided through teaching plan ▪ potential of adaptive tests to better target student achievement level.
Future use and application potential	<p><i>Achieve</i> is currently available to schools in the United Kingdom. It is considered most useful:</p> <ul style="list-style-type: none"> ▪ as part of ongoing assessment to support teacher and student learning partnerships ▪ to utilise options of online assessment with the support of mathematical instruments and the delivery of a variety of item types ▪ to support teacher assessment literacy development ▪ to support student self assessment development.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ Australian availability and customisation ▪ the time required to become familiar with the tool and reporting options to utilise its potential ▪ teachers have an understanding of Assessment for Learning principles and their place in the teaching and learning cycle ▪ training support required to support effective use of the tool ▪ usage and cost.

School demographics	<i>Achieve</i> was trialled in 4 schools (2 Government and 2 non-Government) across 2 jurisdictions. Three schools were in Metropolitan and 1 school in Provincial locations. School IT infrastructure and IT support varied across the sites ranging from inadequate to well equipped and supported.
Teacher demographics	4 teachers formally completed the trial and provided feedback both during the trial and on its completion. Teaching experience ranged from 4 to 35 years. All teachers use a range of computer applications and rate their IT and computer expertise as average or above. The most common motivation for teacher participation in the trial was to use an e-tool and to inform their teaching.
Student demographics	115 students in Years 6 and 8 participated in the trial with 41 providing feedback. The ability range of students was diverse with 6% having English as their second language. Students regularly use computers for a range of activities including: social networking, playing music and games, word processing, finding information and spreadsheet use.
Tool provider support	Guidance on alignment between UK and Australian curriculum levels. Provision of two 1 hour webinars and a recording of each session. <ol style="list-style-type: none"> 1. Overview of <i>Achieve</i> and how to use it 2. Overview of reporting system and how to use it Helpdesk support provided via phone and email contact.
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ User friendly tool ▪ Average to high student engagement ▪ Valued online training and familiarisation sessions and access flexibility ▪ Test difficulty most suitable for average to high achievers [<i>setting dependent</i>] ▪ Useful for student self assessment, results generated worthwhile discussions ▪ Reporting useful however need more time to explore options ▪ UK centric items an obstacle or distracting for some students ▪ Need more time to use this tool effectively <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Tool is easy to use ▪ Liked test difficulty being challenging or easy ▪ Some students reported tests too easy or too hard ▪ Liked being able to work at own pace ▪ Some symbols were confusing (UK symbols e.g. £, °F)

Refer pp 43-54 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

Compass

Tool provider	Australian Council for Educational Research (ACER)
Focus	Literacy: Reading Numeracy: Number, Measurement, Space, Chance and Data
Diagnostic Power	<i>Compass</i> provides broad domain achievement information with the capacity to target test difficulty to individual students with a Diagnostic Power level 2.
Target student cohort	Middle Years – Years 6 to10
Brief description	<i>Compass</i> is designed for adolescents who have had limited or disrupted exposure to formal education, including experience in testing. The assessment provides information about literacy and numeracy skills and achievement that is benchmarked against the Australian Core Skills Framework (ACSF). Guidance on time to conduct an assessment is 15 to 55 minutes.
Tool strengths	Within the context of the trial cohort the following strengths were highlighted: <ul style="list-style-type: none"> ▪ teachers found the tool user friendly, with clear instructions and simple to follow ▪ test level can be targeted to individual students ▪ students from standard and alternative education settings were generally positive about using <i>Compass</i> and reported it was easy to use.
Future use and application potential	<i>Compass</i> became available for purchase to Australian schools during October 2010. <i>Compass</i> is considered most useful for: <ul style="list-style-type: none"> ▪ providing an overview of individual or group progress against the ACSF ▪ the potential to engage students through its computer delivery and emphasis on visual appeal ▪ tracking progress over time, for example a pre-test early in the year and a post-test later in the year.
Considerations before use	The following should be considered before using the tool: <ul style="list-style-type: none"> ▪ reporting options provided – the reporting module was not available at the time of the trial ▪ potential for use with students who have limited or disrupted schooling ▪ the assessment purpose is to provide broad achievement information ▪ appropriate time period between pre- and post-testing ▪ the cost of the tool.
School demographics	<i>Compass</i> was trialled in 1 jurisdiction by 4 Government schools, 2 in Metropolitan and 2 in Provincial locations. Two schools specialised in education provision for students with learning difficulties or challenging behaviour. All 4 schools reported adequate school IT infrastructure and support to effectively conduct the trial.
Teacher demographics	5 teachers formally completed the trial. Teaching experience ranged from 1 new teacher to 2 teachers with 10 years experience. Each teacher uses a range of computer applications with 3 teachers reporting average IT expertise, with 1 as minimal and 1 teacher as having a high level of expertise. Gaining more experience in best assessment practice and the effective use of data were key motivating factors for teacher trial participation.

Student demographics	<p>188 students participated in the trial with 117 providing feedback. Most students were in Years 7, 8 and 9 with a few also from Years 5, 6, 10, 11 and 12. Students from special education settings participated in the trial. Trial cohorts include diverse ability groups. Most students (97%) speak fluent English.</p> <p>More boys participated in the trial than girls (74% and 26% respectively). Most students reported using a computer at least once a week with 44% reporting they use computers most days.</p>
Tool provider support	<p>A user guide (for a tool with the same administration process as <i>Compass</i>) was provided and a 20 minute introductory teleconference conducted. Helpdesk support was available via email and phone.</p>
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ Average to above average student engagement ▪ Time and support requirements manageable ▪ Standard IT support required ▪ Tool provider and in-tool support more than adequate ▪ Tool easy to use ▪ Tests are age, curriculum and ability range appropriate ▪ Students sometimes experienced difficulties scrolling through text <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Liked computer delivery ▪ Tool easy to use ▪ Didn't like having to scroll ▪ Liked the colourful images ▪ Liked not having to write, quick to complete

Refer pp 65-72 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

Fractions and Decimals Online Interview

Tool provider	Victorian Department of Employment, Education and Early Childhood Development (Vic DEECD)
Focus	Numeracy: Fractions, Decimals, Ratio, Percentages
Diagnostic Power	<i>Fractions and Decimals Online Interview</i> provides specific fine grain diagnosis of sub-skills in a domain with a Diagnostic Power level 4.
Target student cohort	Primary and Middle Years – Years 5 to 9.
Brief description	<p><i>Fractions and Decimals Online Interview</i> is a one-to-one interview to assess students' knowledge and strategies related to fractions, decimals, ratio and percentages. It is designed to address research findings about student difficulties in these topics. The Interview provides a means of tracking students' learning through significant big ideas in fractions, decimals, ratio and percentages.</p> <p>The Interview consists of hands-on and mental computation assessment tasks where students can demonstrate mathematical understanding and preferred strategies for solving increasingly complex tasks.</p> <p>Guidance on time to conduct an assessment from 30 to 60 minutes.</p>
Tool strengths	<p>Within the context of the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ professional learning gained by teachers ▪ reports clearly highlight student strengths and weakness ▪ quality materials ▪ reports inform teaching programs ▪ observations about student learning made during the assessment.
Future use and application potential	<p><i>Fractions and Decimals Online Interview</i> is currently available to Victorian schools. It is considered most useful for:</p> <ul style="list-style-type: none"> ▪ middle to high achieving students in some primary classes ▪ developing a detailed profile of student achievement ▪ informing focussed teaching on this topic ▪ enabling teachers and schools to collect detailed information on students' understandings of fractions and decimals ▪ professional learning gained through use.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ target group appropriateness ▪ teacher time to prepare for the assessment ▪ one-to-one administration needs to be appropriately resourced ▪ assessment need is diagnostic.
School demographics	<p>The <i>Fractions and Decimals Online interview</i> was trialled in 8 schools within 3 jurisdictions (2 non-Government and 6 Government schools). A key motivation for trial participation was to gain experience in explicit data use to improve numeracy skills.</p> <p>The range of IT infrastructure and IT support within the 8 schools varied from low to excellent. Despite any IT limitations the trial was effectively conducted.</p>

Teacher demographics	<p>Nine teachers (6 classroom and 3 executive teachers) provided feedback during and on completion of the trial. Their years of teaching experience ranged from less than 1 year to 35 years.</p> <p>IT and computer experience varied from average or moderate to competent. The teachers reported interest in using assessment data to inform teaching programs and to measure progress in numeracy.</p>
Student demographics	<p>107 students participated in the trial with 56 providing feedback. The gender balance of the students was even. 96% of students in the trial speak fluent English. Students regularly use computers, with a range of applications.</p>
Tool provider support	<p>Access to a user guide, materials required list and masters, plus access to other resources. A 30 minute introductory teleconference was conducted and helpdesk support was available via phone and email contact.</p>
Feedback summary	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ Low level IT support required ▪ Provides useful resources for teachers and students. ▪ Comprehensive support provided ▪ Opportunity to observe student on a one-to-one basis ▪ Test difficulty most suitable for average to high achievers ▪ Useful as a teaching tool <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Easy and fun tool to use ▪ Interesting activities ▪ Liked challenging questions ▪ Liked working on computer ▪ Instant feedback

Refer pp 93-102 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

Specific Mathematics Assessments that Reveal Thinking (SMART)

Tool provider	University of Melbourne
Focus	Numeracy: Number, Measurement, Space, Algebra, Chance and Data
Diagnostic Power	<i>SMART</i> provides fine grain diagnostic information about sub-skills in Numeracy with a Diagnostic Power level 4.
Target student cohort	Middle Years – Years 7, 8 and 9.
Brief description	<i>SMART</i> tests are designed to reveal the thinking behind student responses and provide teachers with informative diagnosis of their student’s conceptual understanding in mathematics. The diagnosis of responses is research based and provides rich formative assessment information. <i>SMART</i> tests support teachers with or without expertise in mathematical research. Guidance on time to conduct an assessment is 10 to 20 minutes.
Tool strengths	<p>Within the context of the trial cohort the following strengths were identified:</p> <ul style="list-style-type: none"> ▪ provides useful research based hierarchy of mathematical thinking development ▪ identifies strategies to support learner needs ▪ easy to administer ▪ quick to administer.
Future use and application potential	<p><i>SMART IS</i> available for research purposes until the end of 2010. Further availability is funding dependent. It is considered most useful for:</p> <ul style="list-style-type: none"> ▪ its potential to support formative assessment use in teaching and learning programs ▪ pre-topic testing to identify student understandings and misconceptions to guide teaching and learning requirements ▪ post topic testing to gauge the effectiveness of the teaching program ▪ building teachers professional knowledge of evidence-based common misconceptions ▪ supporting teachers with strategies to target teaching needs.
Considerations before use	<p>The following should be considered before using the tool:</p> <ul style="list-style-type: none"> ▪ tool access as availability is dependent on further funding ▪ focus area quiz availability and status of research base ▪ training requirements to support effective use of the tool.
School demographics	<p><i>SMART</i> was trialled in 7 government schools in 3 jurisdictions with a mix of Urban, Rural and Remote locations. A key motivation for trial participation was the opportunity to further understand student thinking in mathematics. All 7 schools reported adequate school IT infrastructure and IT support to conduct the trial effectively.</p>
Teacher demographics	<p>11 teachers provided feedback during and on completion of the trial. All teachers had at least 2 years teaching experience and maths teaching roles in the school. 5 teachers rated their computer expertise as competent or very competent. 6 teachers rated their IT expertise as minimal. The main purpose teachers cited for using assessment data is to inform teaching programs and to measure progress.</p>

<p>Student demographics</p>	<p>Approximately 300 Year 7 to 9 students participated in the trial with 137 of providing feedback. 72% speak fluent English. Ability ranges varied with most classes having a range of very low achievers through to students at year level standard or slightly above. Most students use computers regularly including use at home.</p>
<p>Tool provider support</p>	<p>Provision of two 1 hour webinars.</p> <ol style="list-style-type: none"> 1. Introduction to <i>SMART</i> and setting up a quiz 2. Accessing and interpreting reports, and teaching strategies. <p>Helpdesk available via email and phone contact.</p>
<p>Feedback summary</p>	<p><i>Teacher feedback</i></p> <ul style="list-style-type: none"> ▪ Easy to administer ▪ Quick to administer ▪ Provides hierarchy of mathematical thinking development and identifies common misconceptions ▪ Potential to inform future teaching and the way topics are taught ▪ Identifies strategies to support learner needs and access to support activities online ▪ Suitable for a diverse range of ability groups <p><i>Student feedback</i></p> <ul style="list-style-type: none"> ▪ Easy to use ▪ Enjoyed or disliked test difficulty level (easy or challenging versus too easy or too hard) ▪ Enjoyed working on the computer ▪ Enjoyed short length of test ▪ Prefer a higher quality of test display

Refer pp166-176 for more comprehensive information including minimum IT requirements and guidance on time requirements for preparation, familiarisation and reporting access.

SECTION 4

ACHIEVE

Tool Provider

Pearson Research and Assessment (PRA), United Kingdom

Focus

Numeracy: End Key stage 3, UK curriculum

Diagnostic Power

Achieve provides broad domain achievement information (summative test) and finer diagnosis at domain level (adaptive diagnostic test) with a Diagnostic Power level 3.

Target student cohort

Middle Years – Years 6, 7 and 8.

Brief description

Achieve provides summative and diagnostic tests to assist teachers to identify the stage students are at in their learning to inform teaching and learning programs. The tests cover a range of levels, and can be presented as the same test for all students (summative tests) or individualised for each student through computer adaptive administration (diagnostic tests).

Reports provide teachers with information about what students already know and misconceptions or areas for development. Student self assessment capacity is supported through the feedback provided.

Guidance on time to conduct an assessment is 20 to 40 minutes.

Tool strengths

Within the context of the trial cohort the following strengths of Achieve were identified:

- flexibility of the training model comprising web conference
 - Participants attended 2 real-time web conferences and then had ongoing access to a recording of each session.
 - I found the two online sessions particularly helpful where you can see things happening on the screen and I knew that I could go back and have a look at the recording anytime.³*
- user friendliness of tool and reporting, although time is required to explore rich options available
 - Clear, it is a simple program. We didn't need to use the guide extensively.*
 - I liked the feedback columns (competent and working towards).*
 - Great information available, you need more experience to fully take advantage.*
- student self assessment potential
 - Students showed an interest in testing their knowledge online as it is easier than writing.*
 - I discussed positives with students, areas in which they achieved good outcomes and then we targeted an area to work on.*
- instant results and feedback

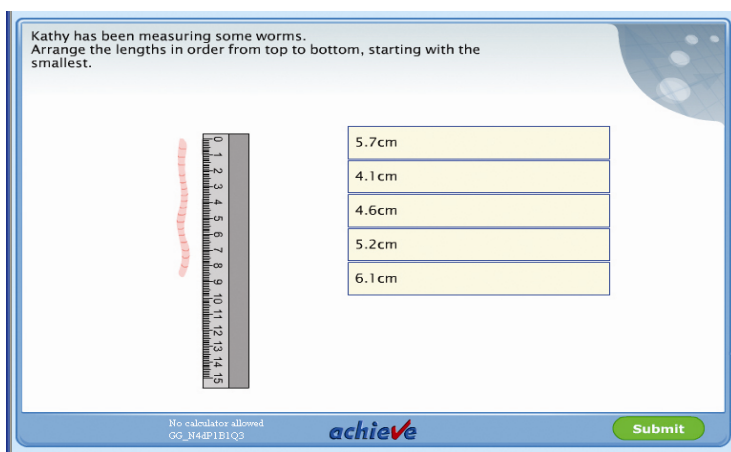
³ Throughout this section italics indicate quotes from teachers and students

Students were able to see what they could do, not do, straight away.

We had some kids who were pushing each other with a bit of rivalry which worked really well.

- teaching support provided through teaching plan
The teaching plan on the report is very useful.
- potential of adaptive tests to better target student achievement level
I think the idea of students being able to work through things at their level and at their pace is good.

Figure 1: Example of a test question, students drag and drop the five boxes provided to order them correctly.



Future use and application potential

Achieve is not currently available in Australian schools. It is available to schools in the United Kingdom on purchase.

Achieve is considered most useful:

- as part of ongoing assessment to support teacher and student learning partnerships.
Teachers can choose the most appropriate test for the teaching and learning need. For example they may wish to administer a pre-test to establish what students already know and identify misconceptions they may have. An adaptive diagnostic test will tailor the test to each individual student and report detail about achievement against a particular sub-domain or topic.

Alternatively teachers may want indicative information about student performance and would administer a summative test. This provides comparative information against other students in the class and against a standardised scale.

- to utilise options of online assessment with the support of mathematical instruments and the delivery of a variety of item types.

Achieve provides a variety of item types including student generated responses, click and drag, shape rotation, drop down windows and multiple choice responses. This allows a wider variety of mathematical outcomes to be tested whilst still maintaining the auto marking facility. Teachers are also able to include access to mathematical instruments such as calculators and protractors to support students in answering questions.

- to support teacher assessment literacy development.
Teachers are provided support in how to best target testing to individual student needs. Reporting options are diverse and include groupings of students against recommended teaching plans, an overview of individual progress and identification of high achievers and students with gaps in their knowledge.
- to support student self assessment development.
Students receive immediate feedback on test completion where they can review their answers and results. Diagnostic tests include a learning plan that outlines what the student demonstrated they could do in the test and recommendations about what they need to do next. The summative tests provide a more holistic report on progress that students can use to monitor their progress over time.

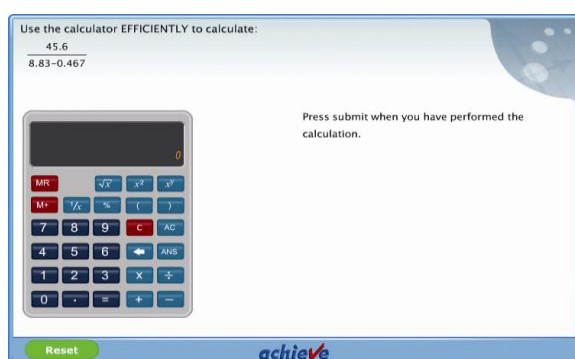
Considerations before use

The following should be considered before using Achieve. Schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of this tool.

- Australian availability and customisation
As Achieve is based on the United Kingdom curriculum decisions would need to be made as to how best customise the tool for Australian use. These considerations include customising the test content for Australian use through an item review to ascertain suitability and curriculum coverage, mapping test items to curriculum outcomes, ascertaining item difficulty with an Australian student population, the addition of further items required and alignment of tests and reporting to Australian standards. This process is dependent on sufficient demand to support such a decision.
- The time required to familiarise with the tool and reporting options to utilise its potential.
Any new assessment tool requires teacher time to become familiar with its administration and reporting facilities. Given the assessment and reporting options available in Achieve teachers should expect to spend more time on this aspect initially than they might need to spend familiarising themselves with other types of assessment tools. However this time will be well rewarded if teachers then utilise the rich data and teaching plans provided to better target their teaching and support students in developing their self assessment skills. Teachers reported the use of this tool supported their assessment literacy development. As teachers become familiar with the tool its use will be less time consuming.
I need more experience or training to utilise all the available options.
Significant time is required to understand how to best use this tool.
- Teachers have an understanding of Assessment for Learning principles and their place in the teaching and learning cycle.
Achieve has an assessment for learning focus therefore it is best used to support ongoing teaching and learning needs. A teacher may, for example, assess before teaching a unit to ascertain student prior understandings so that lessons can be better targeted. Testing following a unit will provide information about student development in this area.
Students are encouraged to be partners in their learning. They have access to their results including a summary of what they can do and what they need to work on, learning plans and the opportunity to review answers and learn from their assessments.

- Training support required to support effective use of the tool.
 Teachers will require dedicated training to familiarise themselves with the testing and reporting options available.
 The training provided during the trial was based on attendance at 2 live web conferences complemented by access to recordings of each session for later review.
 The flexibility of this model was appreciated by participants as they liked being shown the system by a UK expert and having the opportunity to ask questions. They also appreciated the option of being able to review the presentation at a later time if desired.
 This training model of direct access to a tool expert plus the flexibility of any-time access to review the training sessions could be used to deliver training Australia wide.
 A variety of training models are employed in the United Kingdom such as online workshops, one-to-one training sessions for groups of schools and school visits.
- Usage and cost
 Schools choose this tool for ongoing assessment rather than one off or episodic use. In the United Kingdom schools take a subscription to Achieve. An annual fee per student is charged that includes unlimited use of the system during this period.
It would be good to use it for six months so you could come back to it on a regular basis.

Figure 2: Example of a test question answered with support of a calculator



Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

- IT checks: access to site check, 5 minutes (when school network authorises site access)
- Tool materials review: approximately 1 hour
- Recommended training: 2 to 3 hours training, face to face or online delivery
- Preparation for student assessments: 10-30 minutes
- Conduct student assessments: 20 to 40 minutes
- Time to access and interpret reports: 10 to 30 minutes, depending on the reports accessed

Minimum IT requirements

- Microsoft Internet Explorer 6 or higher or Firefox 3 or higher
- Adobe Flash Player 9 or higher

School demographics

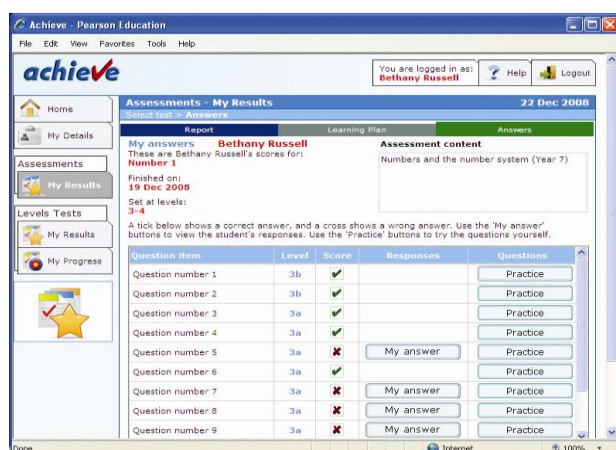
Achieve was trialled in 4 schools (2 Government and 2 non-Government) across 2 jurisdictions. Three of the schools are in Metropolitan locations describing their location as a *capital city*. The other school is in a Provincial location describing their location as rural. All 4 schools have Index of Community Socio-Educational Advantage⁴ (ICSEA) values between 900 and 1100.

One school described their student population as *travelling from all areas of the district and surrounding area*. The other 3 schools describe their student population as *low socio-economic grouping; middle class; and a multicultural environment with students from different nationalities and with high ability and potential*.

A common motivation for school trial participation was the opportunity to use an online assessment tool because of *easy access to data and for students to be given instant feedback on progress*.

School IT infrastructure and support varied across the sites with comments such as: *inadequate, wireless network and internet access are unreliable at best, IT technician does his best to keep patching the system; and Well equipped IT laboratories with white boards, laptops and video projectors, Wi-Fi internet system and smart IT technicians*.

Figure 3: Example of student interface, reviewing results



Teacher demographics

Four teachers formally completed the trial providing feedback both during the trial and on its completion. The 4 teachers have 4, 6, 22 and 35 years teaching experience respectively. Three of the teachers are Mathematics co-ordinators and the other a Mathematics teacher.

All teachers use a range of computer applications citing use of at least 4 of the 6 applications listed with all using email, the internet, word processing software and PowerPoint. Three of the teachers also use spreadsheets. Other applications used included interactive whiteboards and simulations. All teachers rated their level of computer expertise as average or above average and rated their IT expertise as average, one as *average-low* and the other as *above average*.

⁴ The Index of Community Socio-Educational Advantage (ICSEA) average score is 1000. The Australian Curriculum and Assessment Reporting Authority (ACARA) note that most schools have an ICSEA score between 900 and 1100.

Teachers were asked to nominate 2 ways they currently assess. Teachers reported a range of class-based assessment such as: assignments, checklists, anecdotal, rubrics and paper tests.

The main purpose teachers cited for using assessment data is to inform teaching programs and for reporting.

Help understand what the student knows.

To guide future teaching.

To inform students and parents about understanding and progress.

Other reasons included:

ongoing assessment, and to inform the curriculum being offered.

Teachers reported the most useful types of assessment are:

tests as an accurate gauge of each student's level.

a variety of strategies to give a better picture of student abilities.

instant feedback so students learn from their mistakes straightaway.

Only 1 teacher reported effective use of student self assessment, other teachers rated this as *low* or a *growing skill*.

The most common motivation for teacher participation in the trial was to use an e-tool and to inform their teaching.

To develop a better understanding of this type of material and skills to effectively take advantage of the program to improve outcomes for students.

To develop the students who are at the bottom level up to medium level.

Student demographics

115 students participated in the trial: 54 Year 6 and 61 Year 8 students, with 41 providing feedback: 10 Year 6 and 31 Year 8 students. The gender balance of students was 52 boys (45%) and 63 girls (55%) and a similar balance was reflected in the students providing feedback, 49% boys and 51% girls.

Seven of the students (6%) are identified as ESL learners (English as a Second Language) with 3 (3%) identified as Indigenous. One hundred and eight students (94%) speak fluent English.

The ability levels of students in both Year 6 and 8 ranged from above to below their year level with 2 of the 4 classes described as *low to average ability*.

80% of students use a computer most days with only 1 student reporting little computer use. As well as using a computer at school, 80% also report using a computer at home, 44% at family or friends' homes and 34% at the library. 56% of students reported using computers for social networking very often and 17% do this sometimes. The next highest rated computer use is playing music or DVDs (49% very often, 32% sometimes) and playing games (46% very often, 44% sometimes), word processing (20% very often, 61% sometimes), finding information (34% very often, 59% sometimes) and spreadsheet use (10% very often, 49% sometimes).

Tool provider support

The following guidance was provided to schools on the alignment between UK and Australian curriculum levels.

Australian Year 6 is approximately UK Year 7, Stage 3, *Achieve* levels 3-6, expected level for 'average' pupil is 4a.

Australian Year 7 is approximately UK Year 8, Stage 3, *Achieve* levels 3-7, expected level for 'average' pupil is 5b.

Australian Year 8 is approximately UK Year 9, Stage 3, *Achieve* levels 4-8, expected level for 'average' pupil is 6c.

Participants attended two web conferences (Webex) of approximately 1 hour each in duration. A recording of each presentation was made available after the session for teachers who could not attend the live session and also to allow teachers to review the session at a later date if desired. A tool specialist from the United Kingdom conducted the training sessions supported by an Australian company representative.

Session 1	Overview of Achieve and how to use it
Session 2	Overview of reporting system and how to use it
Helpdesk support provided throughout the trial via phone and email contact. Trial activity reports indicate the following activity during the trial period.	
School 1	3 tests were completed
School 2	4 tests were completed
School 3	12 tests were completed

Figure 4: Example of teaching plan provided to teacher, students are grouped according to identified needs

Objective	Working towards 3	WT3	Completion %	Students	Notes
Numbers and the number system: Recognise when two simple fractions are equivalent, including relating hundredths to tenths.	Objective not attempted	0%		Tatiana Foster, Hannah Brown, Daisy Milner	
Recognise when two simple fractions are equivalent with a diagram	3b	60%		Verity Malulake, Oliver Mitchell, Amy Fellows, Victoria Chambers, Chelsea Taylor, Benjamin Allen, Lewis Flanders, Bethany Russell, Siobhan Kelleher	Write numbers of ten pence as decimals and also describe as the number of pence, eg. 3 ten pence pieces, £0.30, or 30 pence therefore 30/100 of a pound. Repeat for several sets of money.
Recognise the relationship between hundredths and tenths	3a	20%		Allie Murray, James Cohen, Lauren Chan	Use fraction shapes on an OHP to demonstrate the pieces making whole shapes and having pieces left over and split into separate pieces.
Numbers and the number system: Find simple fractions of whole number quantities	Objective not attempted	6%		Chelsea Taylor	
Working towards 3	WT3	6%		Tatiana Foster	
Find simple fractions of whole number quantities	3a	88%		Lauren Chan, Allie Murray, Siobhan Kelleher, Verity Malulake, Bethany Russell, Daisy Milner, Hannah Brown, Lewis Flanders, Benjamin Allen, Oliver Mitchell, Amy Fellows, James Cohen, Victoria	Relate simple percentages like 25, 50, 75, 100 etc to their fraction equivalent and use the fractions to find the simple percentages without a calculator. Use 100 square grids, shade out the percentages and say the grid is worth £3 etc what is each square worth so what is 45% of £3 etc.

Teacher feedback

Summary of key points

- User friendly tool
- Average to high student engagement
- Valued online training and familiarisation sessions and access flexibility
- Test difficulty most suitable for average to high achievers [setting dependent]
- Useful for student self assessment, results generated worthwhile discussions
- Reporting useful however need more time to explore options
- UK centric items, an obstacle or distracting for some students
- Need more time to use this tool effectively

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings of 5-8 suggest average to above average student engagement was observed.

The student engagement was high at first but diminished as the content was not relevant to Australian students.

Students showed an interest in testing their knowledge online as it is easier than writing. Students had what I call 'light bulb moments' when discussing their results and they worked things out with their friends or by themselves.

Note: Some test content and terminology would be unfamiliar to Australian students.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 5-7 indicate the time to assess was a little more than expected.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings of 3-6 indicate the student support required was generally considered manageable. Support required included explanations related to UK symbols terminology students were unfamiliar with such as pounds and Fahrenheit.

We tried to use this as a learning opportunity and talk about the difference between Celsius and Fahrenheit.

IT support required was rated between low level support (0) and high level support (10). The ratings of 0-5 suggest average to below average IT support was required.

The time required to administer assessments is estimated to be 20 to 40 minutes, depending on the testing undertaken.

Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). The ratings of 5-9 suggest more than adequate support was provided.

We had quick responses to requests for assistance.

The best feature of the support was the online conferences.

Teachers valued the online sessions which were conducted live and also available for review at any time.

I found the two online sessions particularly helpful where you can see things happening on the screen and I knew that I could go back and have a look anytime.

You can read the manual and see things but sometimes it's easier to be guided through it initially. It was great to have people over there (UK) show you and you could ask questions. It just made things so much easier. It was important to have the functionality to be able to watch it again.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). The ratings of 5-8 indicate the support within the tool was more than adequate. *I found the tool easy to use however the students took a while to understand how to use it.*

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 6-10 indicate text and images were very clear.

The user friendliness of Achieve was rated between not user friendly (0) and very user friendly (10). The ratings of 7 and 8 indicate the tool is user friendly.

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 5-9, indicating the assessment is age appropriate.

Curriculum relevance was rated between not appropriate (0) and very appropriate.

Teachers rated this 2-7, suggesting a low to average relevance. Note: tests are based on UK curriculum.

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Range of ratings of 2-7 include 2 schools rating this as appropriate and 2 schools rating this as less than appropriate. Generally teachers found the testing less suitable for their low ability students.

Motivated students had a positive experience and were happy to engage.

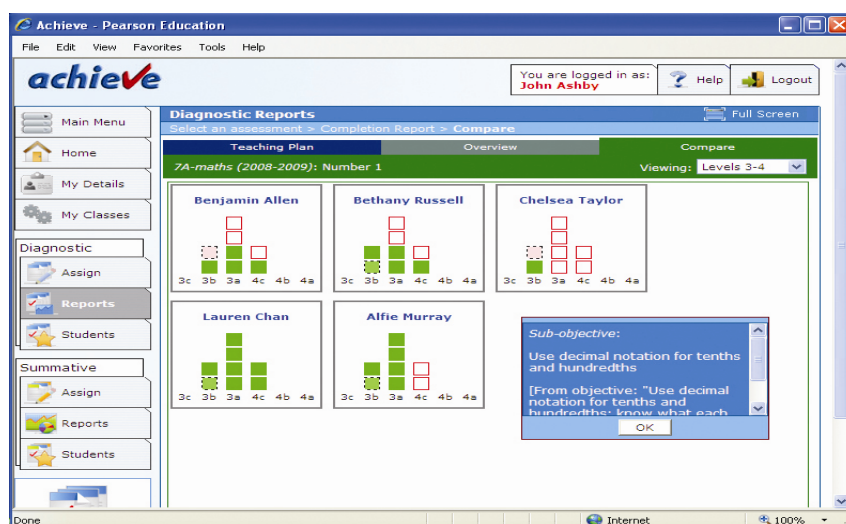
Very mixed abilities – very low to average mix. Low ability students found it extremely difficult.

Some less capable students found each session very short as they were not provided with a lot of questions.

Most of the questions are statement based which was difficult for non-English speaking background students.

The comment about short tests suggests the initial targeting may not have been appropriate. Appropriate targeting to UK curriculum may have been difficult for Australian teachers.

Figure 5: Example of the student progress report.



Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). Teachers rated this 5-7 suggesting the time required is as expected or a little more. Report user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings of 4 suggest the reporting user friendliness is a little below average. Teachers estimate the time to review reporting to be 10 to 30 minutes.

I like the feedback columns displaying whether students are competent or working towards etc.

Good however some struggled with all aspects which made it difficult to find out what they already knew.

I particularly liked the student reporting being in two columns, 'I can...' and 'I need to...', it's logical and effective.

Teachers found the results were generally as expected, validating these results against results from standardised tests such as NAPLAN and teacher classroom assessments.

The reporting highlighted areas we already knew and gave the students another vehicle to express their knowledge. This is very important for their self esteem as they get visual representation of their progress.

Teachers rated the capacity to track or monitor over time from not useful (0) to very useful (10), Teachers rated this 5-7 indicating it would be a useful tool for tracking or monitoring progress.

As long as you could further tailor to kids' levels.

Two teachers discussed the results with students.

We discussed positives – areas in which they achieved good outcomes and then targeted an area to work on.

They were happy as they have questions suitable to their level.

Teachers noted the most beneficial aspects of reports are: the student self assessment, the overview, the teaching plan and the comparative bar charts.

Useful in targeting curriculum.

Great information available, need more time to fully take advantage.

The comparative statements shown in the bar charts are very good.

The teaching plan on the report is very useful.

Teachers reported the most beneficial aspect of the trial for students was:

using the computers.

seeing activities they were familiar with in a different context.

instant results and evaluation.

the opportunity to try something new.

the questions were at their level but more descriptive.

The teachers reported the most beneficial aspects of the trial from their perspective was:

It could be a good way in the future to use tests instead of just paper and pen especially for students with learning difficulties.

Watching and listening to the students self-evaluation with their friends.

The opportunity to become aware of a product that may become available.

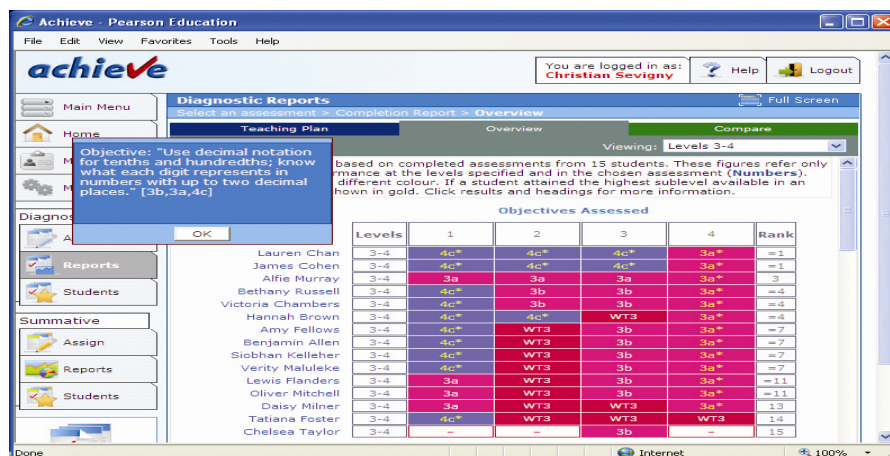
I have got a clear idea where students are lagging behind e.g. conversion of units.

Three of the 4 teachers expressed interest in using Achieve again, their reasons included:

If more time was available to construct tests that better reflect what I want in the test.

Good use of technology in Maths; and It's a very good diagnostic tool.

Figure 6: Example of an overview report



Student feedback

Summary of key points

- Tool is easy to use
- Liked test difficulty being challenging or easy
- Some students reported tests too easy or too hard
- Liked being able to work at own pace
- Some symbols were confusing (UK symbols e.g. £, °F)

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). 83% of students rated the ease of use 5 or higher with 29% giving a rating of 8 or above.

Students were asked what they like about using Achieve. The most common aspect students enjoyed was the difficulty level of test finding it easy or challenging:

It was easy to use.

The questions were easy to understand.

The questions were challenging.

A number of students commented on qualities of the test they enjoyed.

You were able to work at your own pace.

The layout was clear. It was clearly labelled.

You didn't know what was coming next.

You can go back and check your results.

There were a variety of sums and operations.

32% of students did not identify an aspect they liked.

When students were asked what they didn't like, 24% said the test was too hard or too easy. 12% said the tests were too long and 12% found it boring.

The symbols were confusing [UK symbols such as pounds and Fahrenheit].

It doesn't tell you if you got the answer correct or incorrect as you do the questions.

Some questions were really hard.

It was too hard.

46% of students identified something they had learnt about what they knew or could do.

Answers included:

I can do quite a few things, I need to work on fractions.

I learnt about angles.

I am not good at most things.

I learnt how to make percentages.

20% of students said they had learnt nothing about what they knew or could do and a further 34% either didn't know or gave no response to this question.

Links to further information

Link to the Teacher's Handbook, an introduction to Achieve and how the system works

<http://achieve.heinemann.co.uk/help/pdf/MathsHandbook.pdf>

Getting Started booklets

Administrator: <http://achieve.heinemann.co.uk/help/pdf/GettingStartedAdmin.pdf>

Teacher: <http://achieve.heinemann.co.uk/help/pdf/GettingStartedTeacher.pdf>

Student: <http://achieve.heinemann.co.uk/help/pdf/GettingStartedStudent.pdf>

A list of test and assessments: <http://achieve.heinemann.co.uk/help/pdf/Tests.pdf>

Link to Help Section: <http://achieve.heinemann.co.uk/help/index.html> (includes links to the practice questions)

<http://tinyurl.com/yI9Iyeh>, this URL directs to a 4 minute video of Achieve in use in Coventry, UK

Contact Details

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AN EVEN START

Tool Provider

Department of Education, Employment and Workplace Relations (DEEWR)

Focus

Literacy: Reading and Writing

Numeracy: Number, Space, Measurement, Chance and Data

Diagnostic Power

Identifies strengths and weaknesses in narrowly defined domain or sub-domain with Diagnostic Power level 3.

Target student cohort

Primary/Middle Years – Low achievers (below National Minimum Standard) in Years 3, 5, 7 and 9.

Brief description

An Even Start is a tuition program designed to assist educators to identify and address the learning needs of individual students. Students complete reading and numeracy tests through on-screen delivery. Multiple choice items are automatically marked and teachers are guided by the program to mark student constructed responses.

Individual and group reports are generated and these are linked to support materials to guide the development of learning plans for students.

The resource includes paper based writing tests for each level and Components of Reading Investigations (CoRI) for students who are well below Year 3 Minimum National Standard.

Time to complete assessment is approximately 15 to 35 minutes per student.

Tool Strengths

Within the context of the trial cohort the following strengths of An Even Start were identified:

- user friendly tool with standard IT support needs
 - An Even Start has user-friendly interfaces that provide the user with clear and precise instructions.*
 - There was a lot to read and follow but it was very user-friendly.*
 - Effective use of technology in the learning process.*
- students were positive about using An Even Start, engagement was high
 - It was good because it was on the computer. The questions were easy.*
- tests allow access to low achieving students
 - I feel that An Even Start gave a clear picture of how children read, write and complete Numeracy tasks.*
- capacity to increase font size
 - The ability to alter font size was an excellent thought.*
 - I liked the part where the writing was bigger and easier to read (Student).*
- good balance between text and visual support
 - I found out a lot more about students' levels and the need for visual literacy support.*

- user friendly reporting, clearly highlighted strengths and weaknesses
The reporting was very clear and easy to interpret.
- recommended activities provided for next teaching steps
It provides clear goals and activities to help them improve.
- useful tool to monitor growth over time (provides a pre- and post-test).
It shows explicit comparisons and improvements.
Good for storing and retrieving information.

Future use and application potential

Many Australian schools were provided with this resource during 2008. Further copies are not available at this point in time.

An Even Start is considered most useful for:

- assessing low achieving students at Years 3, 5, 7 and 9 and as appropriate at other year levels. Suitable for some special needs students.

This resource was specifically designed for students below the National Minimum Standard so allows access for low achieving students. Teachers reported the assessments were also suitable for special needs students in the trial cohort.

- monitoring growth over time including to assist evaluation of intervention programs. The pre- and post-test results are displayed on a common report against a common scale so provide teachers with a mechanism to determine progress and evaluate intervention programs implemented.
- teaching support provided to address identified weaknesses. Teachers valued the detailed support provided to address areas of weakness and the link to further resources as appropriate.

Figure 7: Example of the student interface, a reading test and question

The screenshot shows the 'an even start' National Tuition Program interface. On the left is a 'PRACTICE' sidebar with a progress indicator for levels 1-21. The main content area displays a reading test titled 'Monsters' with a table of monster characteristics and a multiple-choice question about Tabby's special power.

Name	Tabby	Squiz	Finn	Dude	Pop
Age	13	10	9	11	10
Hobbies	chess	surfing sailing	swimming	reading	basketball
Best friend	Pop	Dude	Pop	Squiz	Tabby
Special power	Tabby can fly.	Squiz can bounce really high.	Finn can breathe underwater.	Dude digs secret tunnels.	Pop can split into many small monsters.

What is Tabby's special power?

flying
 digging
 running
 jumping

Considerations before use

Before using An Even Start schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of the this tool.

- The resource is already available in many schools

The tool is no longer readily available however it is likely that many schools will currently have a copy of this resource in their school. All primary schools were provided with the First Edition Tutor Kit (April 2008), resources for Years 3 and 5. During 2008 Tutors many of whom were teachers located in schools, were provided with An Even Start-National Tuition Program Tutor Kit II which contains assessments and resources for Years 3, 5, 7 and 9. Schools will need to locate a copy of the resource. It includes two DVDs, installation instructions and Tutor guide.
- Provision of school based IT support

Use of the tool is not currently supported externally. Trial schools drew on assistance from their education authority and the project team as necessary.

The Tutor Kit II includes a trouble shooting guide, FAQs and the user manual. These provide guidance to manage simple user and technical issues.

There are no formal training requirements to orientate users to reporting capabilities, this is self directed and supported by the user guide.

Schools would be prudent to ensure adequate IT support is available locally to assist tool setup and use if required.

Note: The National Tuition Management System (NTMS) referred to in the user manual is no longer available.
- Identification of the appropriate student group

An Even Start was developed to effectively assess students working below National Minimum Standards in literacy and numeracy at Years 3, 5, 7 and 9. Tests are colour coded to avoid year level referencing. Guidance on test level appropriateness is provided in the Tutor Guide.

Figure 8: Excerpt from the progress report displaying the pre- and post-test descriptors on a common scale. A scale score of 47 has been achieved for the pre-test. Green highlighted descriptors indicate correct responses for the corresponding question.

13	72	13	locate information provided in title of text (Q16)	
	71		use information in a simple sentence to match a word and a picture (Q5)	
	69	12	compare directly stated information within one section of a table (Q12)	
12	68		scan a table to locate synonymous information (Q14)	locate directly stated information near the end of a short narrative (Q14)
	67			
	66	11		locate directly stated information in a short informative text (Q8)
	65			locate information in the middle of an informative text (Q16)
	64		locate synonymous information in a table (Q11)	locate information directly stated in second line of a short narrative (Q12)
10	63	10	recognise answer to a simple question by word/ picture match (Q4)	recognise the convention of a labelled diagram in an informative text (Q11)
	62			
	61		recognise information in a simple sentence that matches a picture (Q7)	
9	60	9	compare information within a short, illustrated text (Q10)	use information in a simple sentence to match a word and a picture (Q4)
	59			recognise information in a simple sentence that matches a picture (Q7)
	58			
8	57	8		
	56		locate directly stated information in a short, illustrated text (Q8)	
	55			
7	54	7		
	53			
	52			
6	51	6	locate directly stated information in a short, illustrated text (Q9)	locate synonymous information in a short informative text (Q10)
	50			
	49			
	48			
5	47	5	recognise a word that matches a picture (Q2)	recognise answer to a simple question by word/ picture match (Q5)
	46			recognise a word that matches a picture (Q3)
	45			
	44			
4	43	4	recognise information in a simple sentence that matches a picture (Q6)	recognise information in a simple sentence that matches a picture (Q6)
	42			
	41			
	40			
	39			

Time requirement guidance

The following guidance on time requirements is based on trial feedback and teacher interviews.

IT check: 30 to 60 minutes, installation and tool setup.

Tool materials review: approximately 1 to 2 hours.

Preparation for student assessments: 1 to 2 hours, includes student setup process

Conduct student assessments: 15 to 35 minutes.

Time to access and interpret reports: 15 to 30 minutes.

Minimum IT requirements

Windows XP or Windows Vista operating systems for PCs and meet minimum requirements for Windows XP and have Internet explorer set as the default

For Macintosh computers they must meet the minimum requirements for Mac OS X and have Mac OS X 10.4 or above operating system installed.

Adobe Acrobat Reader is required to read Student Reports.

School demographics

An Even Start was trialled in 1 jurisdiction. The following information was provided by the 2 Government schools completing the trial.

The schools have student populations of 70 and 250, the former school being in a Metropolitan location and the latter in a Provincial location, near an urban centre. The schools ICSEA values (refer to Footnote 4, p46) are 777 and 880 respectively, lower than the Australian school average.

The school student population descriptions included: *declining numbers, special needs plus behaviour problems.*

Motivation for school trial participation includes:

To have a program that accommodates Primary and Secondary literacy assessment.

Gain a better understanding of student levels in Literacy and Numeracy.

A streamline assessment program.

To further enhance the use of assessment to inform future teaching and learning programs.

School IT infrastructure at both schools was described to be *sound* and IT support to be *thorough* and *readily available*.

Teacher demographics

Three teachers formally completed the trial providing feedback both during the trial and on its completion. The 3 teachers have a few weeks, 7 and 15 years teaching experience respectively. One teacher is new to teaching, 1 is a classroom teacher and the other an Assistant Principal. One teacher noted previous use of the tool.

All 3 teachers use a range of computer applications citing use of at least 3 of the 6 applications listed with all 3 using email, the internet and word processing software. Two of the teachers also use spreadsheets and power point and cite other use such as playing games, creating activities and using databases.

The teachers rated their level of computer expertise as *competent*, *intermediate* and *very competent*. They rated their IT expertise as *quite average* and *competent* (2 teachers).

Teachers were asked to nominate 2 ways they currently assess. They listed external assessments such as SA Spelling, Hawker Brownlow Inventory of Basic Skills and school based assessments e.g. teacher led assessment, product analysis, work samples, questioning and discussions.

Teachers report their current use of assessment data is to measure progress and to inform teaching programs.

It allows me to program to suit areas of learning.

To show achievement of basic skill.

To determine improvements in student learning.

Teachers reported the most useful types of assessment are:

Computer based assessment as allows me the chance to look at learning as a whole.

Computer based because students are more likely to participate.

Formative assessment, for example work samples and questioning because it gives continuous insights into students' learning and directions for teaching.

The use of computer based assessment was a common motivation for teacher participation in the trial.

To gain further knowledge and experience of computer based assessment.

To have fast and simple but an effective reading assessment tool.

To increase the use of technology within the school.

Improve IT skills.

Other reasons cited for participation were:

To enhance our understanding of levels in Literacy and Numeracy.

To further develop knowledge and skills in effective assessment.

Teachers reported the use of self assessment was not current or at a very minimal level.

Figure 9: Example of the student report teachers receive. Green indicates Max's correct responses. Many items are hot linked to support information about the item and suggested teaching activities.



Reading Pre-tuition Assessment Red

Question Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Strand	IN	IN	IN	IM	IM	IM	IM	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN
Correct Answer	C	D	D	B	D	B	D	B	HM	B	A	HM	B	C	C	A	HM	C	D	H
Total Correct	1	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
Max	C	B	A	B	A	A	D	A		A	A		-	-	-	-	-	-	-	-

Student demographics

Eleven students participated in the trial with all of these students providing feedback on the trial. Students providing feedback included: 6 Year 3, 1 Year 4, 3 Year 7 students and 1 Year 8 student. The gender balance is in favour of girls, 2 boys (18%) and 9 girls (82%).

One student (10%) is identified as an ESL learner (English as a Second Language) while 6 students (55%) were identified as Indigenous. 10 of the students (91%) speak fluent English. The ability level of students is described as below average to average.

All 11 students reported using a computer at least once a week, with 4 using a computer most days. Apart from using a computer at school, 82% also report using a computer at home, 73% at family or friends' homes and 50% at the library.

The computer applications used the most were playing music, DVDs and games, with 7 students reporting this use as very often and 3 or 4 reporting this use as less often. Ten students use computers sometimes (or more often) to find information and do word processing.

Tool provider support

The An Even Start program was decommissioned in 2009 so no formal support was available. Support was provided through the jurisdiction, sector officers and the project team as required.

Teacher feedback

Summary of key points

- User friendly tool
- High student engagement
- Suitable for low achievers
- Some older students commented that the content of tests (low level tests) was more appropriate for younger students
- Highlights strengths and weaknesses and required teaching support
- Useful for monitoring over time
- Results were not directly discussed with students
- Useful to have control over font size
- Backup record of school password recommended

One teacher had experience of using the tool during the tutorial program. The other 2 teachers had not used An Even Start prior to the trial.

At both schools the tool was setup on one computer.

We were unable to have the program networked to allow more than one student to use it at a time.

At 1 school staff shortages restricted the number of students able to participate in the trial. Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings of 7-10 suggest above average student engagement was observed.

The students were thoroughly engaged and could navigate the program on their own.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 5-7 indicate the time to assess was a little more than expected.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings of 5-7 indicate the student support required was considered manageable.

IT support required was rated between low level support (0) and high level support (10). The ratings of 0-6 suggest average to below average IT support was required.

The time required to administer assessments is estimated to be 15 to 35 minutes.

Using the tool

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). The ratings of 7-8 indicate the support within the tool was more than adequate.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 8-10 indicate text and images were very clear.

The user friendliness of An Even Start was rated between not user friendly (0) and very user friendly (10). The ratings of 8 and 10 indicate the tool is very user friendly.

An Even Start has user-friendly interfaces that provide the user with clear and precise instructions.

The ability to alter font size is an excellent idea.

The text and messages are very clear to follow and attractive to students.

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 6-10, indicating the assessment is age appropriate.

Curriculum relevance was rated between not appropriate (0) and very appropriate.

Teachers rated this 7-10, suggesting an above average curriculum relevance.

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 5-10 suggest the tool is appropriate for a range of abilities.

Our students have such diverse abilities within their age group.

Age appropriateness is difficult to achieve with students in Year 7 who are working at a much lower level.

The lowest functioning student did struggle but it was okay for the rest of the group.

Some students complained of having to do baby work (Year 7 students completing Year 3 level test).


The tasks start off simple and moved on which allowed all students to access areas of specific learning.

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). Teachers rated this 5-7 suggesting the time required is as expected or a little more.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings of 5-10 suggest the reporting is user friendly.

Figure 10: Example of the support provided to teachers in analysing the student's response and in targeted teaching support.

Reading Pre-tuition Assessment Red, Item 1: Designed for students below Year 3 benchmark L3A011	
	<p>Question 1</p> <p>What is this?</p> <p> <input type="radio"/> a dog <input type="radio"/> a bed <input type="radio"/> a hat <input type="radio"/> a pin </p> <hr/> <p>Key or Marking Guide:</p> <p>C – a hat</p>
<p>Text type :</p> <ul style="list-style-type: none"> • Informative <p>Skill:</p> <ul style="list-style-type: none"> • Text location and interpretation skills • This question assesses the student's ability to recognise a word that matches a picture. <hr/> <p>Online Resources:</p> <p>Host page: http://www.standards.dcsf.gov.uk</p> <p>Link to resource: http://www.standards.dcsf.gov.uk/primary/publications/literacy/63469/nls_els00767_book.pdf (Early Literacy Support)</p> <p>Link to resource: http://www.standards.dcsf.gov.uk/primary/publications/literacy/63469/nls_els00767_book.pdf</p> <hr/> <p>Key Skills addressed:</p> <ul style="list-style-type: none"> • Recognising words that match pictures. <p>How to use the Resources:</p> <ul style="list-style-type: none"> • Print off and cut out the cards on p.346 and p.373 of the Early Literacy Support document. • Encourage the student to read out the words and match them up with the pictures. • Encourage the student to complete the online word match activity. The student needs to drag and drop the picture into the correct word box. Assist if necessary. 	

Teachers estimate the time to review reporting to be 15-30 minutes. They found the results were generally as expected, judging the results against data from teacher classroom assessments and 2009 student information.

Teachers rated the capacity to track or monitor over time from not useful (0) to very useful (10). They rated this 6-9 indicating it would be a useful tool for tracking or monitoring progress.

Very clear and visual reporting to monitor progress, will be using it in the future.

It shows explicit comparisons and improvements.

It has the ability to re-test and compare over time.

Other comments about reporting include:

It highlighted specific areas of weakness and had follow-up tasks to help improve.

One child could now complete tasks in numeracy that she was previously struggling with.

The reporting was very clear and could interpret data easily for this small sample group.

Teachers noted the most beneficial aspects of reports.

The areas highlighted for improvement.

The directed tasks to help the children.

The visual clarity of the reporting.

The ease of operating and being stored on the computer for easy retrieval.

None of the teachers discussed the results with their students so feedback is not available on the usefulness of this aspect.

Teachers did not use the results to modify or confirm their programs so feedback is not available on this aspect of reporting.

Student reaction to results was rated between low interest (0) and high interest (10) with ratings of 6-7 suggesting standard response to results although noting students weren't shown their results. This may be related to perceived success rather than actual student results.

Generally, students were happy and could see progress. They enjoyed using the technicolour.

Students did not initiate discussion about their results or use their results to inform learning plans.

Teachers reported the most beneficial aspect of the trial for students were:

The chance to use a computer assessment.

Finding out what they could achieve in Literacy.

Success and engagement while being assessed.

The teachers reported the most beneficial aspects of the trial from their perspective were:

Knowing I was part of a group working to improve opportunities for children.

Seeing how receptive students were in using technology to be assessed.

Being exposed to new resources and teaching programs.

All 3 teachers expressed interest in using An Even Start again.

I feel that An Even Start gave a clear picture of how children read, write and complete Numeracy tasks, as well as giving clear goals and activities to help them improve.

Very much so, I would like to trial it further across the whole school.

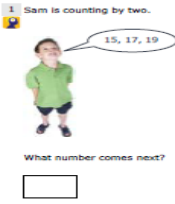
It was very beneficial and easy to navigate. Engagement was high.

Further comments include:

I would like to see the tool implemented pre-NAPLAN to help identify areas of student weakness.

It would be good to have a password that works for all schools in case theirs is lost

Figure 11: A further example of the support provided to teachers, note the possible misconceptions identified to support next steps in learning.

Numeracy Pre-tuition Assessment Yellow: Item 1 Designed for students below Year 5 benchmark	
	<p>Descriptor: write the next number of a counting by two pattern</p> <p>Key / Answer: 21 only if done mentally. Pen and paper not permitted. Fingers accepted.</p> <p>Key skills:</p> <ul style="list-style-type: none"> Number names Skip counting by 2s, 5s and 10s and recognition of associated number patterns, e.g. 7, 9, 11.
<p>Possible errors/misconceptions:</p> <ul style="list-style-type: none"> The response 20 is probably due to a misreading of the question. The response 22 is probably due to a counting on error. <p>Advice:</p> <ul style="list-style-type: none"> Check knowledge of number names first to 20, especially the teens. Then multiples of 5 and 10 to 100. Some students will find this task difficult as they don't think you can count by twos starting with an odd number. Another difficulty for some students will be starting at 15 – if they can't count on they will have difficulty starting at 15. Students who are having difficulty counting need to see the counting sequence e.g. a hundreds grid. Ask them to point to the numbers as they count. Suggested sequence for assistance <ol style="list-style-type: none"> Count by ones forwards and backwards first to 20, then to 30, then to 40 and finally to 50 Skip count from zero by tens, then fives, then twos. Skip count by tens, fives and twos from a multiple of these e.g. start at 30 and count by tens, start at 25 and count by fives. Skip count by tens, fives and tens from a non-multiple of these e.g. start at 23 and count by tens. <p>Materials:</p> <ul style="list-style-type: none"> Hundreds grid (and counters) and narrow strip/roll of paper. See Site . <p>Online Resources:</p> <p>Site 1: http://www.education.vic.gov.au/studentlearning/teachingresources/maths/mathscontinuum/number/default.htm Then scroll down the Continuum page to level 2.0 and click on 'Skip Counting' link.</p> <ul style="list-style-type: none"> Activity 3: For students to record a counting sequence as far as they can. Activity 4: Using the hundreds grid for counting and seeing skip counting patterns. <p>Site 2: http://standards.nctm.org/document/examples/chap4/4.5/index.htm Links a hundreds grid with a calculator and addition. Shows patterns.</p> <p>Site 3: http://www.amblesideprimary.com/amblesweb/mentalmaths/countersquare.html Online interactive hundreds grid with moveable counters.</p> <p>Site 4: http://www.amblesideprimary.com/amblesweb/mentalmaths/bigcount.html Onscreen skip-counting. Useful for weak students to count along with at home or at school. Takes time to load.</p> <p>Activities for pairs or small groups:</p> <ul style="list-style-type: none"> Activity 2: 'Whisper count' on Continuum (Site 1). 	

Student feedback

Summary of key points

- Easy to use
- Liked colourful tests
- Liked the increased font size
- Liked using the computer
- Articulated an element of learning

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). Ten students rated this 5 or above with 2 Year 7 students rating this 10. The Year 8 student rated this 3, hard to use (although this rating appears to be more related to the difficulty of the test itself rather than the use of the tool).

Students were asked what they liked about using An Even Start. The Year 3 and 4 students tended to comment about liking the colourful pictures and the *bigger writing* that was easier to read. Year 7 and 8 students liked using the computer, *Easier to do* and *More helpful than just reading a book*.

When students were asked what they didn't like, 9 of the 11 students *liked everything*. The other two students said it *was hard* and they *didn't like reading the stories*.

All 11 students identified something they had learnt about what they knew or could do.

I learned I can read different texts.

I can do a long test; I can read better than I thought.

Computers are fun; More about reading and Maths.

It's easier to read on the computer.

Links to further information

This tool is not currently available however many schools will have a copy of the program. Refer to the Tutor Kit (Primary) or Tutor Kit II (Primary and Secondary) for further information.

COMPASS

Tool provider

Australian Council for Educational Research (ACER)

Focus

Literacy: Reading

Numeracy: Number, Measurement, Space, Chance and Data

Diagnostic Power

Broad domain achievement information with the capacity to target test difficulty to individual students with a Diagnostic Power level 2.

Target student cohort

Middle Years – Years 6 to 10

Brief description

Compass is designed for adolescents who have had limited or disrupted exposure to formal education, including experience in testing. The assessment provides information about literacy and numeracy skills and achievement that is benchmarked against the Australian Core Skills Framework (ACSF).

Guidance on time to conduct an assessment is 15 to 55 minutes.

Tool Strengths

Within the context of the trial cohort the following strengths of Compass were identified:

- teachers found the tool user friendly, having clear instructions and being simple to follow
The program was logical and simple to follow.
It was easy to understand and navigate.
- test level can be targeted to individual students.
For new students it was useful to pinpoint general weaknesses or areas a student disliked. For established students it mirrored known abilities.
- students from standard and alternative education settings were generally positive about using Compass and reported it was easy to use.
Over 90% of students rated the ease of use as easy or very easy.
Student found the material interesting overall. The pictures and graphics were good.
The maths was suitable for the range of our students.

Future use and application potential

Compass was in development at the time of trial, it became available to Australian schools on purchase during October 2010.

The following developments to the tool have occurred since the trial:

- reporting is benchmarked against the Australian Core Skills Framework
- a gate post test has been added to assist teachers in assigning students the most appropriate level test
- the layout of test stimulus and questions has been reviewed to further enhance the appeal of the materials and where possible to ensure the reading text fits a standard screen minimising the need to scroll for most test questions.

Compass became available to Australian schools on purchase in October 2010. Within this context Compass is considered most useful for:

- providing an overview of individual or group progress against the ACSF.
The ACSF for reading, writing and numeracy describes levels of performance that are considered essential for all adults to achieve to enable them to participate in society. Assessing students against this framework will assist teachers in identifying key strengths and areas of need to focus on to equip students with these core skills.
- the potential to engage students through computer delivery and emphasis on visual appeal.
The pictures were good. You didn't have to write. (Year 7 student)
It was quick to do. Easy to read and finish. (Year 11 student)
It was on the computer and it was easy and colourful. (Year 12 student)
- tracking progress over time, for example a pre-test early in the year and a post-test later in the year.
The pre- and post-test are mapped to a common scale so provide a mechanism for schools to collect baseline information, then following a suitable period retest students to monitor progress or growth over time.

Considerations before use

Before using Compass schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of the tool.

- reporting options provided – the reporting module was not available at the time of trial
As the reporting module was unavailable at the time of trial it was difficult for key stakeholders in the trial to fully evaluate the usefulness of this tool to support teaching and learning needs. The reporting module has now been released and reporting should be reviewed to ensure it provides the type of information schools are seeking.
- potential for use with students who have limited or disrupted schooling
Students found the tests generally engaging and ACER advise that this aspect was further enhanced during the final development phase of the tool. Feedback from the trial suggests this tool appeals to students who are disengaged by conventional paper and pen tests.
- the assessment purpose is to provide broad achievement information
Compass provides teachers with broad achievement information that will be useful to identify student strengths, areas for improvement and learning gaps. Computer test delivery, automatic marking and instant results provide an easy method for collecting this information.
- appropriate time period between pre- and post-testing
When Compass is to be used as a pre- and post-test adequate time should be allowed between testing, 9-12 months between testing as a guide.
- the cost of the tool
Compass costs (as at 2010) are \$9,500 for an annual licence (up to 1,000 test administrations over 12 months) or a \$300 initial registration (includes manual, gatepost materials and 10 test administrations) and then a further \$170 per each package of 10 test administrations. Cost for a System-wide licence is by negotiation.

For updated information see <http://www.acer.edu.au/tests/compass/pricing-and-ordering>

Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT checks: 5 to 15 minutes

User guide review: 15 to 30 minutes.

Other familiarisation activities: 20 to 60 minutes.

Preparation for student assessments: 30 minutes

Conduct student assessments: 15 to 55 minutes

Time to access and interpret reports: no feedback is available on this aspect

Figure 12: Example of a numeracy question about probability

Compass Form 7

Home

1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30

Winning the lottery

A baby being born a girl

Rolling a fair dice and getting a six

Seeing a pig fly

Which of the options shown above is likely to have the **greatest** probability (or chance) of happening?

Winning the lottery

A baby being born a girl

Rolling a fair dice and getting a six

Seeing a pig fly

Previous Next

Minimum IT requirements

Compass requires internet access and is suitable for both PC and Mac operating systems.

The performance of the application will be affected by the communication speed of the internet connection. Recommended connection speed and number of users follows.

Required Bandwidth

The speed of the Internet connection will determine the number of students who can sit a test at any one time. Below are suggested maximum numbers of students for different types of Internet connection.

Connection Type	Connection Speed	Maximum Number
Modem	56K bit/s	1 student
ADSL (basic)	128K bit/s	2 students
ADSL (medium)	256K bit/s	5 students
ADSL (high)	512K bit/s	10 students
ADSL (corporate)	1.5M bit/s	30 students 1 class
Cable (basic)	1.5M bit/s	30 students 1 class
Cable (high)	>3 mb/s	1 - 2 classes

School demographics

Compass was trialled in 1 jurisdiction. The following information was provided by the 4 Government schools that completed the trial. Two trial schools are in Metropolitan locations and 2 in Provincial locations. Three schools have ICSEA values (refer to Footnote 4, p46) between 900 and 1100 and the fourth school has a value below this standard range.

The school student population descriptions includes: small number of Indigenous students, some refugee students, mix of income levels, low socio-economic status, behaviour and emotionally disturbed students. One school is a special education facility for students with challenging behaviour or learning difficulties. Another school provided alternative education to students with academic, social and behavioural needs.

A common motivation for trial participation was to identify an effective way of assessing specific student cohorts such as students at risk and low ability students. The use of assessment data to provide an evidence base for learning and to enhance understandings of literacy and numeracy levels was also a key motivation for trial participation.

All 4 schools reported adequate school IT infrastructure and IT support to conduct the trial effectively.

Figure 13: Example of a reading question and accompanying text.

Compass Form 1

Kinglake

I live in a small town called Kinglake, where there is no lake. Cars drive into town with their boat attached to the tow ball and the windows down. They pull over beside me on my BMX bike while I try to do wheelies down the main street. There's usually a girl in the passenger seat with a map open on her lap and a confused look on her face. The driver leans out with his sunglasses on top of his head and says:

Hey mate, where's the lake?
There is no lake.
No, serious, where is it?
And I give them directions that lead to nowhere.

Why does the bike rider give them 'directions that lead to nowhere'?

He wants to see them again.
 He wants the lake to himself.
 He does not know where the lake is.
 He is tired of people not believing him.

Previous Next

Teacher demographics

Nine teachers participated in the trial with 5 of these providing feedback both during the trial and on its completion. The following information is based on the responses from the 5 teachers who formally completed the trial.

The teachers' teaching experience ranges from being a new teacher (1 teacher) to having 10 years experience (2 teachers). Their roles include classroom teacher (2 teachers), school leadership roles such as leading Mathematics or English teaching and learning at the school and one participant is the Assistant Principal.

All 5 teachers use a range of computer applications with a minimum of 4 different applications each cited such as email, internet, word processing, PowerPoint and computer games. Other computer use includes social networking and music programs. Teachers evaluated their level of computer expertise as adequate or average and very good or excellent. IT expertise was described as 'minimal', average or adequate (3 teachers) and excellent.

Teachers were asked to nominate two ways they currently assess. Teachers reported a range of school based assessment e.g. running records, observation, discussion, anecdotal notes, end of topic tests and external assessment (commercial tests). The main purpose

teachers cited for using assessment data is to inform teaching programs for individuals and the class, for example ‘...to move forward or revisit concepts and skills’.

Teachers reported the most useful types of assessment were formative e.g. work samples, higher order thinking because *they are tangible and available at short notice* and *Students have to step out of their comfort zone and use analytical and critical skills*. Teachers also found commercial tests useful because of their rigour and the control teachers had over timing and the test environment.

Teachers reported that student self assessment was either not currently used or used minimally.

Teachers were motivated to participate to gain more experience in best practice assessment including the effective use and analysis of assessment data and to gain a better understanding of student abilities and numeracy and literacy levels.

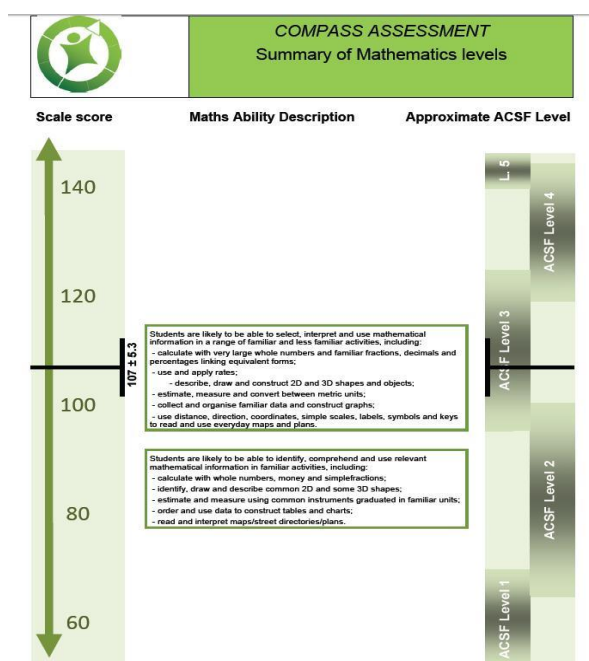
Student demographics

188 students participated in the trial with 115 providing feedback on the trial. Students providing feedback included: 3 Year 5, 4 Year 6, 42 Year 7, 33 Year 8, 18 Year 9, 6 year 10, 6 Year 11 and 3 Year 12 students. The gender balance of students is 74% boys and 26% girls however the students providing feedback were 60% boys and 40% girls.

Only 1 student was reported to be an ESL learner (English as a Second Language) while 20 students (11%) are identified as Indigenous. 182 students (97%) speak fluent English. It is generally noted that students are below their year level in their achievement standards.

85% of students report using a computer at least once a week on average and 44% of these students report using a computer most days. Apart from computer use at school 75% of students report using a computer at home, 37% report computer use at family or friends and 29% at the library. Over 50% of students reported using the computer to play music, DVDs, play games and also for social interaction such as Twitter, Chat, Facebook or email.

Figure 14: Example of report referencing student results to the ACSF



Tool provider support

Participants received a user guide while although not specifically designed for Compass the administration instructions were identical to those required.

ACER conducted a 20 minute teleconference prior to trial commencement to review setup, trial requirements and respond to questions. All 4 schools attended.

A helpdesk was available throughout the trial via email and phone.

Trial activity reports indicate all 4 schools completed testing and reports were issued, noting that reporting was restricted to raw score results as the tool was in development and the reporting module not yet available.

Teacher feedback

Summary of key points

- Average to above average student engagement
- Time and support requirements manageable
- Standard IT support required
- Tool provider and in-tool support more than adequate
- Tool easy to use
- Tests are age, curriculum and ability range appropriate
- Students sometimes experienced difficulties scrolling through text

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings of 4-7 reflect average to above average student engagement was observed.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 2-7 indicate the time to assess was either less than expected (1 school), as expected (2 schools) or a little more than expected (2 schools).

The support students required was rated between not manageable (0) and easily manageable (10). The ratings of 5-8 indicate the student support required was manageable.

IT support required was rated between low level support (0) and high level support (10). Four schools rated this 5 or less, requiring a low level of IT support and 1 school rated this 7 indicating they required a higher level of IT support than the other schools.

The time required to administer assessments ranged between 15 and 55 minutes.

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). All ratings were 5 or above with 3 schools giving a rating of 8 indicating the tool provider support was more than adequate.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). The ratings of 5-9 indicate the user support within the tool was more than adequate.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 6-10 indicate text and images were very clear.

The user friendliness of *Compass* was rated between not user friendly (0) and very user friendly (10). The ratings of 6-10 indicate the tool is user friendly.

Teacher comments relating to using the tool include:

The program is logical and simple to follow

Easy to understand and navigate

Once the students began the program they followed it with very few issues.

Teachers also reported the need to scroll was a less positive aspect, commenting that *text and questions did not fit neatly on the screen* and that some *students found it difficult to have to scroll up and down from the question and back to the text to find the answer*. This was reported to be more a difficulty for lower ability students.

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 6-9, indicating the tests administered were age appropriate.

Curriculum relevance was rated between not appropriate (0) and very appropriate. Again teachers rated this 6-9, indicating the tests administered were curriculum appropriate.

One school commented that *the Numeracy test was appropriate for the life skills curriculum*, the comment went on to say, *the literacy test could have been better aligned to functional literacy*.

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings this 5-8 reflect the tool being quite appropriate for the ability range within their trial cohort.

Comments related to target group appropriateness include:

Students found the materials interesting overall. The pictures and graphics added to the appeal.

The maths was suitable for the range of our students. The literacy was accessed more appropriately by our top end.

Some reading tasks involved too much reading, therefore engagement was low.

As the reporting module was not available during trial the results provided were simple raw scores therefore teachers were unable to comment on its value.


The most beneficial aspect about the trial for students identified by teachers was the testing being conducted on computer and being available online.

The teachers reported the most beneficial aspect of the trial was the ease of use and an opportunity to review student results, albeit limited at this point of the tool's development.

Four of the 5 teachers expressed interest in using the tool again, their reasons included:

To provide a snapshot of performance that can be used to evaluate and inform teaching.

Figure 15: Example of report provided detailing student test results

Individual Student Report for Professionals						
		Name: John Smith Date of Birth: 1 January 2006 Test: Compass Maths - Blue Date: 21 September 2010				
Summary		Raw score: 25/30 (83.3%)		Scale score: 107 ± 5.3		
Area of maths	Score	Area of maths	Score			
Number	13/14	Space	2/5			
Measurement	8/6	Chance & Data	4/5			
Question responses						
No.	Description	The learner can	Maths area	Option	Result	ACSF
1	add simple amounts of money	Number	C	✓	1.00	1.10
2	subtract simple amounts of money	Number	B	✓	1.00	1.10
3	recognise and compare familiar shapes and objects	Space	C	X	1.00	1.10 1.11
4	estimate the height of a common object	Measurement	C	✓	2.00	2.10
5	identify and count an amount of money	Number	D	✓	1.00	1.10
6	understand familiar words about position and location	Space	A	X	2.00	
7	identify an everyday fraction such as a half and a quarter	Number	C	✓	2.00	
8	identify correct way of multiplying with money	Number	C	✓	2.00	2.10 2.11
9	estimate the length of a common object given handspan	Measurement	D	✓	2.00	2.10
10	read and interpret simple bar graph	Chance & Data	C	X	2.00	2.10
11	read and interpret simple bar graph	Chance & Data	C	✓	2.00	2.10
12	read time on an analogue clock to the nearest quarter hour	Measurement	C	✓	2.00	
13	multiply with money	Number	C	✓	2.00	2.10
14	identify the amount of money represented by a set of coins and notes	Number	B	✓	2.00	2.10
15	recognise and represent halves	Number	C	✓	1.00	1.10
16	recognise correct method for addition and subtraction	Number	B	X	2.00	2.10 2.11
17	change a time in minutes and seconds to seconds	Measurement	C	✓	2.00	2.10
18	work out change with money	Number	C	✓	2.00	2.10
19	locate a position on a map given map reference	Space	C	X	2.00	2.10
20	subtract with whole numbers	Number	B	✓	2.00	2.10
21	read and interpret simple bar graph	Chance & Data	C	✓	1.00	
22	read and interpret simple bar graph	Chance & Data	C	✓	2.00	2.10
23	subtract with whole numbers	Number	A	✓	2.00	2.10
24	name the shape of an image of a 3D shape from a different view	Space	A	✓	1.00	1.11
25	recognise familiar shapes that will tessellate	Space	A	✓	3.00	3.10
26	read and interpret data and match with a pie chart	Chance & Data	C	✓	3.00	
27	choose appropriate measurement unit	Measurement	B	✓	2.10	
28	estimate the length of a common object	Number	B	✓	2.10	
29	estimate the length of a common object	Measurement	B	✓	2.10	
30	compare decimal numbers to 2 decimal places	Number	E	✓	2.00	

¹ NA: not attempted

Student feedback

Summary of key points

- Liked computer delivery
- Tool easy to use
- Didn't like having to scroll
- Liked the colourful images
- Liked not having to write, quick to complete

Students were overall positive about their experience with Compass. They rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). 91% of students rated the ease of use 5 or higher with 21% of these giving the highest rating of 10.

Students enjoyed using the computer, they liked the test being quick to complete and easy to navigate. They noted liking the colourful questions, enjoying not needing to writing (questions are multiple choice). Some students enjoyed the test being easy while other students enjoyed the test being challenging. Response comments were very similar across year levels.

The reporting module was not available during the trial and teachers received limited feedback on results, 10% of students reported receiving results.

Many students did not articulate what they learnt about what they know and can do by completing the assessment. Some could provide general and specific content descriptions about what they know and can do such as *money* and *maths* while some were able to distinguish specific strengths and weaknesses.

*Easy at the simple numbers. Not so good with the $\frac{1}{4}$, $\frac{1}{6}$ and $\frac{1}{2}$.
I could read it well enough to know the answers.*

The most common aspect students didn't like about the tests was the need to scroll. This is more related to literacy items where students read a text and answer questions – as the test difficulty increases the reading texts tend to be longer.

Links to Further Information

Access to further information about Compass

<http://www.acer.edu.au/tests/compass>

Contact Details

Contact details are available at: <https://iachieve.acer.edu.au/au/portal.php>

E-ASSESSMENT TOOL FOR TEACHING AND LEARNING (e-asTTLE)

Tool provider

New Zealand Ministry of Education. Professional development provider was Visible Learning Laboratory

Focus

Literacy: Reading, Writing

Numeracy: Space, Measurement, Chance and Data, Number and Algebra

Diagnostic Power

e-asTTle provides broad domain achievement information (adaptive test) with Diagnostic Power level 2. Finer diagnosis at domain level (customised, comprehensive tests) with Diagnostic Power level 3.

Target student cohort

Primary and Middle Years – Years 4 to 9 (NZ Years 5 to 10)

Brief description

The e-asTTle is a web-based tool designed to enable teachers to create and analyse literacy and numeracy tests. Students are considered significant partners in the teaching, learning and assessment cycle. *e-asTTle* provides formative and summative diagnostic tests to assist teachers to identify the stage students are at in their learning to inform teaching and learning programs. There are three types of test options: customised, comprehensive and adaptive. Teachers can customise tests by selecting the curriculum or subject areas to be tested. Comprehensive tests are pre-built covering all curriculum levels. Adaptive tests are used to better target the difficulty of questions in a test.

The *e-asTTle* is based on the NZ curriculum. Reports provide teachers with information about what students know and misconceptions or areas for development. Student self-assessment capacity is supported through the feedback provided.

Guidance on time to conduct an assessment is 30 to 50 minutes.

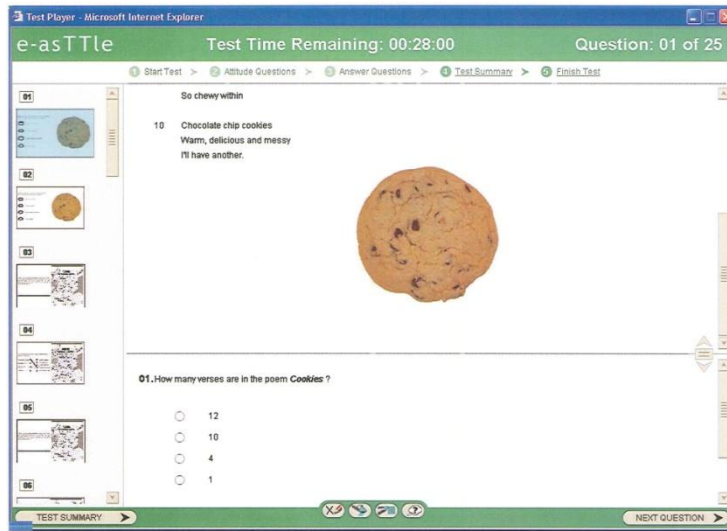
Tool strengths

Within the context of the trial cohort the following strengths of e-asTTle were identified:

- ease of constructing assessments
The tool was easy to use. Navigating the screens was clear and the information easy to find.
- clear report layout
The reports highlighted strengths and weaknesses really well and provided clear data.
- provides various ways to display results
The reports are excellent for the whole class, groups and individuals. One of the most beneficial aspects is the layout of the results which are easy to interpret.
- engaging tool for the students
The layout of their results was easy to interpret. The trialling of a new assessment tool was also very engaging for them.

- students enjoyed IT aspect in preference to pen and paper tests
 - Students really enjoyed the virtual experience and seemed less stressful than when using a standard paper test.*
 - One of the most beneficial aspects of the trial was observing students enjoying IT-based tests more than paper-based.*
- potential to develop teachers' assessment and data literacy
 - It made me think more deeply about my use of data to inform literacy learning.*
 - It reinforced my own assessment of the students' abilities.*

Figure 16: e-asTTle example of a test question.



Future use and application potential

e-asTTle is currently available to New Zealand schools. It is considered most useful:

- for ongoing assessment to support teacher and student learning partnerships
 - e-asTTle is an assessment for learning tool which can be used frequently during the teaching and learning cycle to assess student learning and direct teachers and students towards further teaching and learning pathways.
 - A most beneficial aspect was learning how to use assessment tools to inform future teaching programs.*
- for professional learning gained through tool use and use of materials and resources
 - Teachers were provided access to self-directed online training during the trial. This included professional readings, reflections about quality assessment practices, engagement in learning to construct assessments and reading and interpreting the data. Teachers were also supported in analysing school data through a teleconference with a New Zealand assessment expert.
 - I was able to broaden my range of assessment tools, and confirm and acknowledge areas that I need to focus on to improve student outcomes.*
 - I did think more deeply about use of data to inform literacy learning.*
 - A good feature of e-asTTle is that it brings in in-depth good assessment with the professional development component which is needed.*

- in supporting teacher assessment literacy development

The professional learning materials, activities and hands-on training to construct assessments and interpret reports can potentially develop teacher assessment literacy.

I liked the wholeness to it. Because we need to bring schools on board about what assessment for learning is all about and how do I actually use it to inform the teaching and learning process and I like the depth and background materials for that. It's a good thing to bring teachers into that aspect.
- in supporting student self-assessment development

Importance is placed on student involvement in the learning and assessment cycle. Emphasis is placed on students reflecting on what they have learned and on how they have learned in order to develop the capacity to become more effective learners. Teachers are provided with a variety of reports on which to base these discussions such as the *Learning pathways* and *What next* reports.

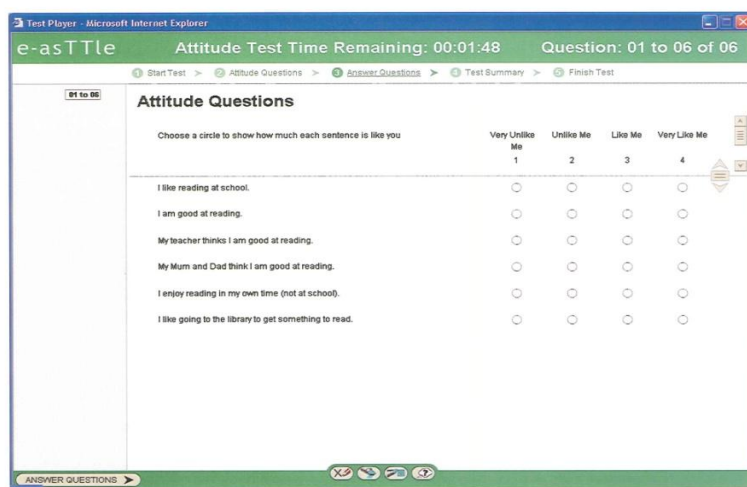
Students used their learning journal to write a reflection on their strengths and weaknesses based on their individual report.

Student comments included:

I have realised I like fractions now that I know I am better. I am more confident about division sums.

I can't really explain the meaning of digits in any whole numbers.

Figure 17: e-asTTle example of student interface displaying Attitude Questions.



Considerations before use

- Australian availability and customisation

The following advice assumes e-asTTle is customised for Australian use before being made available to schools. This would potentially meet concerns raised during the trial related to curriculum relevance.

Before using e-asTTle schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of this tool.

- The time required to familiarise with the tool and reporting options

Any new assessment tool requires teacher time to become familiar with its administration and reporting facilities. Therefore, teachers would benefit from relief time allocation to

facilitate effective engagement in professional development. During the trial various teachers reported difficulties experienced with time constraints.

The trial would have been difficult for a classroom teacher due to the time required for PD etc on top of regular classroom requirements. I was allocated a day each week to work with the e-asTTle trial.

The demands of full-time teaching impacted.

Given the variety of assessment and reporting options available in *e-asTTle*, teachers should initially expect to spend more time on this aspect than they might need to spend familiarising themselves with other types of assessment tools. However, this time will be well rewarded if teachers then utilise the rich data provided to better target their testing, utilise teaching plans to inform their teaching and support students in developing their self assessment skills.

It was interesting seeing different ways in which literacy results can be plotted.

As teachers become familiar with the tool its use will be less time consuming.

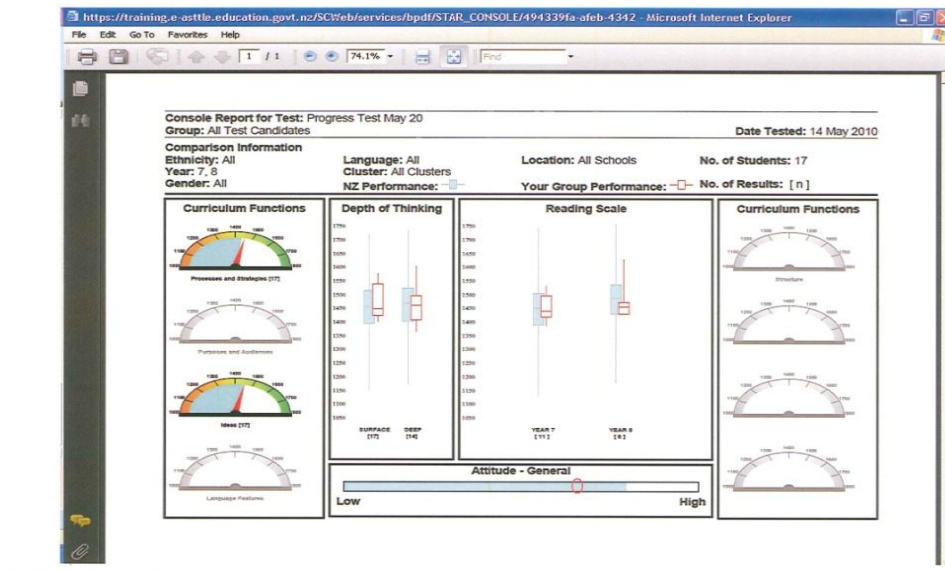
- The assessment need is ongoing and students are partners in the learning process *e-asTTle* is best used as part of ongoing assessment rather than for less regular assessment needs. The tool has an assessment for learning focus. Therefore, it is best used to support on-going teaching and learning needs. A teacher may, for example, assess before teaching a unit to ascertain student prior understandings so that lessons can be better targeted and then provide opportunities for students throughout a teaching unit to demonstrate their development in this area.

- Training required to support effective use of the tool.

Training provided during the trial was based on self directed learning via the use of a *Moodle* site. This involved professional reading, including John Hattie's theories underpinning quality assessment practices. The site provided virtual activities to assist teachers in the practice of constructing various assessments. Teachers were provided with the opportunity to engage in and reflect on quality assessment practices and continue to develop their assessment literacy. Communication with and feedback from *e-asTTle* experts was available through regular online chat sessions, webinars and teleconferencing. Teachers were able to move through the learning phases at their own pace.

This is one model of training that could be considered. It will be important to provide comprehensive support during training to ensure the tool can be used effectively.

Figure 18: e-asTTle example of a console report including the range of achievement and comparison against a normed sample group



Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT check : 30 minutes to 1 hour

Tool material review: 20 minutes to 2 hours

Recommended training: Self directed online training which can be paced over several weeks.

Preparation for student assessments: 20 to 30 minutes

Time to conduct student assessments: 30 to 50 minutes depending upon the amount of questions chosen by the teacher.

Time to access and interpret reports: 5 to 30 minutes

Minimum IT requirements

Operating System: Windows 2000, Macintosh OS X 10.3

Internet Browser: Internet Explorer 6.0, Mozilla Firefox 1.5, Safari 2.0.4, Chrome 4.1, Opera 10.10, Camino 2.0.2

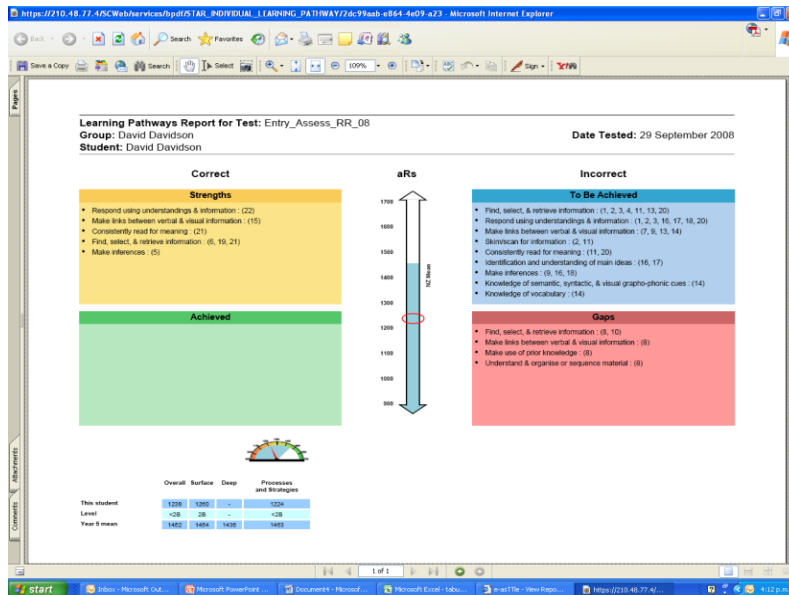
For e-asTTle, all browsers must have JavaScript enabled and Pop-up Blockers disabled.

Internet Connection: Broadband (minimum of 2mbs symmetrical per class of 30 students.

Third-party Software: Macromedia Flash 8, Adobe Acrobat Reader

Display: 1024x768, 256 colours

Figure 19: e-asTTle example of learning pathways report this includes strengths and gaps evident.



School demographics

e-asTTle was trialled in 2 jurisdictions. The following information was provided by the 6 Government schools that completed the trial. Two schools were classified as Provincial, 2 as Metropolitan, 1 as Remote and 1 as Very Remote. 5 schools have Index of Community Socio-Educational Advantage (ICSEA) values (refer to Footnote 4, p46) between 900 and 1100 and one school is below this average range.

The schools are described as *a remote mining community, outskirts of a capital city, large urban primary school, large rural school, capital city – urban and remote*. The school student population descriptions stated *predominately white students from mining families, comprehensive local high school, 45% of students are from Defence families, SAE is the first Language spoken by high majority of our students, high number (1/3 of our students are ESL and Indigenous students, mixture of low SES and mid SES groups from mainly Anglo-Saxon background, approximately 20% are students with special needs and learning difficulties and Defence families, Indigenous town families*.

A common motivation for trial participation was to gain experience in explicit data use. There was also interest in the opportunity to use an assessment tool and engage in professional learning. Trial teachers cited motivation such as... *Diagnostic analysis of students' results to inform teaching and learning programs; To firstly see what diagnostic information about student achievement it can generate; and Greater understanding of assessment integrity*.

Generally, the IT infrastructure for 5 of the 6 schools was described as adequate while, 1 school described the IT infrastructure as *underfunded*. The IT support within all of the schools was reported as *satisfactory or good*.

Teacher demographics

Nine teachers participated in the trial providing feedback both during the trial and on its completion. Teaching experience varied considerably although on average was 8.7 years. Two teachers had more than 20 years teaching experience, while another teacher reported to be in her first year of teaching.

Teacher's roles at the school were reported as: *teaching across all primary classes; Literacy Field Office; classroom teacher; Senior Teacher Primary; Literacy Advisor to Year 4/5/6 teachers and Executive Teacher English & SOSE.*

Seven of the 8 trial teachers reported that they usually use the computer for email and word processing. Seven teachers use the internet, 5 use PowerPoint, 3 use spreadsheets and 2 use computers to play games. The teachers rated their computer expertise as ranging between average to competent and their IT expertise from minimal or basic to sound.

Teachers were asked to nominate two ways they currently assess. Teachers reported a range of assessments including formal (commercial, departmental) and class-based assessment (portfolios and rubrics). The main purposes for assessment data teachers cited were planning for programming, teaching and learning in order to target students' needs and reporting to students and parents.

The most useful types of assessment teachers cited were generally classroom designed assessments embedded within their teaching programs. Teachers perceived these as being more student and teacher friendly, providing information at individual levels with instant access to student information.

Generally, a strong motivating factor for the majority of teachers in the trial was to enhance their assessment practices and to be able to successfully implement these within their programs in order to improve student learning outcomes. Several teachers expressed a particular interest in online assessment. One teacher wanted to *...become familiar with electronic tests that are used to monitor progress and identify student strengths and weaknesses;* and another wanted to gain... *insight into what the future holds for assessment in Australian schools.*

Student demographics

Of the 155 students who participated in the trial, there were 13 Year 4, 42 Year 5, 62 Year 6, 16 Year 8 and 22 Year 9. The gender balance of trial students was 76 girls and 79 boys, almost even and this is also reflected in their feedback. 52 students provided feedback on the trial.

The majority of students were reported to be fluent English speakers. 9% were identified as ESL students while 21% were identified as Indigenous students. There was a wide range of ability levels amongst the students ranging from two years below, at or slightly above year level ability.

The teachers were asked about the use of student self assessment within their classes, a ranged of responses were received. These varied from:

Most of the students in my class are very accurate with the comments and ratings they give themselves.

We use self-assessment regularly.

Embedded into all of my curriculum areas.

Developing as it is the start of the year.

Reflective activities for all projects, assignments, writing tasks plus listening.

Checking their work against marking guides.

Most students think they are not as good as they really are – they are hard on themselves in self assessment.

Two teachers reported student self-assessment use as *...Beginning* and *...minimal.*

The majority of students reported using a computer most days of an average week. When they were asked to rate how often they used the computer, on a scale between (0) not very often (5) once a week and (10) most days, the average rating score was 8.

Students were asked where they use their computers. 82% of students said they use computers at school and 84% at home while 46% reported using computers at a family or friend's house with 44% using computers at the school or local library.

All students in the trial have played games on a computer, 65% have played games very often. The majority use a computer to find information. 42% stated they use a computer to find information very often while 53% use a computer sometimes to find information. Just 3% of students said they never use the computer to find information. 53% of students use a computer to play music or watch DVDs very often.

Tool provider support

Participants engaged in long distance on-line professional development through a *Moodle* internet site within the Visible Learning Laboratory at the University of Auckland, New Zealand.

Learning was supported through a virtual café, chat room and emails and involved:

- Professional readings
- Several online assignments and quizzes
- Familiarisation with using the tool including hands-on activities in a virtual *sandpit* to construct assessments.
- After the assessments were administered to students, scaffolding and feedback was provided via teleconference. Teachers were taught how to access reports, analyse and interpret the data with professional dialogue around learning pathways.

Helpdesk support was available throughout the trial via email contact.

Some teachers used the online support more than others and only one teacher used the 'café' to post questions. The organised teleconferences and chat room that were used by some teachers proved the most benefit with good discussions coming from these.

Teacher Feedback

Summary of key points

- Ease of constructing a test
- Clear report layout
- Provides various ways to display results
- Reports provide clear breakdown of strengths and weaknesses
- Useful for targeting individual needs
- Provides information on individual student pathways
- Assists ability grouping
- Time to complete professional development and training required resourcing

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings of 4 – 10 reflect an average to high level of student engagement. 3(0) and more expected (10). The ratings of 5 – 8 indicate the time to assess was more than expected.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings of 5 – 8 indicate the support students required was manageable. IT support required was rated between low level support (0) and high level

support (10). The ratings of 5 – 10 indicate a moderate to high level of IT support was required.

The time required to administer assessments averaged between 30 to 50 minutes. However, this depended upon the type of assessment constructed by the teacher.

Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). Responses varied between 4–10 indicating the tool provider support was adequate.

The availability of real people to answer my questions either by phone or email was a good aspect.

A quick response to emails/telephone conferencing.

People were willing to help you.

Teachers rated the support provided within the tool itself between not adequate (0) adequate (5) and comprehensive (10). The ratings of 1 – 8 indicate the trial experience varied with some teachers finding this inadequate and others reporting it adequate. This variation may be due to the difference in uptake of the training before tool use of participants.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 6 – 10 indicate the text and images were quite clear.

Navigating the screens was clear and information easy to find.

The user friendliness of e-asTTle was rated between not user friendly (0) and very user friendly (10). All but one school provided ratings of between 7 and 10 indicating the tool was considered user friendly.

You could really breakdown the outcomes and be explicit in what areas to test.

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 7 – 10 indicated the tests administered were quite age appropriate.

Curriculum relevance was rated between not appropriate (0) and very appropriate (10). Teachers rated this 5 – 10, indicating the tests administered were curriculum appropriate for Australian students even though they are based on New Zealand curriculum.

I was pleased that the assessment matched the students fairly well with our current curriculum levels.

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 8 – 10 indicate that the tool is quite appropriate for a range of abilities.

The students can be given different tests according to their ability levels.

e-asTTle is great for ability grouping, assessment and progress of knowledge within strands.

It would be useful especially for targeting individual students for literacy support.

Reporting

The teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). This feature was rated 4–9 indicating that the time to access and interpret reports was more than expected.

The reports would be excellent to use with parents.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings of 4 - 10 reflected a range of responses to this aspect. The majority of responses rated above 5 suggesting the reporting is user friendly. The most useful aspects of reporting was the:

individual student pathways.

individual reports.

breakdown of strengths and weaknesses.

representation in the form of diagrams showing areas of strength.

Teachers estimate the time to review reporting was 5 to 30 minutes. *The reporting highlighted strengths and weaknesses for individuals really well with clear data provided; It was excellent for groups, individuals and the whole class.*

The results were judged against 2009 student information and classroom based assessments. Teachers rated the student results between (0) very surprising or unexpected and (10) no surprises or as expected. Ratings ranged from 1 – 10 indicating a variety of expectations were experienced. Some teachers noted being surprised about what the reporting showed, particularly gaps in learning that they had not been aware of.

Teachers rated the usefulness of the tool's capacity to track or monitor student progress over time from not useful (0) to very useful (10). This was rated by teachers as 6 – 10 indicating the tool has a high level of capacity to track or monitor student progress over time.

If we had this tool modified and were more familiar with it, it would make progress very visible or obvious.

Would give a clear indication of student progress and concept or lesson retention.

Teachers reported the most beneficial aspect of the trial for students was being tested on a computer. *Students enjoyed the IT-based tests more than paper-based.* They reported the most beneficial aspect of being in the trial from their perspective were: *Time not needed for marking results, these were on hand straight away; Seeing different ways in which literacy results can be plotted; The reporting was clear; Ease of constructing tests.*

Six of the 8 teachers expressed interest in using e-asTTle again. Their reasons included:

I think the tool e-asTTle is great. I would love to use it in the classroom if it were aligned with Australian curriculum.

Our school has a high number of defence students which means we are quite transient. School records do not go from state to state so many students arrive at our school without school reports or records. I believe this would be a great screening tool to be used at the beginning of the year initially, then throughout to examine explicit content relating to each strand covered.

e-asTTle confirmed and or pointed out areas of strengths and needs.

e-asTTle is extremely informative.

I would use this as a pre-test.

This could provide more common standards in assessment between schools across Australia.

Student feedback

Summary of key points

- Easy to use
- Computer delivery popular
- Visual representations clear
- Engaging tool for the students
- Students enjoyed IT aspect rather than pen and paper tests

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). 86% of students rated the ease of use 5 or higher and 11% of these students gave the highest rating of 10.

Students were asked what they liked about using e-asTTle. The most common responses related to computer delivery and the user friendliness of the tool.

It was easy. It was on the computer, a very big change.

It was really plain and simple to use.

It used an easy format and the way it was written was easy to understand.

We got to do it on a laptop and it was fun and it was challenging.

It had leaf and stem activities. Cool activities.

Several students responded favourably to the absence of or need for handwriting implements.

It is not hard and you don't have to hold a pencil and make your hand hurt.

I like the way you just had to click a box, not write your answers on paper.

It was on the computer and it was in colour.

It didn't get messy. You could change your answer easily.

It was the best way of assessing me.

When students were asked what they didn't like about e-asTTle, 32% of responses related to the assessment questions. While some students found the questions to be too easy others found them too difficult. Many of these students did not provide specific statements behind their reasoning. A typical response was:

Some questions were easy.

It was too hard. The questions weren't explained very well.

Some of the questions I didn't get.

It was kind of confusing and some of the questions were too easy.

Some students reported the time to load too lengthy with a small number experiencing difficulties with logging on. Typical responses included:

It took too long for it to load.

It was annoying not being able to log onto the site so many times. Eventually, I used a teacher's computer and did the test but I didn't really have enough time.

Whilst 5 students described their experience with e-asTTle as boring, 19% stated there was nothing they didn't like about using the tool.

55% of students reported a specific skill that they learnt about or identified as an area requiring further work.

I have realised I like fractions now that I know I am better.

I am more confident about division sums.

I learnt that I need to work on Fractions. I can do "factors" and multiples.

I can't really explain the meaning of digits in any whole numbers.

I learnt that I can do more than I think.

I also learnt that I'm not that bad at Maths.

Whilst 28% did not articulate what they knew and could do, 23% of student responses stated they had nothing to report.

Links to further information

Research papers

University of Auckland, (2009) *Visible Learning Laboratories Professional Development Services*

[http://www.visiblelearning.co.nz/uploadedfiles/asttle/PDBookle1t%20 2 .pdf](http://www.visiblelearning.co.nz/uploadedfiles/asttle/PDBookle1t%202_.pdf)

Hattie, J and Masters, D, (2006) *e-asTTle Assessment Tools for Teaching and Learning*

http://www.jisc.ac.uk/media/documents/projects/asttle_casestudy.pdf

e-asTTle TKI Website

Contact details, training modules, user manuals, teacher demonstrations and reports are available at:

<http://e-asttle.tki.org.nz/support>

ENGLISH ONLINE INTERVIEW

Tool Provider

Victorian Department of Employment, Education and Early Childhood Development (Vic DEECD)

Focus

Literacy: Reading, Writing, Speaking and Listening

Diagnostic Power

English Online Interview provides finer grain information about a domain with Diagnostic Power levels 3 and 4.

Target student cohort

Early Years. On-entry (Prep, Reception, Kindergarten, Transition or Foundation) to Year 2.

Brief description

The English Online Interview assesses the English skills of students. Teachers interview students in a one-to-one situation, using texts and downloadable resources designed specifically for the interview. Teachers enter student responses directly into the online system which is then used to generate a range of reports at student, class or school levels.

The time to complete an assessment can range from 35 to 90 minutes. This may require more than one session.

Tool Strengths

Within the context of the trial cohort the following strengths of English Online Interview were identified:

- observations about student learning made during the assessment
One of the most beneficial aspects was the one-to-one interviews where you have an opportunity to understand student's thinking.
- detailed reports
It has given me an insight into where children at years 1 and 2 should be operating at and I believe will give further insights into their current skills and abilities.
- professional learning gained through tool use
Through using English Online interview I have gained confidence in myself and my assessment practices. It has increased my knowledge of assessment options.
- quality hands-on materials e.g. picture story books
Many teachers commented on the high quality of the materials. The kit included: picture books, user guide and resources.
All was very user-friendly, easy to understand and get set up to use.
- reports and information from student observations inform teaching programs
Information gained through the assessment was found to be useful to inform teaching programs. Reports clearly display learning success and next steps in learning.
It gave me a greater insight into my students' strengths and weaknesses in various areas. This has assisted me in future planning to meet their needs.

Future use and application potential

The English Online Interview is currently available to Victorian schools and the Western Australia Department of Education is licensed to use the tool. Other use will need to be negotiated with the Victorian Department of Employment, Education and Early Childhood Development.

English Online Interview is considered most useful for:

- assessing aspects of reading, writing and speaking and listening.
Students are provided with a range of experiences in the areas of reading, writing, speaking and listening.
Reading, comprehension, writing, listening and speaking and spelling are all aspects reported on in our curriculum.
- tracking student achievement and growth over time.
Reports can be used to show the progress of a student over time in a domain or to compare achievement across domains.
I think it would be a wonderful tool for sequential type data to be passed on...reporting would be more beneficial over time so you can see student growth and any impact of targeted intervention.
- quick access to student reports.
Teachers enter student responses directly into the online system which can then be used to generate a range of reports at the level of the student, class or schools.
- professional learning gained through tool use and use of materials.
While preparing for and administering English Online Interview with their students, teachers are exposed to a range of reading, materials, resources and experiences that can potentially enhance professional knowledge. The requirement to read and analyse the data in order to make sense of student reports may also improve teachers' data understandings.
I feel confident in myself and my assessment practices. It has increased my knowledge of assessment options.

Considerations

Before using English Online Interview schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of the this tool.

- Teacher time to prepare for the assessment
Teachers should expect to spend more time on preparation such as becoming familiar with the user guide, teaching resources, activities and tasks than they might with other types of assessment tools. Therefore, during the initial stages of becoming acquainted with English Online Interview teachers will need preparation time.
Implementation was too time-consuming. Despite the labour intensive nature of the tasks, I am looking forward to the info that the data will provide on individual students for my mid-year reporting.
Because I'd never done it before I took it home and went through it and I could really gauge from the questions my plan for when the children came with me but it also gave me an idea of where to start.

- Resourcing to allow one-to-one administration

Due to the one-to-one nature of English Online Interview teachers will require release time to administer the testing. A comfortable and quiet environment away from distractions and with internet access should be prepared. The writing and spelling components can be administered to groups of students rather than one-to-one.

I did find the tool useful and would use it again, however, as several aspects need to be completed on a one-to-one basis, it would only be worthwhile using if appropriate resources were in place to do so i.e. time released from class to complete testing properly.

- Access to interview specific resources e.g. texts

Teachers are advised to have easy access to the interview specific resources during the interview in order to administer the assessments effectively.

The time to complete all tasks was longer than anticipated and could not be achieved in one sitting with each student. Although the data gathered through this assessment is beneficial, the assessment could only be performed if teachers were given time off class to assess students as there would be too many interruptions and distractions if this assessment was performed in a classroom setting.

Time requirements guidance

The following guidance on time requirements is based on trial feedback and discussions with the tool provider.

IT check: 10 minutes

Tool material review: familiarisation with comprehensive manuals and interview materials taking approximately 2 to 3 hours.

Preparation for student assessments: up to 2 hours. Allow 2 hours initially to provide time to review the interview by yourself before commencing a student interview

Conduct student assessments: 35 to 90 minutes. The time taken to conduct each test is determined by the teacher on an individual basis with average time being approximately 40 minutes.

Time to review and interpret reports was between 10 and 15 minutes per student and 30-90 minutes per class.

Minimum IT requirements

Internet Explorer 7 required. Check the school's internet browser functionality to ensure settings are set at a fast speed.

Recommended screen resolution 1024x768

School demographics

English Online Interview was trialled in 5 Government schools in 2 jurisdictions. The following information was provided by these schools.

Four schools are identified as Metropolitan with 1 situated in a Remote location. The ICSEA values (refer to Footnote 4, p46) of the 5 trial schools ranged between 900 and 1100. One school described their population as being predominately mining families with 20% Indigenous students from local communities. The other 4 schools also have a diverse range of student background.

A common motivation for trial participation was to gain experience in interrogating data to improve literacy skills, make data comparisons and generally to improve teachers' data literacy.

School IT infrastructure varied across the sites. While 2 schools reported *limited sustainability to support the full system, awaiting upgrades etc.* the other 3 schools reported adequate to excellent access to networked computers.

IT support within the 5 schools also reflects this. Two schools report *limited support* while the other 3 described their IT support as *adequate*.

Despite any IT limitations the trial was effectively conducted.

Teacher demographics

Seven teachers formally completed the trial providing feedback both during the trial and on its completion.

The 7 teachers have between 2 and 10 years teaching experience. Two of the teachers are Literacy Coaches and the other 5 are classroom teachers.

All 7 teachers rated their level of IT and computer experience as fair to good. Teachers reported the use of a range of computer applications. All of the 7 teachers use the Internet and word processing. Six teachers use email, 5 use PowerPoint and 4 use spreadsheets. One teacher uses the computer to play games. Other computer use includes class/school website and a smart board.

Teachers were asked to nominate two ways they currently assess. They reported using a range of class assessments such as: running records, observation checklists, interviews, summative, diagnostic or formative testing, pre- and post-written tests and work samples.

The main purpose teachers cited for using assessment data is to inform their teaching programs and reporting. For example:

To assess the effectiveness of lessons and activities and modify the plan accordingly for future lessons in order to report on progress.

Teachers reported useful types of assessment are those that target areas of need indicating individual student's thinking and linking these to lesson outcomes. As one teacher stated:

Allowing students the freedom to demonstrate their learning through their own means can give an insight into their understandings of a topic that you may not get otherwise (through more standardised testing). It is always important to ensure there is consistency across groups/school and moderation tasks can assist in collecting this information; I am always open to further ideas that would benefit student progress.

Teachers were asked to provide information about the use of student self-assessment. The majority of teachers reported this as minimal or growing.

It is fairly limited but I am hoping to encourage more self-assessment within my class this year.

The most common motivation for teacher participation in the trial was to use an e-tool and to inform their teaching:

... to find a tool which makes good use of diagnostic information for the teachers.

Improved writing including punctuation, grammar across all genres.

Student demographics

Of the 124 students who participated in the trial 46 provided feedback. Students included: 10 on-entry students, 25 Year 1 and 89 Year 2 students.

The gender balance of trial students were 63 boys (51%) and 61 girls (49%) with a similar balance reflected in the students providing feedback.

Eighteen (15%) of the students are identified as English as a Second Language (ESL) learners, 12 (10%) Indigenous students and 104 (84%) of students speak fluent English.

The ability levels of students ranged from high to well below average.

63% of students report using a computer at least once a week or most days. Fourteen students use a computer less than once a week.

The students were asked where they used a computer. 95% report the use of a computer at school and 91% use a computer at home. 52% use a computer at a friend's or relative's house and 26% use a computer at the library.

Playing computer games rated the highest computer usage for this particular group of students. The next highest rating was music and DVDs followed by finding information and word processing.

- 45% report using computers to play games very often
- 52% do this sometimes
- 26% listen to music or play DVDs very often with 56% of students doing this sometimes
- 56% of students use a computer to find information sometimes
- 41% use a computer to do word processing activities sometimes

Other regular computer use reported was using the draw, paint and graphic functions of a computer. Only a small percentage of students report using computers for social networking.

Tool provider support

Teachers were provided with a kit of materials including picture story books developed specifically for the Interview. Access to the user guide and other resources was provided.

The Vic DEECD held a 30 minute introductory teleconference to confirm teachers had access to the tool and had received the materials kit.

Helpdesk support was available throughout the trial via phone and email contact.

Trial activity reports indicate all schools accessed the assessments during the trial period.

Teacher feedback

Summary of key points

- High student engagement
- Length of time to administer one-to-one assessment needed resourcing
- Low level of IT support required
- Clear text and images
- Appropriate age, curriculum and target group
- Good capacity to track and monitor students over time
- One-to-one aspect considered valuable by teachers

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings ranging from 5 to 8 suggest average to above average student engagement was observed.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 7 and 9 indicate the time to assess was higher than expected.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings 2 to 9 indicate this aspect was viewed differently by teachers.

IT support required was rated between low level support (0) and high level support (10). The ratings of 1 to 8 suggest this varied across the sites. However, one teacher noted:

There were no delays in getting into it. It was really functional.

The time required to administer assessments averaged between 35 and 60 minutes. However, this depended upon the type of assessment administered by the teacher and the amount of time taken for the student to respond.

Using the tool

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). The ratings from 5 to 10 indicate support provided within the tool was more than adequate.

The script within the tool ensured consistent use of the tool.

The best feature of support was the documentation or user guide provided with the online tool and the ease of entering student results and easy to follow on screen directions to enter student data.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 3 to 10 indicate text and images were quite clear.

The text and images were easy to use.

Very clear and the online tool was simple to use.

The user friendliness of *English Online Interview* was rated between not user friendly (0) and very user friendly (10). The ratings 3 to 10 indicate the tool is user friendly.

I found the tool itself easy to navigate.

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 4 to 9, indicating the assessment is age appropriate.

Teachers rated the curriculum appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 6 to 9 indicating the assessment is curriculum appropriate.

Teachers rated the ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 3 to 7 were reported with 5 of the 7 teachers rating this 5 or below. It is noted that during the trial some test targeting was not ideal however teachers did not have the capacity to change this aspect. This is an issue specific to the way the trial was conducted rather than the tool itself.

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). Teachers rated this 7 to 9 suggesting the time required is as expected or more.

User friendliness of reports was rated between not user friendly (0) and very user friendly (10). Ratings of 5 to 7 indicating the reporting is user friendly.

Teachers estimate the time to review reporting to be between 10 to 15 minutes. They commented on how well the reporting highlighted strengths and weakness for classes:

It gave me a greater insight into my students' strengths and weaknesses in various areas. This has assisted me in future planning to meet their needs.

The results were validated against 2009 student information, standardised tests and 2010 classroom assessments. Teachers found the results were generally as expected.

Teachers rated the capacity to track or monitor students over time from not useful (0) to very useful (10). Responses ranged from 4 to 9. This indicates English Online Interview is useful in tracking or monitoring students' progress over time.

Useful to see progression of each student, where students are moving and where learning is still an issue. It would be great to have a student's strengths and weaknesses sequenced over 3 years with a standardised tool.

One teacher discussed the results with students commenting:

Students were shown their individual results and where they achieved compared to the mean.

Teachers reported the most beneficial aspect of the trial for students was the tool's capacity to reveal student strengths and weaknesses.

Finding out how well they did on the tasks and identifying their areas of strengths and areas to be improved.

Teachers reported the most beneficial aspect of the trial from their perspective was the way students' strengths and weaknesses were identified.

It gave me a greater insight into my students' strengths and weaknesses in various areas.

The one-to-one nature of the assessment was also considered a beneficial aspect for teachers.

The one-to-one aspect was supportive of my own professional judgement.

Another positive factor was the opportunity to experience a different assessment tool that will meet the needs of individual students.

English Online Interview has assisted me in future planning to meet my students' needs.

Four teachers expressed interest in using English Online Interview again. Their reasons being:

I believe it is a good tool to use as a baseline and then to see progression in the future of the students in my class.

It would be great as a beginning of the year standardised tool.

I did find the tool useful and would use it again, however, as several aspects need to be completed on a one-to-one basis, it would only be worthwhile using if appropriate resources were in place to do so i.e. time released from class to complete testing properly.

Student feedback

Summary of key points

- Easy and fun test
- Engaging hands-on activities
- Students appreciated one-to-one interaction with their teacher
- Assessment was considered time-consuming by some students
- Activities highlight to students what they know and can do

Students were asked what they liked about using English Online Interview. 67% named specific aspects such as writing, reading, rhyming and cooking. The most common response was reading at 46%.

I liked getting to read the Ice-cream book.

I Drew something about Max.

24% enjoyed speaking about their activities in front of the class.

I enjoyed the cooking and talking in front of my class.

19% stated they enjoyed the writing. When students were asked what they didn't like 52% said there was nothing they didn't like. One child wrote:

I liked everything

All other responses varied from students finding the words difficult to colouring in.

The book was a bit tricky then I got the hang of it.

76% of students identified something they know and can do. One child wrote:

I could do rhyming words. I know all my letters.

A small number of students could also articulate an aspect in need of improvement

I am a good reader and can answer the questions, but I need to improve my writing.

17% of students did not comment.

Links to further information

English Online Interview home page

<http://www.education.vic.gov.au/studentlearning/teachingresources/english/englishonline.htm>

Understanding the English Online Interview

<http://www.education.vic.gov.au/studentlearning/teachingresources/english/englishonline/understanding.htm>

English Domain

<http://www.education.vic.gov.au/studentlearning/teachingresources/english>

Research papers

English Teaching and Learning in Victorian Schools

http://www.eduweb.vic.gov.au/edulibrary/public/publ/research/publ/Literacy_Teaching_and_Learning_Paper_9-rpt-v1.00-20060831.pdf

FRACTIONS AND DECIMALS ONLINE INTERVIEW

Tool provider

Victorian Department of Employment, Education and Early Childhood Development
(Vic DEECD)

Focus

Numeracy: Fractions, Decimals, Ratio, Percentages

Diagnostic Power

Provides specific fine grain diagnosis of sub-skills in a domain with a Diagnostic Power level 4.

Target student cohort

Primary and Middle Years – Years 5 to 9.

Brief description

Fractions and Decimals Online Interview is a one-to-one interview to assess students' knowledge and strategies related to fractions, decimals, ratio and percentages. It is designed to address research findings about student difficulties in these topics.

The Interview provides a means of tracking students' learning through significant big ideas in fractions, decimals, ratio and percentages.

The Interview consists of hands-on and mental computation assessment tasks where students can demonstrate mathematical understanding and preferred strategies for solving increasingly complex tasks.

The time to conduct an assessment can range from 30 to 60 minutes.

Tool strengths

Within the context of the trial cohort the following strengths of Fractions and Decimals Online Interview were identified:

- professional learning gained by teachers
 - A professional gain for me was using IT to assess students - a path I want to take more in the future.*
 - I have gained from the exposure to a different assessment method and tool (as well as the) exposure to current research.*
- reports clearly highlight student strengths and weakness
 - The reports helped to compare students' achievements and identify the common weaknesses and learning gaps.*
 - The reporting allowed me to see how bright some students were.*
- quality materials
 - The user guide is easy to follow and is simple enough.*
 - The quality of the resources is good however I was not aware of all the time needed to prepare them.*
 - The quality and user friendliness was good and easy to understand - step by step.*
- reports inform teaching programs
 - Student responses and observation of student was valuable to support teaching program.*

The report and my observations highlighted for me exactly which areas the students were comfortable with and which ones caused them problems.

The report provided a focal point for teaching.

- observations about student learning made during the assessment
I have professionally gained from the one-to-one interaction with students. It was beneficial to experience the one-to-one time with the student and to see the strategies that they use.

Future use and application potential

Fractions and Decimals Online Interview is currently available to Victorian schools. It is considered most useful for:

- middle to high achieving students in some primary classes.
Trial experience indicated Fractions and Decimals Online Interview may be more appropriate for middle to high achieving students when used in some primary classes.
If students had little fraction knowledge, then they would really struggle to answer any of the questions. It was really designed for students who had more than 1/2 and 1/4 knowledge. This is good for the average to high achiever but not fine enough for students with limited understanding.
This requires teachers to have a very good understanding of the maths. Some Year 5 and 6 teachers might struggle with this.
- developing a detailed profile of student achievement.
Fractions and Decimals Online interview assessments and reports provide a means of tracking student learning in this topic over time.
The more data the better and having them online make it much easier to access and track.
It can calculate data and present over time.
- informing focussed teaching on this topic.
Teachers are provided with the opportunity to gather evidence of individual achievement and develop various teaching strategies.
From this trial we were able to gather evidence of students' individual achievement. This trial enabled me to develop or refine my teaching strategies.
- enabling teachers and schools to collect detailed information on students' understandings of fractions and decimals.
Fractions and Decimals Online Interview allows teachers and schools to collect data about students mathematical understandings. The information from the data provides teachers and schools with a record of what students know and can do. This information assists with future planning and reporting on student achievement.
It gave us some trend data. What we appear to do well and not so well.
It did give us an insight into the needs of our students and what sort of questions we as teachers can ask in order to gain an understanding of what our students know and don't know.
The way that the reports are set and made visual. It was great way of representing data.
- professional learning gained through use.
Whilst preparing for and administering Fractions and Decimals Online Interview with their students, teachers are exposed to a range of reading materials, resources and

experiences that can potentially enhance professional knowledge both of assessment use in general and the specific topic tested.

Using IT to assess students - a path I want to take more in the future.

Good to reflect on the needs of the students and their capabilities and understanding of fractions, percentages and decimals.

It also affirmed that the way we are currently teaching these concepts is in line with the diagnostic tool.

Considerations before use

Before using Fractions and Decimals Online Interview schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of this tool:

- target group appropriateness

During the trial some teachers reported various students who had not yet consolidated their understandings of fractions and decimals found the Fractions and Decimals Online Interview assessment activities difficult. This suggests that the tool may be more appropriate for average to high achieving students.

An excellent tool for high to middle achieving students.

This is good for the average to high achiever but not fine enough for students with limited understanding. I only had my extension students' work through the trial.

If students had little fraction knowledge, then they would really struggle to answer any of the questions.

- teacher time to prepare for the assessment

Teachers need to allow adequate time to source and prepare the hands-on materials they will require during the testing. An equipment list is provided that includes resourcing blocks and other manipulatives plus photocopy masters for materials to prepare. It may seem pedantic that these masters have instructions as to which colour card they are to be copied on however this is to ensure the coherence of the administration instructions such as *Show the student the yellow pie diagram*. Teachers are advised to follow the preparation instructions provided to support the ease of resource location during the testing session.

- one-to-one administration needs to be appropriately resourced

It was recognised that the opportunity to work one-to-one with students was valuable as this allowed teachers to become further acquainted with each student's mathematical capabilities.

Although the tool took a long time to implement, it did give us an insight into the needs of our students and what sort of questions we, as teachers, can ask in order to gain an understanding of what our students know and don't know.

The best feature of support required was the two days release to enable the testing to be done.

The time taken to complete each assessment was very time consuming as there was no release time left to conduct the trial.

I would like to use it again as it was very thorough but very time consuming.

- assessment need is diagnostic

Fractions and Decimals Online Interview has an assessment for learning focus.

Therefore, it is best used to support diagnostic assessment of understandings about fractions and decimals. A teacher may assess before teaching a unit of fractions and decimals to ascertain student prior understandings so that lessons can be better targeted

and then provide opportunities for students throughout a teaching unit to demonstrate their development in this area.

I concentrated on the basic operations of fractions and decimals but I realised after reading the results that I need to spend extra time to help the kids in that area. It helped me in teaching of fractions and decimals to my year 7 students next year. Student responses and observation of students was valuable to support the teaching program.

I would like to use Fractions and Decimals Online Interview again because it offers fast feedback and clear explanation of students' achievements.

Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT check: 5 to 30 minutes

Tool material review and preparation: Approximately 2 hours, includes resourcing and preparing materials required for the interview

Preparation for student assessments: 30 minutes. Allow 2 hours initially to provide time to review the interview by yourself before commencing a student interview

Time to complete a student assessment: 15 to 60 minutes, depending on the length of the test and the time allowed for students to respond to questions. Teachers should use their professional judgement to determine when a question or the test itself is too difficult for a student and either move to the next question or end the testing session.

Time to access and interpret reports: Between 20 and 60 minutes.

Minimum IT requirements

Internet Explorer 5 required: Check the school's internet browser functionality to ensure settings are set at a fast speed.

CD ROM

School demographics

Fractions and Decimals Online Interview was trialled in 8 schools across 3 jurisdictions (2 non-Government and 6 Government schools). The following information was provided by these 8 schools.

Four schools are in Metropolitan locations, 3 in Provincial locations and 1 situated in a Remote location. Seven schools have ICSEA values (refer to Footnote 4, p46) between 900 and 1100. One school had a value below this average range.

School contacts were asked to describe their school's location. The location of 4 schools are described as *provincial town*, *small country towns*, and *suburban* and 2 are described as *urban* and 2 as *capital cities*.

A common motivation for trial participation was to gain experience in explicit data use to improve Numeracy skills, to experience the use of an e-assessment tool and professional development.

When asked to describe their IT infrastructure a range of responses were reported from the 8 schools as poor to excellent. Responses about the IT support within the schools to conduct the trial ranged from limited to excellent. Despite any IT limitations the trial was effectively conducted.

Teacher demographics

Nine teachers participated in the trial providing feedback both during the trial and on its completion. The teaching experience varied considerably. While one teacher had 35 years teaching experience, another teacher reported to be in her first year of teaching. Six teachers described their roles within the school as classroom teachers and 3 as executive teachers.

The 9 teachers use a range of computer applications citing the use of at least 3 of the 6 applications listed with all 9 teachers using Internet, email and word processing. Three of the teachers rated their level of computer expertise as average with the other 6 describing this as competent. Four teachers rated their IT expertise as average or moderate while the other five teachers described their IT expertise as competent.

Teachers were asked to nominate two ways they currently assess. Teachers reported a range of assessments such as: *NAPLAN results, pen and paper testing both commercially produced and teacher created; Diagnostic tests; teacher generated testing - pre and post testing; Schedule of Early Number Assessment (SENA); observation; checklists and rubrics.*

The main purpose teachers cited for using assessment data is to inform teaching programs and to measure progress.

To select, develop and refine teaching strategies that are appropriate to the learners in each class.

Use to change teacher practice to meet students' needs.

We track all students throughout their primary years using school generated spreadsheets.

Teachers reported the most useful types of assessment are:

Assessments that offer the chance for me to discuss students' results and process with the students as they complete the task.

Assessments tend to be 1 to 1 situations. You get more information from the child and can see where they are making mistakes.

Observation and discussion with students.

By having ongoing assessment you can see if students are meeting requirements;

To get a true and current measure of a student's ability.

Student self assessment was used minimally amongst the teachers.

The most common motivation for teacher participation in the trial was to have the opportunity to use an online assessment tool in order to gain explicit teaching support.

Use a diagnostic tool to inform teacher practice and improve student outcomes;

Strategies that I can implement in my classroom that will improve the results;

Use diagnostic tool to inform teacher practice and improve student outcomes.

Student demographics

Of the 107 students who participated in the trial 56 provided feedback. Students providing feedback included: 38 Year 5, 6 Year 6, 2 Year 7 and 10 Year 8 students.

The gender balance of students were 52 boys (49%) and 55 girls (51%) and a similar balance is reflected in the students providing feedback. Four of the students are identified as ESL learners (English as a Second Language) with 9 or (8%) of students identified as Indigenous. 103 or 96% of the students speak fluent English.

Whilst the students of Years 5 and 6 were considered very low to very high abilities for their year levels the Year 8 students were considered to be average to above average year ability.

The majority of the students in the trial use a computer most days with just 22% using a computer about once a week or not very often. The students were asked where they used a computer. 92% report using a computer at home, with 82% reporting the use of a computer at school, 51% use a computer at a friend's or relative's house and just 37% report using a computer at a library. While over 60% of students report using a computer very often to play games, 43% use a computer to find information. Other regular computer use reported is word processing and spreadsheets, music, DVDs and for graphics.

Tool provider support

Teachers were provided access to the User guide, materials required and master plus access to other resources was provided.

The Vic DEECD held a 30 minute introductory teleconference to confirm teachers had access to the tool and details of materials to prepare prior to commencing student interview.

Helpdesk support was available throughout the trial via phone and email contact.

Trial activity reports indicate all schools accessed the assessments during the trial period.

Teacher Feedback

Summary of key points

- Low level IT support required
- Provides useful resources for teachers and students
- Comprehensive support provided
- Opportunity to observe student on a one-to-one basis
- Test difficulty most suitable for average to high achievers
- Useful as a teaching tool

Teachers rated student engagement between low engagement (0) and high engagement (10). Although ratings ranged between 2 and 10, 7 of the 9 teachers rated student engagement between 5 and 10.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 9 and 10 indicate the time to assess was higher than expected.

The support students required was rated between not manageable (0) and easily manageable (10). Whilst ratings ranged between 3 and 10, 8 of the 9 teachers rated the support students required between 5 and 10.

IT support required was rated between low level support (0) and high level support (10). Ratings ranged between 0 and 7 which suggests a low level of IT support was required.

The time required to administer assessments averaged between 15 and 80 minutes. However, this depended upon the type of assessment constructed by the teacher and the amount of time taken for the student to work with the question to obtain an answer.

Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). The ratings between 5 and 10 indicate the support was more than adequate.

The teleconference and Victorian Online Interview team were very helpful.

The user guide was relatively easy to navigate through.

The email support and PDF tools were the best feature of support.

Talking to a real person on the phone that knew what was going on.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). Although ratings ranged between 2 and 10, 7 of the 9 teachers rated the support provided within the tool itself between 5 and 10.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 5 to 10 indicate text and images were clear.

The user friendliness of Fractions and Decimals Online Interview was rated between not user friendly (0) and very user friendly (10). Ratings varied between 2 and 9 with the 5 of the 9 teachers providing a rating between 7 and 10.

The tool was fun and easy to complete the interview online.

The students struggle with the meta-language of the test and this helped us with naming key terms for our curriculum so that students could better understand what the question is asking them to do.

Target group appropriateness

Teachers rated the age appropriateness of Fractions and Decimals Online Interview between not appropriate (0) and very appropriate (10). Teachers gave a range of responses. While 5 teachers gave a rating under 3, 4 gave a rating 7 and above.

Teachers rated the curriculum relevance between not appropriate (0) and very appropriate (10). Again teachers gave a range of responses between 0 and 9. Five teachers gave a rating under 3, with 4 rating the curriculum relevance 7 and above.

Teachers rated the ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 0-9 were reported with 5 schools rating this as appropriate and 4 schools rating this as not appropriate.

However, some teachers were surprised about observations with her high achieving students.

It was interesting to see that some of the students actually could do things that I thought "there's no way they're going to know how to do this". A couple of my top students did a lot better than even what I thought they would. You could tell they weren't just guessing, like they knew.

It also gave me a good cross section of my class.

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). All responses rated 6 to 10 indicating the time to access and interpret reports was considered slightly more than expected.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). The teachers' responses ranged with ratings from 0 to 9. Four teachers rated this 4 or below while the other 5 rated this 6 and above.

Teachers estimate the time to review reporting to be anywhere between 5 to 60 minutes. The following comments highlight what the reports revealed for the teachers:

The reports showed exactly which areas the students were comfortable with and which ones caused them problems.

It provided information as to where the gaps and strengths (of the students) were.

Quite good across all groups.

Excellent for high to middle achieving students.

The results were validated against 2009 student information and classroom based assessments. Teachers found the results were generally as expected. The results were found to be most useful when used as a group profile report, individual student data and in comparison with other information about the students.

Teachers rated the capacity to track or monitor students over time from not useful (0) to very useful (10). Five teachers rated this 1 or below, while the other 4 provided a rating of 8 and above.

The more data the better and having them online makes it much easier to access and track.

It can calculate data and present over time.

Teachers discussed the results with students. Comments include:

They wanted to see what they could improve in.

The students were very keen to discuss areas they found difficult. They used results to see areas they thought they needed to review.

Teachers reported the most beneficial aspect of the trial for students.

The students would benefit through the familiar section of online testing.

Exposure to new and different assessment tool.

They enjoyed being chosen to be part of a trial and thought that they were special.

The most beneficial aspect of the trial was the one-to-one time with the teacher - no distractions.

The teachers were asked what the most beneficial aspects of the trial from their perspectives were.

The most beneficial aspect was the one-to-one time with the student and the strategies that they use.

It gave me a really good insight into how we can improve our teaching of fractions and decimals to the Year 7 cohort.

Exposure to new and different assessment tools.

Trying something new.

Three teachers expressed interest in using Fractions and Decimals Online Interview again, their reasons included:

I would like to use it because it offers fast feedback and clear explanation of students' achievements.

I would like to use it again as it was very thorough but very time consuming.

Although the tool took a long time to implement, it did give us an insight into the needs of our students and what sort of questions we as teachers can ask in order to gain an understanding of what our students know and don't know.

Student feedback

Summary of key points reported

- Easy and fun tool to use
- Interesting activities

- Liked challenging questions
- Liked working on a computer
- Instant feedback

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). A range of responses, between 0 and 10 was reported. 73% of students rated the ease of use 5 or higher and 25% of these gave a rating of 8 or above.

It was very quick to use and to get results.

It was fun and easy to use and less stressful.

Easier to use and different - better than using paper.

Students were asked what they liked about using Fractions and Decimals Online Interview. The most common response (29%) related to the various activities.

The pizza was easy and fun. Decimals were easy.

I liked the fraction and decimals cards.

I liked the pie and decimal sheet.

I liked the blocks.

I liked the colour shapes.

Number line question and the fractions picture.

Students also liked being on the computer, the challenging activities and quick access to results.

I liked the technology and it was on a computer

It was fun and it challenged me

I liked it because it was moderately difficult

You can get the result faster.

When students were asked: "What didn't you like about the tool?" 12% of students conveyed they were not provided with the opportunity to use pen and paper for working out. Student responses include:

It was impersonal - you can't show working out.

No working out space. Concentration gets difficult.

No assistance from teacher.

I didn't like it. I prefer paper. You can't work out on the computer.

I didn't like it when I had to think about answers in my head.

The use of paper and pencil during the assessment may have been overlooked or considered not allowed during the trial. However, the tool provider of Fractions and Decimals Online Interview recommends that the use of pen and paper be encouraged by teachers.

21% of students didn't like the tool but could not articulate a specific reason. The common response amongst these students to this question was *Nothing*. When students were asked what they didn't like about the tool 20% stated that they didn't like the questions. The reasons varied as some students were confused about or didn't understand some questions, for example: *I got confused with some questions*. Three students didn't like questions about percentage and decimal parts, while other students did not provide a specific answer, such as *I didn't like some questions*.

16% of students referred to the time it took to complete the assessment. The majority of these students stated: *It took too long*. One student commented: *I didn't like the blue cheese question. It took too long and was in the morning also; It was time-consuming*.

Students were asked, "What did you learn about what you know and can do?" 56% of students were able to clearly highlight at least one or two concepts about what they had learned or what they had learned about their learning and themselves through using the tool. 27% of students provided information about what they learned.

What I learnt about was that fractions are easier than I thought.

I learned you can reverse addition to subtraction.

There is more than one way to solving something.

I found out about improper fractions.

I learned how to do fractions.

How to halve and how to add.

Through using Fractions and Decimals Online Interview 16% of students stated that they learned an aspect of what they already know or what they are good at.

I know how to change fractions into decimals.

I am better at fractions than I thought. I need to practise decimals.

I can do hard questions.

I could do more than I know.

I learned that I can do more than I think.

A further 10% of students recognised an aspect of their learning in need of attention.

I need to practice on ratio.

I need to improve on my decimals.

I need to always check my answer.

I need to practice fractions. I learnt to check my answers before submitting.

While some students chose not to comment, 30% stated they did not learn anything with the majority of these students stating: *Nothing* or *?*. One student wrote: *I did not really learn anything. My answers were based on what I already know.*

Links to further information

Before using the Interview with students, teachers should first become familiar with:

Equipment checklist:

<http://www.eduweb.vic.gov.au/edulibrary/public/teachlearn/student/mathscontinuum/fracdecequipphotocopy.pdf>

Interview script:

<http://www.eduweb.vic.gov.au/edulibrary/public/teachlearn/student/mathscontinuum/fracdecimalscript.pdf>

A range of supporting resources for the Interview is available at:

<http://www.education.vic.gov.au/studentlearning/teachingresources/maths/interview/fractions.htm>

These include Classroom Activities, Fractions Pair Strategies and Big Ideas linked to the Interview.

Big Ideas Linked to the Interview tasks:

<http://www.education.vic.gov.au/studentlearning/teachingresources/maths/interview/fracdecimalbigideas.htm>

Research papers

Numeracy in Practice: teaching, learning and using mathematics

http://www.eduweb.vic.gov.au/edulibrary/public/publ/research/nws/Research_eLert_Issue_19_Numeracy_newsletter.pdf

Numeracy programs in schools

http://www.eduweb.vic.gov.au/edulibrary/public/publ/research/nws/Numeracy_programs_in_schools_case_studies.pdf

IMPROVE

Tool provider

Education Services Australia

Focus

Literacy: Reading, Language Conventions

Numeracy: Number, Algebra, Function and Pattern, Measurement, Chance and Data, Space

Diagnostic Power

Improve provides broad domain proficiency information with a Diagnostic Power level 2.

Capacity to create own tests including finer diagnosis at domain level with Diagnostic Power levels 2 or 3 depending on test composition.

Target student cohort

Primary and Middle Years - Years 3 to 9.

Brief description

Improve is designed to support ongoing formative assessment of individual students. Learning paths are generated that match the learning needs of students to appropriate digital resources with links provided to the appropriate digital resources where 'gaps' are identified.

Improve was still in development at the time of trial so teachers had access to a small item bank of test items mostly at Year 3 and 5 levels. Teachers choose a published test or use the search engine to help them identify and select items to construct a test on a specific aspect they wish to assess.

Students indicate their confidence in the correctness of their responses and receive instant feedback on their results.

Approximate time to conduct an assessment is 10 to 45 minutes, depending on length of test assigned.

Tool Strengths

As *Improve* was under development at the time of the trial, teachers used a pre-release version of the tool and as such were 'guinea-pigs' to some extent in its use.

Further development and field trials are being undertaken prior to the tool's release.

Within the context of the development status of the tool and the trial cohort who trialled *Improve* the following strengths were identified:

- ease of use once some functional issues experienced during the trial are resolved
 - The User Guide is very easy to follow and steps implemented. I liked the use of graphics and the explanations that accompanied them.*
 - Once you get an understanding and have a play it's not hard to understand. You just need time to work through the process.*
 - Easy to use and administer.*
 - Children are familiar with this style of tool or format.*
- flexibility of testing options
 - The tool allowed the teacher to create assessments for specific age groups and below and above level as required.*
 - You have the ability to compare pre- and post- test results.*

- links to digital resources to support individual learning needs identified

One of the most beneficial aspects for students was being directed to learning objects to help them improve their knowledge and skills.

The games that we could use were generally the ones they needed to use for the questions they got wrong.

I became more aware of the learning objects available in Scootle.
- prompts students to state their confidence level in the accuracy of their responses

It was interesting seeing the confidence level students had in their responses.

Figure 20: Example of question presentation to student. Students rate their confidence in the accuracy of their response from 'I don't know' to 'Very sure!'

The screenshot shows the 'improve' assessment interface. At the top, it says 'improve Demo / Attempt 1' and has buttons for 'Help', 'Finish test', and 'Save and exit'. The main question is 'Question 2 out of 2' and asks 'Which diagram does not have $\frac{3}{4}$ of the area shaded?'. There are four diagrams of triangles with different shading patterns. Below the diagrams are radio buttons for each. At the bottom, there is a confidence rating scale with five options: 'I don't know', 'I am guessing', 'Somewhat sure', and 'Very sure!'. A 'Question navigator' panel on the right shows 'Questions 1 - 2' with '1 Completed' and '2 You are here'. A note says 'Only 1 question to go! If you want to change any answer just use the question navigator to jump to that question.'

Future use and application potential

Improve is under development and due for release late 2011.

Improve is considered most useful for:

- identifying broad strengths and weaknesses (using the existing tests available)

The item bank includes tests that have been administered to national or jurisdiction student cohorts. These tests can be used to triangulate school based assessment, identify broad strengths and weaknesses and determine needs at the class or year level.

Shows up strengths, weaknesses and gaps.

Demonstrated that the class as a whole needed to focus on measurement skills.

Useful for future planning.
- finer grain diagnosis at domain level (existing or teacher created quizzes)

Teachers can use the search engine to identify items around a particular topic or sub-domain and assign a more focussed test e.g. a test about proportions. At the time of trial the item bank was quite small and so the range of such test was limited however as the item bank is extended teachers will have further opportunities to tailor tests according to their needs.

As you can set your own test within the Improve framework, it makes it very age and curriculum appropriate.

- building student self assessment and learning partnerships
Teachers may use the option for students to record their confidence in the accuracy of their responses. This provides the perfect opportunity for teacher-student discussions about specific skills and confidence in the skills as well as being open about 'guessing' when this occurs. Teachers noted that students were sometimes surprised by what they could do.
Provided immediate feedback.
Promoted discussion with students about strategies used to answer questions.
Some students were surprised by their own results.
Students wanted to improve their level of skills, knowledge and understanding.
Students were responsible for their own test, practice and test results.
- test familiarisation activity e.g. using past NAPLAN papers
The item bank includes a range of items from the 2008 and 2009 NAPLAN tests. Teachers noted the use of these could be a useful familiarisation activity leading up to the test so that students were exposed to the test format and item types in NAPLAN tests.
A very engaging way to prepare students for NAPLAN.
- flexibility of testing options
Teachers can choose from a number of testing options including the capacity to allow students to reattempt a test if this proves useful or restrict access to one attempt.
You have the ability to compare pre- and post-test results.
An easy way of assessing an area of the curriculum and then quickly looking at student understandings.

Considerations before use

Before using Improve schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of the tool.

- Tool release timeline – due for national roll-out late in 2011, funding dependent
As this tool is currently in development, a release date will be required before considering use. There may be usage costs and equipment requirements to be further considered at that point.
- Training requirements to support effective use of the tool
During the trial teachers conducted self-directed training using the user guide provided. Helpdesk support was available as required. It may be more effective to conduct a familiarisation training session to equip teachers with the basics to setup, conduct tests, direct the use of digital resources to support learning needs and become familiar with the reporting available.
- Student support requirements – password and other access information support
Students may require support with login information, passwords and test PINS. Forward planning will minimise any disruption this might cause to the use of Improve.
It was time and support hungry to begin with but once the children knew what to do it got better and easier.

- Familiarity with the digital resources available
It will be useful for teachers to familiarise themselves with the digital resources students are directed to so that they can monitor the use of the resource and evaluate its effectiveness in addressing the gap identified.

Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT checks: 30 minutes

Tool materials review: approximately 1 hour

Recommended training: 2 to 3 hours training, face-to-face or online delivery

Preparation for student assessments: 20-45 minutes

Conduct student assessments: 20 to 40 minutes, depending on the test administered

Time to access and interpret reports: 5 to 20 minutes

Minimum IT requirements

Improve content is designed to be viewed within learning management systems and web browsers. It is developed and tested according to the software requirements listed below.

Supported operating systems: Windows EXP, Windows 7, Apple OSX

Internet browsers: Internet Explorer 7, Firefox 3.6, Safari 4

Plug-ins: QuickTime Player 7.6, Adobe reader 5, Adobe Flash Player 10, Adobe Shockwave Player 11 (full version), J2SE Runtime Environment 6.0

Note: software can be checked with the Analyser Tool.

Screen Resolution: content displays best at a screen resolution of 1024 pixels x 768 pixels

Minimum 256 kb/s connection to the internet

Figure 21: Example of student feedback available immediately after the test.

The screenshot shows the 'improve' student feedback interface. At the top, it says 'improve demo / Miss Kent' and 'Save and exit'. The main heading is 'First attempt results'. Below this, it states 'You have answered 2 question(s) correctly!'. There are four question cards:

- Question 1:** Image of a flower. Your answer: $\frac{1}{3}$. Status: Correct (blue checkmark).
- Question 2:** Image of a group of people. Your answer: $\frac{4}{10}$. Status: Correct (blue checkmark).
- Question 3:** Image of a grid. Your answer: (empty grid). Status: Incorrect (blue X).
- Question 4:** Image of a line graph. Your answer: $\frac{1}{4}$. Status: Incorrect (blue X).

On the right side, there is a section titled 'Here are the results for your first test attempt.' with instructions: 'Scroll down to see all your results, and select a question to see more detail. Choose Print report to print your results.' At the bottom, there are 'Print report' and 'Continue' buttons. The footer says '© Education Services Australia 2010'.

School demographics

Improve was trialled in 13 schools (7 Government and 6 non-Government schools) across 2 jurisdictions. Eight of the schools are in Metropolitan locations describing their location as *capital city, suburban* and *urban* schools. Five of the schools are in Provincial locations describing their location as *a country school close to the metropolitan area, rural* and *remote*.

All 13 schools have ICSEA values (refer to Footnote 4, p46) between 900 and 1100.

Student populations varied across schools with descriptions noting potential education challenges such as: *98% non English speaking background; Refugee population; High number of special needs students; and, High number of ESL students.*

Some schools noted very positive attitudes to schooling.

keen to learn, very few behaviour issues.

good values – positive and social.

stable

supportive parent community interested in their children's learning.

A common motivation for school trial participation was the opportunity to use an assessment tool with 5 schools noting their particular interest in online assessment tools.

To become familiar with a variety of computer based tools for diagnostic purposes.

The ability to use technology to gather data that will help teachers develop individualised programs for students.

Use an IT tool to help make the assessment easier.

A further 5 schools noted their interest in assessment tools more generally with comments including:

The opportunity to see firsthand what tools are like.

Awareness of the programmes available for gathering useful data on student performance in literacy.

Consistent assessment strategies to support accountability and student learning.

Focus on tools for assessment.

Schools were also motivated to gain information from the trial that might inform their school and teaching programs with comments including:

Knowing more about our students Numeracy understanding.

Ideas to support student improvement.

Improved means to assess student abilities and gaps in their learning.

Have a tool that supports quality learning in each class.

Most schools reported their IT infrastructure and IT support would be adequate for the trial.

Well set up

Computer lab and some PCs in classrooms.

Fairly good when working well.

Tech team established and very capable.

Good support but limited to two afternoons a week.

Reasonable hardware and software but lack of IT support.

Note: This general optimism was not realised at all trial schools during the trial with a number of schools reporting IT issues that impacted on their capacity to trial the tool.

Teacher demographics

Seventeen teachers formally completed the trial providing feedback both during the trial and on its completion. Teachers had on average 16 years teaching experience ranging from 1 to 30 years experience with 11 of the teachers having over 10 years teaching experience.

Three teachers have 1 to 2 years experience.

All 17 teachers have teaching responsibilities in the school and 4 of these also hold leadership roles in the school such as: *Maths facilitator; coach; expert Numeracy teacher;* and coordinator.

Sixteen of the teachers use at least 3 of the 6 computer applications identified in the survey: email, internet and word processing software. Most teachers had at least one other computer use with 68% using Powerpoint and some teachers using spreadsheets and playing games. Other computer applications teachers report using includes interactive whiteboards (5), *Skype* (1), databases and calendars (1). One teacher noted only one use of computers – emailing.

Three teachers rate their level of computer expertise as low (*not that good, very minimal*), 12 rated this as competent and 2 rated themselves as above average (*excellent*).

Six teachers rate their IT expertise as limited commenting:

Not very good in lots of areas.

Easily jaded by new facts.

Limited, always asking for help.

Adequate to low, as long as it works I'm okay.

Low, always looking for further training an opportunity to learn and refine skills.

Ten teachers rate their IT expertise as good or average: *Competent; 7/10; Intermediate; OK, with assistance on tricky things;* and, *Good, 10 years as ICT coordinator.* One teacher rated this aspect as *excellent*.

Teachers were asked to nominate 2 ways they currently assess. Teachers reported a range of class-based assessment such as: rubrics, teacher observation, anecdotal records, student self-assessment, running records, pre- and post-tests. Some teachers reported the use of standardised or external assessments such as NAPLAN and First Steps.

Most teachers report their main use of assessment data is to inform teaching.

Inform next teaching points.

Future planning and delivery.

Where to take my next lesson.

Evaluating what students still are unsure about and what I need to extend in.

To plan and program for student needs.

Another popular use of assessment data is to inform reporting e.g. *reporting to parents;* and, *as a means of accountability when doing reports.*

One teacher stated one of the main uses of their assessment data was, *to share with students.*

Teachers reported the most useful assessments are diagnostic and formative assessments e.g. noting the usefulness of rubrics, *students know what is expected of them;* teacher observation, *much information can be obtained in a relatively short amount of time;* and, checklists, *quick and easy, can identify strengths and weaknesses.*

Teachers note the usefulness of standardised tests, *to show achievement against a norm* and student self assessment, *students have input.*

The use of student self assessment varies, 5 teachers report regular use, 8 teachers report limited use and 4 teachers note this is not currently used.

The most common motivation for teacher participation in the trial was to use an assessment tool. Some teachers noted potential benefit of an e-tool.

Access to user-friendly, informative diagnostic or formative assessment tool.

Better assessment processors.

To become more aware of computer based learning activities.

Other teachers made more general comments about assessment tools.

A greater understanding of diagnostic tools.

To develop more efficient strategies for assessing students' knowledge.

To see what other applications this tool might have.

Another common motivation was to inform teaching.

Ability to trace improvement.

A greater snapshot of children's ability in Literacy and Numeracy beyond NAPLAN.

(to gain) Knowledge of skills needing improvement.

To enhance my use of diagnostic tools in my classroom practice.

Teachers were also interested in data collection, commenting: *To improve effective teaching by using data to analyse strengths and weaknesses; and, the ability to trace improvement.*

Student demographics

Five hundred and twenty-three students participated in the trial with 237 providing feedback on the trial. Trial students were predominantly Year 5 students (313 or 59%) with 5 Year 2 (1%), 116 Year 3 (22%), 66 Year 4 (12%), 11 Year 6 (2%) and 12 Year 7 students (2%).

Students providing feedback included students from Year 2 to 7: 2 Year 2 (1%), 72 Year 3 students (30%), 55 Year 4 (23%), 69 Year 5 (29%), 15 Year 6 (6%) and 24 Year 7 students (10%).

The gender balance of trial students is even with 263 boys (50%) and 260 girls (50%) and a similar balance is reflected in the students providing feedback, 51% boys and 49% girls.

One hundred and thirty five of the students (25%) are identified as ESL learners (English as a Second Language) and 7 (1%) identified as Indigenous. 50% (264) speak fluent English.

Teachers report a range of abilities within class groups noting gifted students through to students who are well below National Minimum Standard. Seven classes on average are considered to be below year level standard, 9 classes are on average at class level and 2 classes are considered to be above year level.

85% of students report using a computer at least once a week with 45% using a computer most days and 8% of student report very little computer use. Apart from using a computer at school, 87% report using a computer at home, 47% at family or friends' homes and 32% at the library.

95% of students report playing games on computers with 64% doing this very often. The next highest computer use is to find information with 70% doing this sometimes and 22% doing this very often. 83% of students play music or DVDs (44% very often, 39% sometimes) and 79% use word processors (19% very often and 60% sometimes).

Tool provider support

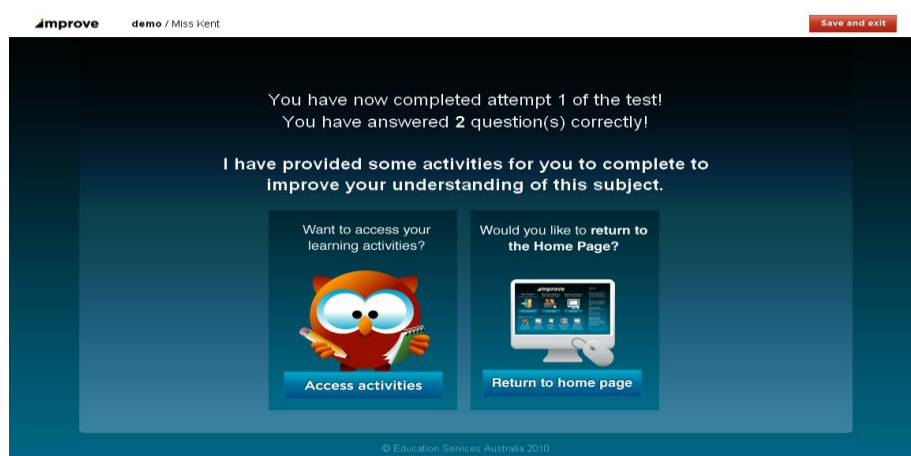
Schools were required to be registered to *Scoutle* before being able to access Improve. Some schools already held *Scoutle* accounts.

Schools were provided access to information about Improve and 3 User Guides, a user guide each for teachers, students and parents or carers. As this tool was in development at the time of the trial teachers were advised the manuals had not yet been thoroughly tested by teachers and students. They were advised to contact the helpdesk if necessary. Helpdesk support was provided during the trial period via phone and email contact.

Trial activity reports indicate the following activity during the trial period:

- 38 teachers registered to use Improve
- 720 students registered to use Improve
- 63 quizzes were created
- 60 tests were created
- 938 tests and quizzes were undertaken

Figure 22: Example of student's end of test screen with targeted access to digital learning resources.



Teacher feedback

Summary of key points

- Teacher feedback varied immensely across schools and sometimes even within schools with 6 teachers noting inadequate IT infrastructure and support to effectively use Improve.
- Tool functionality such as load time, complexity of logins and test PINS caused some schools issues however other schools found the tool to be user friendly for themselves and students.
- Some issues noted appear to be due to the developmental phase of the tool, teachers could often see past these concerns to the potential of the tool.
- Teachers like the automatic marking and being able to view student confidence levels against actual results.
- Test results were generally as expected, triangulated against class assessment, NAPLAN results and 2009 student information.

Five teachers noted unexpected events during the trial relating to IT issues such as:

We had trouble accessing Improve.

Problems with net books – halted access at different times during the trial.

We had to download updates to allow our students access to the portal.

Six teachers reported the IT infrastructure and support in their school was inadequate to enable the effective trial of the tool however, 8 teachers reported adequate IT infrastructure

and support to effectively trial Improve. Two teachers did not respond to this question and one teacher commented, *there were not enough computers for all students to be on at the same time.*

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings ranged from 3-10. More positive comments included:

Students really enjoyed it and were excited each time we went back to use it.

Computers and games were a bit of a novelty.

Less positive comments included:

Students were not engaged as they did not understand what to do in the games.

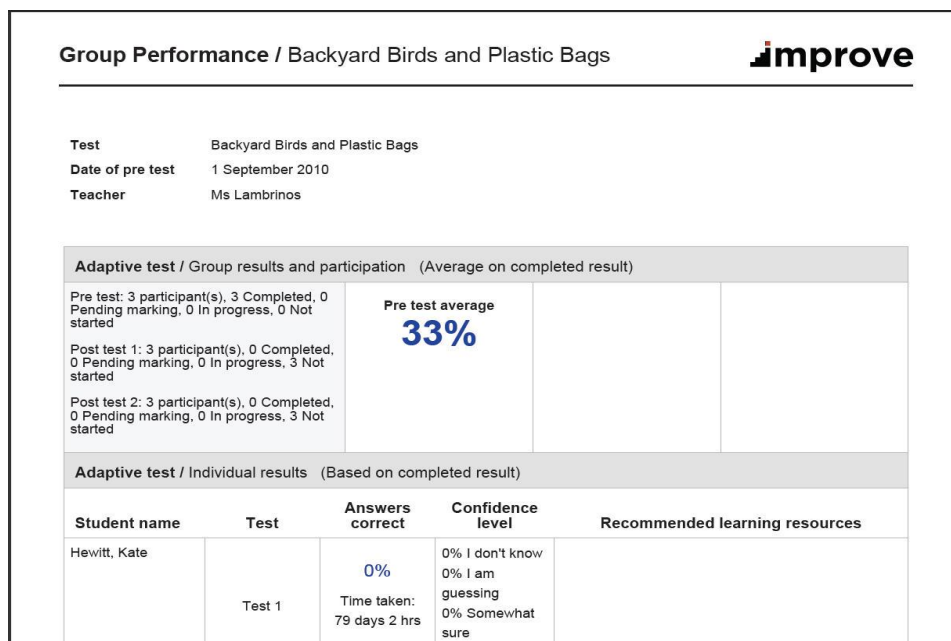
They initially found it engaging but soon tired of it because they were not able to keep the text on the screen while answering the question.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The range of ratings of 3-9 indicates teachers had different perspectives on this aspect. Interestingly the teachers who reported IT issues rated this aspect as neutral; time to conduct assessment being as expected. Teachers reported that time was needed for the initial setup with one commenting, *It was time and support hungry to begin with, but once the children knew what to do it was easier and easier.* It is also possible that extra time was required where teachers created tests themselves or needed to register for Scootle before accessing Improve.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings of 2-10 indicate teachers had quite different perspectives on this aspect. Three of the low ratings (not manageable) were given by teachers who report a lack of ability to effectively trial Improve so this rating may relate to the access and item load issues reported. Also due to the development stage of Improve some students had to login a number of times during tool use [This issue is being worked on so that students will have a more seamless experience in the future].

Ratings in 1 school varied immensely with a rating of 10 (easily manageable) and a rating of 3 (less manageable), this teacher commenting, *Students needed help to navigate the program.*

Figure 23: Example of a group performance report



IT support required was rated between low level support (0) and high level support (10). The ratings of 0-10 again reflect a range of experience on this aspect. An issue with loading was identified that was restricted to Mac users. (This issue has been rectified for future users). As expected some of the higher ratings were given by teachers who reported IT issues however this is not consistent across the ratings with some of these teachers rating the IT support needs as low. In turn some teachers who rated their IT and computer expertise as high also rated the IT support needs as high whilst some teachers who had limited expertise rated IT support requirements as low or average.

The time required to administer assessments is estimated to be 15 to 40 minutes, depending on the testing undertaken.

Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). The ratings ranged from 0-9, with most ratings 5 or above, suggesting the tool provider support was adequate or more than adequate.

Quick response to emails.

Helpdesk very obliging and patient.

We were able to email or phone and get responses to questions quickly.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). Again there were a range of responses, 2-8. Eleven of the ratings were 5 or above suggesting that the support was adequate or more than adequate for most participants.

The guide made referencing easy.

Too many pages to justify printing (user guide).

Couldn't get it to work!

Clarity of text and images was rated between not clear (0) and very clear (10). A full range of responses between 0 and 10 were given however only 3 of these ratings were below 5 suggesting that overall participants found the text and images clear.

The user friendliness of Improve was rated between not user friendly (0) and very user friendly (10). The ratings of 0-8 again suggest this aspect was viewed differently by teachers. Of the 5 low ratings 3 were from schools experiencing IT issues however the other 2 schools rated this aspect more positively. At another school teachers gave ratings of 0 and 8 suggesting other non IT infrastructure and support factors influenced the response to this question. Positive comments include:

Easy to use and administer.

Quite easy to navigate, year 3 students were able to work independently.

Bigger, clear images with few on the page made it easier for children to use.

Took some time working through, but was quick to learn.

Less positive comments include:

I found some of the setup complex, I assumed I'd be able to use the tool without the use of a reference book.

Some activities did not have explanation on how to operate them.

At times half the question was missing and you could not view the diagrams.

Games instructions need to be clearer and need to tell you when you are finished.

During follow-up interviews with teachers, this aspect was explored further and it appears that the ratings were often related to the other aspects of the use, such as access to Scootle

and the activities students were directed to following the test, rather than the user friendliness of Improve itself. One teacher commented: *The students weren't familiar with Scootle at all.* Another commented: *Students had trouble navigating the games, they couldn't finish because there was no clear end button.*

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 3-10, however only 5 teachers reported the assessment was not age appropriate.

The tool allowed the teacher to create assessments for specific age groups and below and above level as required.

Curriculum materials allowed me to tailor questions to suit target groups.

Some of the activities (e.g. division) were too difficult for Year 3 students.

Curriculum relevance was rated between not appropriate (0) and very appropriate.

Teachers rated this 1-10, only 4 teachers rated this less than 5.

As many questions were taken from NAPLAN they were very curriculum relevant.

Years 4 were between question levels so some were appropriate to some children.

(Noting the item bank contained mostly Year 3 and 5 items at the time of trial).

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Teachers gave ratings of 1-10 with approximately half of the ratings below 5 and just over half 5 and above. These ratings could be related to the limited item pool available at the time of the trial and how well this met specific needs at the time.

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). Teachers rated this 3-10, an average of 6 suggests the time required is on the whole a little more than expected.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings of 0-10 reflect very different opinions on this aspect however only 4 teachers rated this less than 5. Teachers from the same school gave consistent ratings to each other for this aspect.

Teachers estimate the time to review reporting to be 5-20 minutes.

It was good to see student confidence levels against the actual results.

It showed diagnostic patterns clearly.

It identified specific areas of strengths, weaknesses and gaps.

Demonstrated that the class as a whole need to focus on measurement skills.

Would be good to see what wrong answer they chose.

Most teachers found the results were generally as expected, validating the results against results from classroom assessments, standardised tests such as NAPLAN and 2009 student information. Two teachers commented on the lack of improvement between test cycles although they did not elaborate on the time period or the activities undertaken during this period.

Teachers rated the capacity to track or monitor over time from not useful (0) to very useful (10). Teachers gave ratings of 0-9.

Yet to work out how best to use the tool.

Would be excellent if the program worked all the time.

Having students complete the post-test would show progress over time.

The teacher chooses relevant questions so it should be helpful, more choice of similar questions would be useful.

It doesn't allow for open-ended assessment.

It did not give me enough information about where they went wrong, what difficulties they were having.

Seven teachers discussed the results with students commenting: *We look at patterns as a whole class; we had a whole class discussion about strategies used; Some students said they couldn't be bothered clicking back and forth between the text so they guessed; We discussed incorrect responses; and We discussed why they chose the answer they did.*

Teachers noted the most beneficial aspects of reports are:

Automatic marking, so instant reports.

Noting where individual students need support.

Easy to group on basis of diagnostic problems.

Immediate feedback.

Seeing student confidence levels.

Can track an individual student.

Teachers reported student interest in their learning with comments such as: *They wanted to find out what $\frac{1}{4}$ past and $\frac{1}{4}$ to meant; I heard them discussing specific questions and concepts; and,*

Teachers reported the most beneficial aspect of the trial for students was using the computer, getting instant results, being directed to activities to improve their skills and being able to practice for the NAPLAN test.

Seeing their results and discussing areas to work on.

They liked the instant results.

They like being on the computer.

That they were responsible for their own test, practice and test results.

An opportunity to try a different form of assessment and clarify their understandings of concepts.

Where access to Improve was limited teachers understandably did not identify beneficial aspects of the trial for their students.


The teachers reported the most beneficial aspects of the trial from their perspective were the potential of the tool, the student engagement, the ease of assessing an area of the curriculum, becoming more aware of the resources available to support student learning and to assist preparation for the NAPLAN tests.

Seven teachers expressed interest in using Improve again however many noted this was conditional on the functional issues being resolved, *Will be an excellent tool once all the problems are fixed.*

Recommendations included: *The addition of further items to allow more choice; Functional improvements like question loads, clear instructions for games; and streamlining password, test PIN and login requirements to make these more user friendly for students including, The ability to bulk upload students via a CSV file. One teacher commented, It requires reasonably high IT skills of students, more so for year 3 than 5, as some had trouble logging into their accounts and remembering passwords, some students struggled with typing in test codes.*

One teacher commented, *I am sure that as the tool is used more the process of setting up tests, checking reports etc would improve and then we would be able to use the tool to more advantage.*

Figure 24: Example of teacher's student report and suggested learning resources access status

Test results / Sally Smith			
Test	Backyard Birds and Plastic Bags		
Student	Sally Smith		
Teacher	Ms Lambrinos		
Pre test / Assessment			
Score	3 out of 5 questions were answered correctly.		
60%	Time taken: 1 minutes		
Recommended learning resources	L1285 Koala control: points of view	Not completed	
	L5996 Visit us: tourist information website	Not completed	
	L866 Sea chase	Not completed	
	L332 Letters to the editor: interviews 1	Not completed	

Student feedback

Summary of key points

- Easy to use
- Liked using the computer
- Liked the activities after the test
- Didn't like slow load time (experienced by some schools)
- Liked and disliked test difficulty being too easy or too hard
- Most students identified something they had learnt about what they knew or could do.

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). 79% of students rated the ease of use 5 or higher with 35% of students giving a rating of 8 or above.

Students were asked what they like about using Improve. The most common aspect students enjoyed were the activities they were directed to after their test (27%). 17% of students liked using the computer. Other aspects students commented on were: test difficulty, *It was not too hard and not too easy* (9%); self assessment support, *I got more marks than I thought so I improved*(7%); and some students commented on rating their confidence in answering the questions correctly, *The faces you can click on to show your confidence level.*

When students were asked what they didn't like 10% responded there was nothing they didn't like about Improve. 35% didn't like the load time, finding it too slow. 21% didn't like the difficulty level of the test, finding it too easy or too hard. Other aspects students didn't like were the lack of instructions on some of the games, they would like more colour in the questions and more predictable responses such as the length of the test or their lack of interest in the test material.

60% of students identified something they had learnt about what they knew or could do.

I need more work on multiplying.

I found out my skills are good.

I'm pretty smart but slow.

I learnt about time.

I learnt to read the questions over and eliminate the answers that aren't true.

17% of students said they had learnt nothing about what they knew or could do and a further 8% either didn't know or gave no response to this question. 14% did not have sufficient access to respond to this question.

Links to further information

Access to further information about Improve

<http://stagingimprove.curriculum.edu.au/Splash>

Contact Details

For further information contact Preety Agarwal at:

preety.agarwal@esa.edu.au

MATHEMATICS ONLINE INTERVIEW

Tool Provider

Victorian Department of Employment, Education and Early Childhood Development
(Vic DEECD)

Focus

Numeracy: Number, Measurement and Space

Diagnostic Power

Mathematics Online Interview provides finer grain diagnosis of sub-skills in a domain with Diagnostic Power levels 3 and 4.

Target student cohort

Early Years and Primary. On-entry to Year 4.

Brief description

The Mathematics Online Interview is an assessment tool used by teachers in a one-to-one interview situation to determine a student's existing mathematical knowledge and skills. The interview consists of hands on tasks through which students demonstrate mathematical understanding and preferred strategies for solving increasingly complex tasks. Student data is presented in detailed profiles in relation to significant points of growth. Analysis of student responses provides teachers with valuable information to use when planning to meet individual student learning needs and progress can be monitored over time.

The time to complete an assessment ranges from 30 to 60 minutes.

Tool Strengths

Within the context of the trial cohort the following strengths of Mathematics Online Interview were identified:

- observations about student learning made during the assessment
 - The most beneficial aspect of the trial was the one-to-one time with the kids and being able to assess via observation and to see whether the kids could or couldn't do things.*
 - When you're doing the test with a child you pick up exactly what they're doing and visually you can see how they're working things out.*
- detailed reports
 - The reports were excellent and very comprehensive.*
 - I used the results from the assessment to plan, teach and report.*
- professional learning gained through tool use
 - As a first year teacher, it has been fantastic to see different assessment programs.*
 - I didn't know what I was signing up for so I didn't have any specific goals; just an open mind to learn. I found it made me more aware of using materials to test students.*
- quality hands-on materials provided
 - The students enjoyed working with the materials when problem solving.*
 - As some of the children commented in their surveys, they enjoyed most of the activities, the variety and the challenge that it gave them.*

- reports and information from student observations inform teaching programs
Information gained through the assessment was found to be useful to inform teaching programs. Reports clearly display learning success and next steps in learning.
From information gathered I was able to provide them with more challenges to solve open-ended questions.

Future use and application potential

Mathematics Online Interview is currently available to Victorian schools. Western Australia is in the process of making this tool available to schools. Other use will need to be negotiated with the Victorian Department of Employment, Education and Early Childhood Development.

Mathematics Online Interview is considered most useful for:

- enabling teachers and schools to collect detailed information on students' understandings of mathematics
The most beneficial aspect was being able to spend one-to-one time with each student to assess their mathematical understanding.
I have seen via observation what the kids can do so I can use that information to plan future lessons.
I do have a good collection of quality data and a better understanding of my students' mathematical ability.
The info received from this trial allowed me to gain great insight into my student learning individually and as a class. It benefited my reporting and it is a great way to track students.
- developing a detailed profile of student achievement
Mathematics Online Interview assessments and reports provide a means of tracking student learning over time.
From viewing reports I could clearly see what points of growth they had achieved.
I think it would be useful as a whole school approach for tracking the development of each child.
- informing focussed teaching
Student reports provide teachers with a clear view of areas of need.
It shows what students can do and what they need to work towards. The report helped to highlight key areas for students requiring extra support.
- measure growth over time
I can see it would be very useful to have data saved in a school so we can compare growth points to use for planning and teaching.
I think it would be useful as a whole school approach to tracking the development of each child.

Considerations before use

Before using Mathematics Online Interview schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of this tool:

- teacher time to prepare for the assessment
Teachers should expect to spend more time on preparation such as becoming familiar with the user guide, teaching resources (this may require sourcing the hands on materials required), activities and tasks than they might with other types of assessment tools. Therefore, during the initial stages of becoming acquainted with Mathematics

Online Interview teachers will need preparation time. As one teacher suggested: *A future recommendation would be to provide more relief funds at school level to allow release time to look at the materials.*

- resourcing to allow one-to-one administration

Due to the one-to-one nature of Mathematics Online Interview teachers will require release time to administer the testing. Although the majority of teachers reported the information gained from observing their students engaging with the hands-on activities during the assessment was very valuable they were also concerned with the amount of time taken to conduct assessments.

I found the amount of time expected to be spent on each child is a lot. I enjoyed the time spent with each child.

- access to interview specific resources

Teachers are advised to have easy access to the interview specific resources required, including the manipulative material, during the interview in order to administer the assessments effectively. A comfortable and quiet environment away from distractions and with internet access should be prepared.

The interviews took much more time than anticipated. Unless you have a laptop or a nice office and desk to sit behind, you are limited. The equipment does take up a lot of space.

- time to analyse the reports

Teachers will require time to review the results of the assessment. However, this time will be well rewarded if teachers then utilise the rich data provided to better target their testing and utilise teaching plans to inform their teaching.

We used all data to write our reports.

These results have also been used to plan for our whole grade.

It was fantastic, useful and supportive info for me as a classroom teacher.

Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT check: approximately 10 minutes.

Tool material review: familiarisation with comprehensive manuals and reading materials taking approximately 2 to 3 hours.

Preparation for student assessments: setting up assessment area taking approximately 30 minutes.

Time to conduct student assessments: 20 to 90 minutes. Because this is an adaptive test the time taken to conduct each test is determined by the teacher on an individual basis with the average time being approximately 30 to 40 minutes.

Time to access and interpret reports: 10-20 minutes per student, approximately 60-90 minutes per class.

Minimum IT requirements

Internet Explorer 5 required: Check the school's internet browser functionality to ensure settings are set at a fast speed.

School demographics

Mathematics Online Interview was trialled in 8 schools across 3 jurisdictions (2 Independent and 6 Government). The following information was provided by these schools.

Four schools are situated in Metropolitan locations, 2 in Provincial and 2 in Remote locations. The ICSEA values (refer to Footnote 4, p46) of 4 trial schools ranged between 900 and 1100, one school is above this average range and three schools are below the average range. School contacts were asked to describe their school's location. The location of 3 of the schools was described as a *capital city*, 2 as *Remote*, 1 as *rural*, 1 as a *coastal community* and 1 *Canberra*.

A common motivation for trial participation was to gain experience in explicit data use to improve numeracy skills and to experience the use of an e-assessment tool.

When asked to describe their IT infrastructure, 7 schools reported that IT was generally well maintained with 1 school stating they have *problems maintaining the network*. Six schools' responses indicate the IT support within the schools to conduct the trial was favourable. However, 2 schools reported their IT support to be *extremely limited* and *limited due to distance from the capital city*.

Teacher demographics

Eleven teachers participated in the trial providing feedback both during the trial and on its completion.

The number of years teaching experience varied from 6 weeks to 20 years. While the majority of teachers described their roles within the school as classroom teachers, 3 described their roles as curriculum coordinators (1 as Literacy and Numeracy coordinator, 1 as ICT coordinator and 1 as Junior Primary coordinator).

All 11 teachers use a range of computer applications citing the use of at least 3 of the 6 applications listed with all teachers using Internet, email and word processing. All teachers with the exception of one rated their level of computer expertise as average or above. One teacher reported her computer expertise as poor. Six teachers rated their IT expertise as below average while the other teachers described their IT expertise as capable.

Teachers were asked to nominate 2 ways they currently assess. Teachers reported using a variety of standardised or calibrated and class-based assessments e.g. one-to-one discussions, observations during group activities, spelling inventories, running records, pre and post-tests, anecdotal records, interviews, photos, outcomes checklists, portfolios and written samples.

The main purpose teachers cited for using assessment data was to inform planning and for reporting purposes.

Assessment data allows me to multi-level plan for a wide variety of skills in classroom.

Written and observational assessment is used to write student reports.

Teachers were asked to detail the most useful types of assessments that they use. They provided a variety of formative and summative assessment methods. One teacher stated *I have uses for all types, depending on what I am aiming to find out*. Several teachers stated that they valued one-to-one interview assessments. One teacher preferred students to use concrete materials during an interview to assess students.

Five teachers reported their students' use of self-assessment as limited with 2 teachers reporting they use self-assessment frequently during maths lessons. Another teacher

reported using student self-assessment to inform teaching. The remaining 4 teachers reported minimal or no use of student self-assessment.

The most common motivation for teacher participation in the trial was to explicitly use data to inform their teaching programs and provide a deeper understanding of their students to improve student outcomes.

If I can assist students (and myself) to improve through this trial, I'll be delighted.

I want to target "poor performing" areas and work towards better results.

Despite any IT or computer expertise limitations teachers considered they may have, no major problems were reported and the trial was effectively conducted.

Student demographics

Of the 184 students who participated in the trial 54 students provided feedback. Students comprised: 19 Reception, 33 Year 1, 66 Year 2, 57 Year 3 and 9 Year 4 students.

The gender balance of trial students were 86 boys (46%) and 98 girls (52%) with a similar balance reflected in the students providing feedback.

Forty-two (23%) students were identified as ESL learners and 48 (26%) identified as Indigenous. The ability levels of students ranged from high ability to well below average. 87% of students report using a computer at least once a week or most days while 12 students use a computer less than once a week. When asked where they used a computer, 96% stated at school and 93% report using a computer at home. 61% of students use a computer at a friend's or relative's house and 41% report use a computer at the library. The majority of students report using a computer very often to play games while 31% of students use a computer to listen to music or watch DVDs. Other regular computer use reported was finding information, word processing and graphics functions such as paint and draw.

Tool provider support

Teachers were provided with a kit of materials including manipulatives required for the Interview. Access to the User guide and other resources was provided.

The Vic DEECD held a 30 minute introductory teleconference to confirm teachers had access to the tool and had received the materials kit.

Helpdesk support was available throughout the trial via phone and email contact. Trial activity reports indicate all schools accessed the assessments during the trial period.

Teacher feedback

Summary of key points

- Length of time taken to administer one-to-one assessment needed resourcing
- Low level IT support was required
- Comprehensive support provided by Vic DEECD
- Adequate support provided within tool
- Clear text and images
- Appropriate age, curriculum and target group
- Good capacity to track and monitor students over time
- One-to-one aspect considered valuable by teachers

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings ranging from 4 to 10 indicate students were engaged whilst completing the Mathematics Online Interview.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 9 and 10 indicate the time to assess was higher than expected.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings ranging from 4 to 10 indicate the student support required was manageable.

IT support required was rated between low level support (0) and high level support (10). The ratings of 0 to 7 with most rating this aspect 0 or 1 suggests low level IT support was required.

It is easy to navigate around the programme. Little external help was needed.

The time required to administer assessments ranged between 20 and 90 minutes. However, this depended upon the length of the test and the amount of time taken for the student to work on each question. On average teachers required 30 to 40 minutes per student.

Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). The range between 5-10 indicates the support was more than adequate. Teachers were positive about the quality of support provided and identified several aspects such as the reliability of helpdesk support throughout the trial, the starter kit including user guide and website links.

The best feature of support from the tool provider was being able to e-mail or call somebody with questions and receive fast responses.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). The ratings ranging from 0 to 10 suggest the view of this aspect varied however the majority of responses rated the support within the tool itself as adequate or more than adequate.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 2.5 to 10 again varied however all ratings except one were 8 or above indicating very clear text and images.

The user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings between 5 and 9 indicate the tool is user friendly.

Target group appropriateness

Teachers rated the age appropriateness of Mathematics Online Interview between not appropriate (0) and very appropriate (10). A range of 4-10 was reported with all but one score 5 or above indicating the tool is age appropriate.

Teachers rated the curriculum appropriateness between not appropriate (0) and very appropriate (10). The range of 4-10 was reported with all but one score 7 or above indicating the tool is curriculum appropriate.

The content is what they should have been able to do.

Teachers rated the ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 4 - 10 were reported with all but one score above 5 indicating the tool is appropriate for a range of abilities, noting the diverse range of students in the trial.

As a year 3 teacher, I found the test to be really good and very appropriate.

Excellent range to cover all needs.

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). A range of 0 – 10 was reported with some teachers finding this less than expected and others more than expected.

Trial teachers estimate the time to review reporting to be between 10 to 20 minutes.

Excellent specific information.

Teachers commented on how well the reporting highlighted strengths and weakness for classes.

The information was very informative.

Good comparisons.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). The teachers' responses ranged from 1 to 9 suggest teachers had differing opinions on this aspect.

The results were judged against 2009 student information, standardised tests and 2010 classroom based assessments. On making comparisons of the results one teacher was surprised about a student's ability. Another teacher could see the learning gaps amongst students while another teacher wanted to retest his students.

One student surprised me with how much he knew and how quick he completed answers.

Because I conducted each test, I could easily see the variations between the students and a few of the 'gaps' that need filling.

Teachers rated the capacity to track or monitor students over time from not useful (0) to very useful (10). The teachers' responses ranged from 1 – 10 with 7 teachers rating this as a useful tool to track or monitor progress over time.

To revisit the test in each semester would help to see the growth in their learning and identify areas of concern.

Four teachers discussed the results with the students.

I asked the students to have a look at questions you could and couldn't answer.

Students discussed counting backwards.

Teachers reported the most beneficial aspect of the trial for students was the one-to-one time with the teacher. Reasons for this included no distractions and the attention provided to each student. The materials for problem solving and the feedback from the assessment were also reported to be the most beneficial aspect of the trial for their students.

Teachers were asked what the most beneficial aspect of the trial from their perspective was. Again, the majority of responses related to the one-to-one time with the students.

I had heard about the numeracy testing and (in our school) it is only completed by the Learning Support teacher in our school.

So it was great to be able to trial it and understand how it works and to see the benefits that it would provide if it was done with all the students.

From an ICT perspective, I love all things ICT so could see the benefits of making the 'process' much easier through the use of a computer.

5 teachers are interested in using the Mathematics Online Interview again. Six teachers felt the time requirement was too demanding.

Student feedback

Summary of key points

- Easy and fun tool to use
- Engaging hands-on activities
- Students appreciated one-to-one interaction with their teacher
- Assessment was considered time-consuming by some students
- Activities highlighted to students what they know and can do

Students were asked what they liked about using the tool. The most common responses related to the activities. Examples of student responses indicate not only the array of the activities provided but also the hands-on nature of the activities.

It was helpful because you used stuff to do the Maths.

It was not too boring because we got to use cool tools.

A large number of student comments relate to working with their teacher.

I like about the tool and working with the teacher and the teddy.

I like doing Maths.

Other students liked Mathematics Online Interview because it was *fun, easy and challenging*.

Students were asked to identify what they didn't like about the tool. 25% stated there was nothing they didn't like, or thought the tool was OK or did not comment. A further 25% commented on a specific activity they didn't like. 18% didn't like the amount of time it took to do the assessment.

Students were asked, "What did you learn about what you know and can do?" 26% of students provided specific information about what they know and can do.

I know all my numbers.

I can use multiplication.

5 teddies are heavier than 2 x 20c's.

25% of students stated that from doing the assessment they learned that:

Teddy bears can help you count.

You could make triangles into puzzles.

I am getting lots better.

Several students were surprised by their experience.

I am surprised that I could answer so many questions.

I know more than I thought I did.

I am surprised about how much I know.

Links to further information

Mathematics Online Interview Manual

<http://www.eduweb.vic.gov.au/edulibrary/public/teachlearn/student/mathscontinuum/onlineinterviewbklet.pdf>

Mathematics Online Interview site – Provides a range of supporting resources and user guide

<http://www.education.vic.gov.au/studentlearning/teachingresources/maths/interview/moi.htm>.

Research papers

Link to National Numeracy Review: <http://www.coag.gov.au/reports/index.cfm#numeracy>

MY ACCESS

Tool Provider

Vantage Learning

Focus

Literacy: Writing

Diagnostic Power

MY Access provides an overview of writing achievement and supports improvement in writing skills with a Diagnostic Power level 3.

Target student cohort

Middle Years: Years 5 to 12.

Brief description

MY Access is an instructional writing program with an automated marking system that has been trained to replicate the scoring of expert markers.

Students respond to a writing prompt (over 1000 prompts are available). The student's response is marked against the following criteria: focus, development, organisation, language and mechanics and conventions.

Teachers determine the level of scaffolding that could be provided to students during their writing. The support options include highlighting spelling, grammar and punctuation errors and access to other resources such as word banks.

Teachers also determine the number of resubmits allowed thus providing the potential for students to improve their writing and receive instant feedback on their success in doing this.

Guidance on time to conduct an assessment is 30 to 60 minutes.

Tool Strengths

Within the context of the trial cohort the following strengths of MY Access were identified:

- supports students' understanding of 'good' writing
 - The writing comments offered were practical and accurate with the level of the writer.*
 - We were able to see students applying knowledge from class into their submissions and vice versa.*
- provision of instant feedback to teachers and students identifying strengths and weaknesses
 - The option of unlimited submissions to allow for on-going polish is a good feature, we were able to see specific areas of growth in their writing.*
 - I was able to see trends in their results which were useful.*
- students motivated to improve their writing
 - The score motivated students well.*
 - Each student chose one or two areas to improve based on the revision goals.*
 - Many students were intrigued by the instant gratification that coincided with slight changes to their writing.*
- improvement observed across a range of students including less motivated students

Students thoroughly enjoyed the independence of the program and were able to follow the process well.

Some students tended to react to the tool as a more tedious experience, however, writing improvements in all cases were evident.

- resources provided to assist writing improvement
(Student) *It gave me a score and told me how to improve my writing skills. It has tools that help me improve my writing.*

Future use and application potential

MY Access is available to all Australian schools on purchase. Further developments planned include the capacity to assess against other rubrics such as the NAPLAN writing rubrics. This requires the system to be trained against the new rubric.

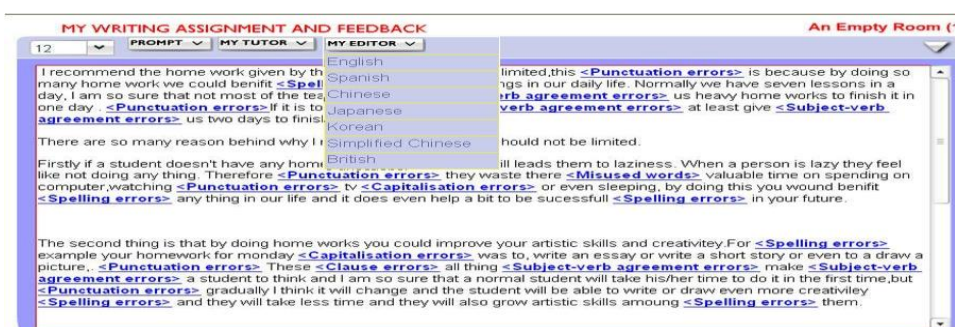
There are also plans to provide more student friendly feedback for upper primary and lower secondary students.

MY Access is considered most useful:

- as part of a teaching program to support improvement in writing skills.
This tool may be suitable as a component in a school's writing program. Teachers found instant feedback provided an ideal platform to discuss student's strengths and weaknesses. They were able to work more in partnership with students given the objective nature of the feedback.
- to provide students and teachers with instant feedback on writing achievement progress.
Teachers reported students were surprised at their improved results after implementing particular changes to their writing.
- to promote student motivation to improve their writing.
Students wanted to improve their own scores and this competitive aspect was highly motivating. Teachers reported that students were very proud of improvements made in their writing and were keen to share their results with other students and their families.
Students were often found bragging about their results.
- to complement other writing teaching approaches.
Teachers found this tool useful for focusing on a particular aspect of writing, for example *Introductions*. The capacity for teachers and students to receive instant feedback on their success in crafting a good introduction was highly motivating.
- to further promote the teacher-student partnership in improving writing.

Teachers enjoyed the 'Us versus the computer' aspect to the tool use as it allowed them to take an advisory role in partnership with the student.

Figure 25: Example of feedback provided to students



Considerations before use

The following should be considered before using the tool:

- the assessment and learning applications – the tool is designed to support learning rather than to be used in isolation as an assessment tool.

MY Access is a teaching and learning tool and is not designed to be used in isolation as an assessment tool. Within the teaching context access to ongoing assessment provides formative information to support writing improvement.

- how this tool will best complement other writing teaching approaches in the school

This tool is not designed to replace other teaching approaches and should be considered as one approach to support writing improvement. Access to instant feedback will be useful to enhance particular teaching approaches.

- the sophistication level of feedback and its suitability for student cohorts

Primary students needed support in understanding the feedback provided while this was not an issue for older students. Teachers reported the independence the tool offered to student learning was more appropriate for some students than others. Teachers also noted that some students would benefit from being offered less options initially (e.g. restricting access to online resources) to ensure they were not distracted from the focus of the lesson.

- dedicated time requirements for training and for tool familiarisation

Any tool requires time to familiarise with its setup, features, reporting and application. MY Access has a wide range of options available so teachers will require time to best apply the options available. Formal training is required initially to orientate teachers to the tool and its potential. There are a variety of training delivery models available including face to face training and real time training via the internet.

- the cost of the program

The 2010 cost of MY Access is an annual charge of \$45 per student (GST exclusive). This includes teacher and administrator accounts. A reduction in the base cost may apply for large student numbers and longer periods of access.

Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT checks: 10 minutes to conduct the computer check (refer minimum IT requirements).

Recommended training: equivalent of one full day face to face training.

Preparation for student assessments: 30 minutes to 1 hour, includes reviewing available prompts.

Conduct student assessments: 30 minutes to 1 hour.

Time to access and interpret reports: approximately 30 minutes.

Minimum IT requirements

A computer's match to requirements may be checked at

<http://www.myaccess.com/myaccess/do/log>

System/Software	Recommended
Bandwidth	256k per workstation
Operating System	MS Windows® XP or Vista / Mac 10.4.6, 10.5
Web Browser	Windows - IE® 8.0 or Firefox® 3.0.1 (or higher) Mac - Firefox® 3.0.1 (or higher), Safari 4.0, 5.0
Adobe Flash® Player	10.0
Acrobat® Reader	8.0

School demographics

MY Access was trialled in 3 non-Government schools in the same jurisdiction. The following information was provided by these 3 schools.

All 3 trial schools are in Metropolitan locations and have ICSEA values (refer to Footnote 4, p46) between 900 and 1100. Two schools describe their location as *suburban* and the other school is located in a *capital city*. One school described their student population as having *diverse cultural background*, another as having a *range of economic and racial background*, noting a number of students have English as their second language.

A common motivation for trial participation was the opportunity to use a diagnostic tool to ascertain its appropriateness and to support the effective teaching of writing in the school.

All 3 schools reported adequate school IT infrastructure and support to conduct the trial effectively. One school reported IT infrastructure and support as excellent, another adequate and the third school having access to several ICT labs and dedicated staff to support any IT issues.

Teacher demographics

Three teachers participated in the trial providing feedback both during the trial and on its completion. The 3 teachers have 2, 9 and 18 years teaching experience respectively. Two of the teachers described their role as classroom teacher and the third teacher is the literacy coordinator and *senior teacher of English as a second language*.

All 3 teachers use a range of computer applications citing use of at least 3 of the 6 applications listed with all 3 using Internet and email. Two teachers rated their level of computer expertise as very good with the other teacher describing this as *nervous but can usually get by*. Two teachers described their IT expertise as limited whilst the third teacher rated this as very good.

Teachers were asked to nominate two ways they currently assess. Teachers reported a range of class-based assessment such as: assignments, Blooms Taxonomy, oral assessment and assessment against rubrics.

The main purpose teachers cited for using assessment data is to inform teaching programs and to measure progress.

Diagnose individual needs and remediation.

Assess strengths and weaknesses.

End of term reporting.

To determine student grades.

Teachers reported the most useful types of assessment are: *In-class assignments because you can be sure it's the student's work*; and *A range of oral, written, individual and group assessments to cater for different students' learning styles*.

Student self assessment was either used minimally or not a significant feature at the stage of the trial.

The most common motivation for teacher participation in the trial was to gain explicit teaching support e.g. *Targeted assessment to assist in the delivery of specific teaching across a cohort of students; Improve teaching of literacy based on the results; and To improve results particularly in narrative writing.* Teachers were also keen to try out a new diagnostic tool.

Figure 26: Example of student revision goals support

Student demographics

Eighty students participated in the trial with 45 providing feedback on the trial. Students providing feedback included: 10 Year 6, 10 Year 7, 18 Year 9 and 7 Year 10 students.

The gender balance of students is 30 boys (38%) and 50 girls (62%) and a similar balance is reflected in the students providing feedback, 31% boys and 62% girls.

21% of the trial students (17) are identified as ESL learners (English as a Second Language). No students were identified as Indigenous. 79% of the students (63) speak fluent English.

The Year 6 students are considered of average Year 6 ability while the Year 9 abilities ranged from Year 3 to Year 10 and the Year 7 students ranged from below year level, working on modified programs to above average ability.

Most students use a computer every day (87% or 39 students) with 5 students reporting using a computer about once a week. 91% of students report using a computer at home, with 20% reporting computer use at family or friends and at the library. Over 50% of students reported using the computer very often to play music and DVDs, for social networking and also for finding information. Other regular computer use reported is playing games, word processing and for graphics.

Tool provider support

Three different training models were used in the 3 schools for the trial.

- At one school a teacher new to the tool was trained by a colleague who was an experienced user of MY Access.

- At another school the teacher drew on an expert at another school who was currently using the tool to support previous training they had undertaken but not had the opportunity to implement.
- At the third school the teacher had no previous experience with the tool and was provided training, this is detailed below.

Tool provider training comprised three sessions

1. A 45 minute online session with the teacher to provide system overview.
2. A 45 minute online session to enable the teacher to demonstrate their understanding of the system.
3. A 30 minute session in-class with students including writing to the *My Special Day* prompt.

A helpdesk was available throughout the trial period via email and phone contact.

Trial activity reports indicate the following activity during the trial period:

School 1:	105 submissions, 28 Year 7 students, some students resubmitted 8-10 times. The teacher also used the facility to set-up their own prompt for students to respond to.
School 2:	116 submissions, 21 Year 6 students, prompts included 'A day as a bird' and 'A time machine'.
School 3:	72 submissions, 17 Year 9 students and 46 submissions, 6 Year 10 students. Prompts included 'The boy in the picture' and 'Limiting the amount of homework'.

Teacher feedback

Summary of key points

- User friendly
- Average or below average IT support required
- Feedback provided to students was highly motivating
- Student improvements were noted including less motivated students
- Teachers need dedicated time to familiarise themselves with the tool options
- Provides useful resources for teachers and students to support improvements in writing
- Useful as a teaching tool.

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings of 7 and 9 reflect above average student engagement was observed.

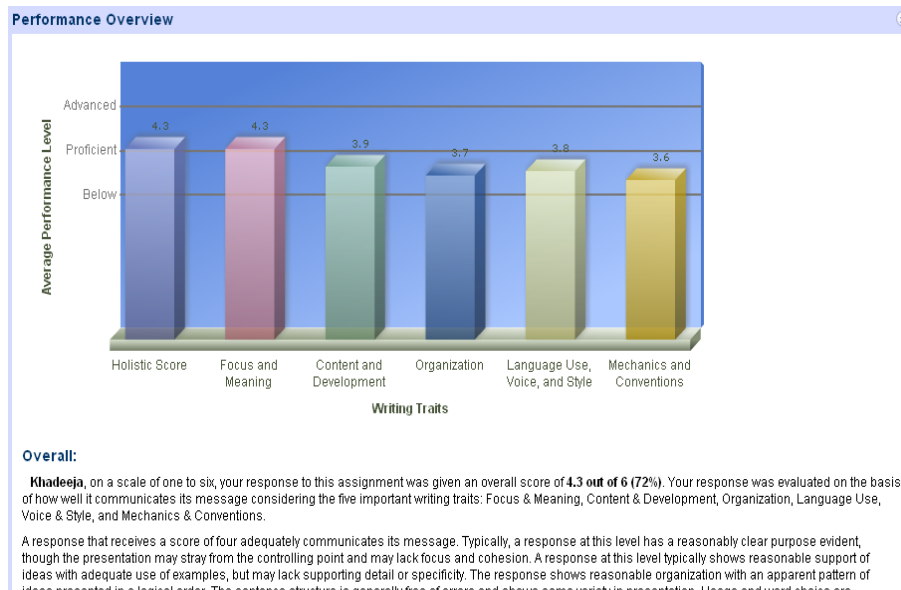
Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 5 and 6 indicate the time to assess was as expected.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings of 4 and 5 indicate the student support required was manageable.

IT support required was rated between low level support (0) and high level support (10). The ratings of 0, 5 and 6 suggest average or below average IT support was required.

The time required to administer assessments averaged between 30 and 60 minutes. Further time was spent when students responded to feedback on their writing and resubmitted their response.

Figure 27: Example of student's performance review



Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). The ratings of 7-9 suggest more than adequate support was provided.

Step by step instructions with screen shots were very useful.

Would find personal contact as well as email and phone contact beneficial too.

Support was great but a longer timeline or access to tool would be beneficial.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). The ratings of 7-9 indicate the support within the tool was more than adequate.

Takes some time to work out all the functions but it is then easy to follow.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 7-10 indicate text and images were very clear.

The user friendliness of MY Access was rated between not user friendly (0) and very user friendly (10). The ratings of 6-7 indicate the tool is user friendly.

Teacher comments relating to using the tool include:

The writing comments offered were practical and accurate with the level of the writer.

The tool provider support was friendly and helpful.

In some cases students need directions to access useful tools within the program.

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 8-9 indicating the assessment is very age appropriate.

Curriculum relevance was rated between not appropriate (0) and very appropriate.

Teachers rated this 5-8, indicating the tests administered were curriculum appropriate.

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 8-9 reflect the tool is appropriate for use with a range of abilities, noting the diverse range of abilities reported by teachers.

Comments related to target group appropriateness include:

Very appropriate for motivated and independent students.

The writing prompts are good, the feedback could be simplified for younger student audience.

The tool was received in a mix of ways within the group. All students enjoyed being able to log in at home and resubmit.

Less independent students need a linear step process rather than multiple next step choices available.

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). Teachers rated this 5-7 suggesting the time required is as expected or a little more.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings of 5-8 suggest the reporting is user friendly.

Teachers estimate the time to review reporting to be 10-30 minutes and went on to say:

Access was easy though load time for each individual tended to be tedious.

Good to see revision goals and strengths.

Some comments tended to be quite broad or specific weaknesses identified too varied to easily apply to teaching.

I was able to see trends in their results which was useful. I needed to unpack what the descriptors meant to each student to assist them to reflect and understand the specific areas they needed to improve (primary students).

The results were judged against 2009 student information and classroom based assessments. Teachers found the results were generally as expected with some surprising results. The results were found to be most useful when used in conjunction with other information about the students.

Teachers rated the capacity to track or monitor over time from not useful (0) to very useful (10), Teachers rated this 7 indicating it would be a useful tool for tracking or monitoring progress. *It provides a useful guide to generally where they are at.*

Two teachers discussed the results with students. One teacher noted, *I often used specific examples found amongst student reports to make a point such as 'Can you see how this student has been able to add more description' or 'Look at how this student has added feelings and emotions to her writing'.* The other teacher noted: *Each student chose one or two areas to improve. However they needed my assistance to understand what the revision goals meant.*

Teachers reported the most beneficial aspect of the trial for students was:

The somewhat objective nature of the program and how it reinforced strengths and weaknesses without commenting on their personal approach, a nice change from traditional assessment.

Other students tended to react to the tool as a more tedious experience, however, writing improvements in all cases were evident.

Receiving the instant feedback was a high motivation to edit their work.

The students liked the instant feedback and access to the editing tools.

Another comment related to the resources provided: *The program provides considerable resource materials in terms of curriculum and lesson plans.*

The teachers reported the most beneficial aspects of the trial from their perspective were:

I enjoyed the opportunity to give students an independent development experience, it was beneficial being on the side of the students 'us versus the machine'.

It showed me instant feedback is highly motivating.

The planning and editing tools and the feedback and revision goals.

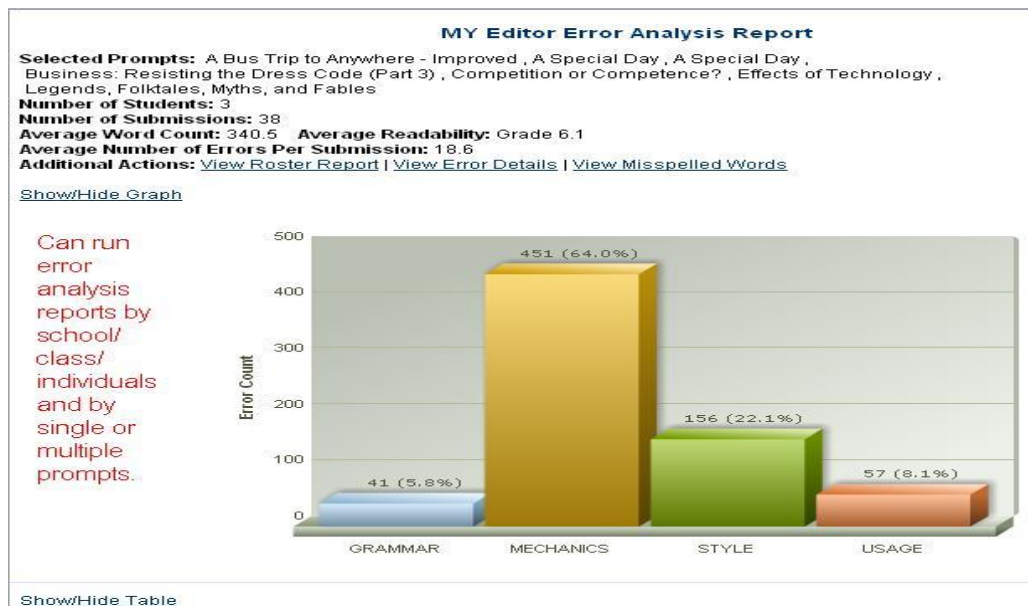
All 3 teachers expressed interest in using MY Access again, their reasons included:

It certainly catered well for students who are not well served in a traditional class structure

I would use it as a teaching aid more than an assessment tool. The planning, revision option and feedback are very useful.

Useful as part of a long-term program in line with school curriculum.

Figure 28: Example of response analysis provided to teachers



Student feedback

Summary of key points

- Easy tool to use
- Liked the support provided to improve writing quality
- Liked receiving instant feedback
- Didn't like slow load time (experienced by some students)
- Most students identified a strength or area for improvement

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). 98% of students rated the ease of use 5 or higher and 42% gave a rating of 8 or above.

Students were asked what they like about using MY Access. The most common response was related to the support the tool provided to improve the writing quality. 60% of students gave responses of this kind:

It gives you information on what to do.

It had tools to help you, like spelling check.

It showed you spelling and punctuation errors. It showed you if something didn't make sense; and I liked the way it tells you the standard of your story and what it's missing, then you could go back and fix it e.g. your vocabulary or sentence structure.

Students (24%) also liked receiving instant feedback with comments like:

I like that it marks you straight away.

I like the way it marks you critically and encourages you to strive for more.

It would give you a score on how you did; and I liked the marking.

Other aspects students liked included being on the computer, the ease of use and the facility to save and go back to their writing later. When students were asked what they didn't like 9% said there was nothing they didn't like. 13% of students referred to slow load time and 18% referred to a specific aspect of the tool or assessment with comments including:

It didn't correct our spelling (Note: This feature can be turned on and off by the teacher, it would be turned off in an assessment context).

I couldn't get the highest score

Some of the tutors were hard to understand.

A number of responses related to the spell checker with comments including: *The marker didn't accept unusual names*; and *The spell check was American* (both British and American spell checks are available). Some students found the options available confusing or were not able to effectively use the support provided.

45% of students could articulate general information about their learning status.

I can write stories but there's room for improvement.

I learnt that I could work on my mistakes.

I learned a lot of new things.

It helped me with my grammar.

A further 42% of students identified a specific skill that they either learnt something about or identified as an area requiring further work.

I learnt that my writing often doesn't contain a proper ending.

I need to use more punctuation.

I learnt that I am good at language use.

I did miss a lot of editing I needed.

It said I can work better on organisation.

Only 2% of students could not articulate what they had learnt about what they know and can do.

Links to further information

<http://www.vantagelearning.com/school/demos/>

Contact Details

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ON DEMAND TESTING

Tool provider

Victorian Curriculum and Assessment Authority (VCAA)

Focus

Literacy: Reading, Writing, Spelling

Numeracy: Number, Measurement, Chance & Data, Space, Structure Dimension

Diagnostic Power

Adaptive tests provide student proficiency estimates with a Diagnostic Power level 2.

Linear tests provide diagnostic information with a Diagnostic Power level 3.

Target year levels

Primary/Middle Years – Years 3 to 9.

Brief description

On Demand includes linear and adaptive tests. Linear tests present the same set of questions in each administration. Adaptive testing is responsive to student answers presenting more difficult or easier items as required to ascertain a student's achievement level.

The teacher selects and downloads required tests to the school server and assign test sessions. Students log in and complete assigned tests. Practice questions illustrative of item types in the test are either included within the test administration or available to use before the test. Tests are mapped to the Victorian Essential Learning Standards (VELS).

Guidance on time to conduct an assessment is 20 to 50 minutes.

Tool Strengths

Within the context of the trial cohort the following strengths were highlighted:

- high quality training
The training and support from the VCAA was outstanding.
- high student engagement
Usually when our students hear the words 'test' they shut down and don't want to be involved. However they were engaged, they didn't rush through – it was surprising for us as it doesn't normally happen.
- instant results for teachers with no marking required
The instant information was the most beneficial aspect. It provided an additional piece of evidence to support teacher's understanding of their students – very informative and useful diagnostic assessment tool.
- provided snapshot of progress across Years 3-8
Initially we were just going to test Years 4, 6 and 8 however word spread quickly about the usefulness of the data so we then tested all Year 3 to 8 students.
- comparative results enabled staff to discuss requirements for individual students and supported professional discussion
Previously we all had different sources of data. This gave us a common data source as a platform for our discussions. The adaptive testing made us ask what we are doing to challenge or support individual students.

Future use and application potential

On Demand Testing is currently available to all schools in Victoria. Developments since the trial include the addition of Year 9 and 10 tests.

The VCAA have plans to make improvements to the user interface and remove the current need of a local virtual server. There are also plans to provide item level information for the adaptive tests as is currently provided for each of the linear tests.

On Demand Testing is considered most useful for:

- adaptive test capacity that targets each individual, particularly useful for low and high achievers.
 - Year level tests often provide little information about low and high achievers. The adaptive test adjusts to student responses by providing easier or harder items until a more accurate estimate of student achievement is made.
- establishing comparative student literacy and numeracy baseline information within and across year level groups (adaptive tests).
 - As the tests are mapped to a common scale they provide common data for comparative use within a year level or across year levels, an ideal platform for professional dialogue and planning.
- monitoring student progress over time or across years of schooling (adaptive tests).
 - Testing can be used to establish baseline information and then used over time to monitor student progress across their years of schooling.
- highlighting strengths and areas for improvement for individuals and groups of students (linear tests).
 - Student responses can be analysed to identify strengths and areas for improvement for individuals and groups. Item response data can be analysed to identify patterns and gaps across school data to inform teaching and learning needs.

Considerations before use

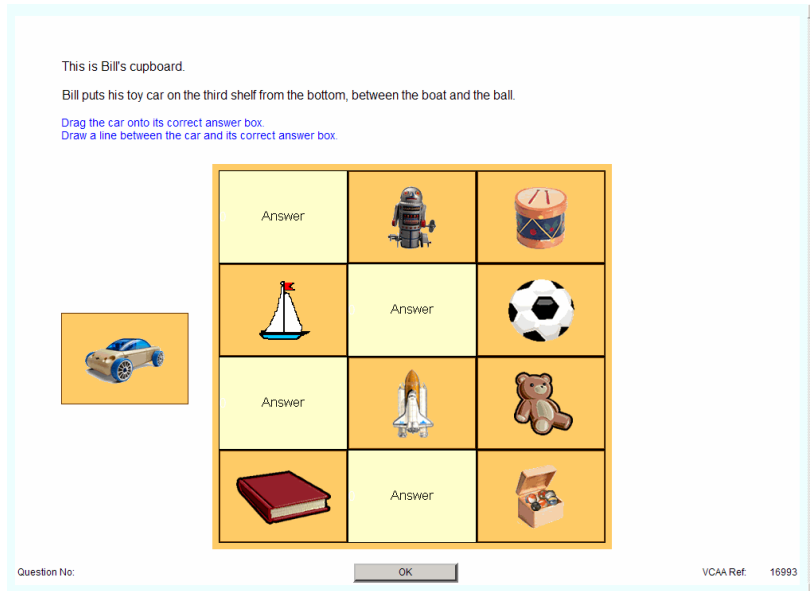
The following should be considered before using the tool:

- access to the tool
 - Victorian schools have access to On Demand. Access to other jurisdictions' schools is not currently available and will need to be negotiated directly with the VCAA.
- adequate IT support to complete the initial setup
 - IT support is required to complete the initial setup. Software is installed on the school server. Jurisdiction and sector firewalls may require updating to enable the school and VCAA server to communicate. At the school, student files are imported and teacher accounts and passwords setup. Teachers login into the VCAA central server and download tests to the school server.
 - The VCAA provides helpdesk support for the setup and use of On Demand.
- training requirements
 - A 3 hour (half day) face to face training session introduces teachers to On Demand testing and reporting functions.
- time to review testing and reporting options available to support effective use of the tool
 - On Demand Testing requires time to become familiar with to effectively utilise the available tests and interpret and apply the reporting information to inform teaching and learning.

- reporting is mapped to VELS

On Demand is mapped to the Victorian Essential Learning Standards however the trial school rated the target group appropriateness (age, curriculum and ability range) very highly.

Figure 29: Example of student question and interface navigation



Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT checks: 30 to 60 minutes.

Recommended training (includes review of manual documentation): 3 hours.

Preparation for student assessments: 30 minutes to 1 hour, allow more time for first use.

Conduct student assessments: 20 to 50 minutes.

Time to access and interpret reports: 30 to 45 minutes, depending on the level of interrogation.

Minimum IT requirements

The VCAA Assessment Online School Server can be hosted on dedicated servers with the following minimum hardware configuration:

2000MHz processing capacity

512MB DDR-SDRAM

20GB dual SCSI hard drives with hardware mirroring

10/100 Mbps network capacity.

VCAA Assessment Online Server Software

Microsoft Windows Server 2003 Standard Edition

Microsoft SQL Server 2000 Standard Edition

Microsoft Internet Information Services (IIS) 6.0

COM+ Data Access

VCAA Assessment Online User Interface

Microsoft Windows 98, 2000, XP and 2003. (Not supported by Apple MAC, or other non-Microsoft MS Windows Operating Systems)

Microsoft Internet Explorer (IE) 5.5 and above

ActiveX Controls and Plug-ins

Macromedia Flash Plug-in

Figure 30: Example of student response status on test completion

The screenshot shows a window titled 'Summary List' with the following information:

Student Name: Leahx M
Student Code: student1
Date of Birth: 10/10/2000
Test: Mathematics 100: Number, Year 3

Below the information are two buttons: 'Answer' and 'End Test'.

Question	Status
1	Skipped
2	Answered
3	Answered
4	Answered
5	Answered
6	Answered
7	Answered
8	Answered
9	Answered
10	Answered
11	Answered
12	Answered
13	Answered
14	Answered
15	Answered

School demographics

On Demand Testing was trialed at 1 school in 1 jurisdiction. The following information was provided by teachers at this Government school and teachers from 2 further schools who participated in the training session.

The trial school is in its second year and has a student population of 850. It is in a Metropolitan location and has an ICSEA value of 1018 (refer to Footnote 4, p46).

The school student population is described as *low socio-economic*.

The motivation for trial participation was *to use a comprehensive diagnostic tool and collect student data*.

The school reported *outstanding* school IT infrastructure and IT support.

Figure 31: Example of the cohort percentage correct by question report (linear test)

Standard Level:		4	5	6	Total Score				
Student Name	Student ID	Test Date	Number of Questions	% Correct	Number of Questions	% Correct	Number of Questions	% Correct	Total Score
Berney Rubble	002	21/11/2006 11:29:11 AM	7	71.4	16	68.8	2	50.0	17
Bert Simpson	B91004	20/10/2006 5:52:50 PM	7	100.0	16	43.8	2	50.0	15
Elvis Presley	B91006	20/10/2006 6:05:50 PM	7	42.9	16	31.3	2	50.0	9
Fred Flintstone	B91001	20/10/2006 5:50:41 PM	7	0	16	25.0	2	0	4
Kyle Minogue	B91010	21/11/2006 11:47:57 AM	7	100.0	16	100.0	2	100.0	25
Marilyn Monroe	B91012	21/11/2006 11:51:33 AM	7	100.0	16	87.5	2	50.0	22
Mickey Mouse	B91007	21/11/2006 11:21:49 AM	7	100.0	16	75.0	2	50.0	20
Nichole Kidman	B91009	21/11/2006 11:35:57 AM	7	85.7	16	75.0	2	50.0	19
Oprah Winfrey	B91011	21/11/2006 11:50:00 AM	7	100.0	16	87.5	2	80.0	22
Santa Clause	B91000	21/11/2006 11:33:47 AM	7	100.0	16	75.0	2	50.0	20
Tom Cruise	B91005	20/10/2006 6:01:40 PM	7	71.4	16	31.3	2	50.0	11
Average									16.725

Teacher demographics

One teacher coordinated the trial and administered assessments across year levels. A further 8 teachers administered tests to their class during the trial period. The following information is based on information provided by the school's trial coordinator. The coordinator has 10 years teaching experience and is in an executive role at the school.

Teachers at the school have a range of computer and IT expertise. One teacher described her computer and IT expertise as *limited*, another teacher's expertise was described as *IT savvy*.

Teachers were asked to nominate ways they currently assess. They reported using assessments such as running records and diagnostic assessments. The main purpose teachers cited for using assessment data is for planning and reporting. Teachers reported the most useful types of assessment were following specific teaching and learning programs and to provide information for reporting purposes.

Use of student self assessment was reported as being limited.

The key motivation for teacher participation was to collect student assessment data.

Student demographics

Approximately 600 students, from Years 3-8, participated in the trial with 41 providing feedback on the trial.

Students providing feedback included: 17 Year 4, 4 Year 5 and 18 Year 7 students (2 student's year levels unclear) with 46% of these boys and 54% girls.

90% of students report using a computer at least once a week on average and 39% report using a computer most days. Apart from computer use at school, 93% report using a computer at home, 41% use a computer at family or friends and 41% at the library.

The most regular computer use reported by students is playing games with 41% playing games very often and 56% playing games sometimes. Over 80% use computers to find information (41% very often, 56% sometimes) and do word processing (20% very often, 61% sometimes).

Figure 32: Example of student test results- linear test

Student Raw Score by Question Standard Level				
Test Number: 2277				
Test Description: VELS 3.5 to 4.0 Number Progress Test				
Test Domain: Mathematics				
Maximum Score: 30				
Date From: Any				
Date To: 04 Sep 2008				
(Year Level: All, Home Group: All, Gender: All, LBOTE: All, ATSI: All)				
Number of Students: 5				
Number of Test Results: 5				
Student Name: Nicole Kidman			Test Date: 2/9/2008 3:35:53 PM	
Student ID: Student23				
Standard Level	Questions	Questions	Questions	
4	2	13	1	
	3		5	
	4		10	
	6		11	
	7		20	
	8		21	
	9		23	
	12		24	
	16		25	
	17			
5	22			
	26			
	30			
	14	18	18	
15	29			
19				
27				
28				
Number Correct:	12/18	1/1	5/11	
	Computation	Number Patterns	Understanding Number	
			Raw Score	18/30
			Standard Score	3.75

(Bolded questions are correct.)

This result indicates that the student is performing in the middle of the range for this test. This test targets outcomes at VELS 3.5 to 4.0. For more information about interpreting this result download the *Interpreting On Demand Reports* document at <http://www.aimonline.vic.edu.au/doc/ODI.pdf>

Tool provider support

Teachers received a training guide and information about the available tests, how to interpret reports and samples of the report types available.

The VCAA conducted a half day face-to-face, hands-on introduction to On Demand based on the teacher training guide. Familiarisation activities included setting up a test for administration.

Helpdesk support was available throughout the trial via phone and email contact.

Teacher feedback

Summary of key points

- High student engagement, student support required was manageable and time to conduct assessment was as expected
- IT support was an important requirement
- Comprehensive support provided by VCAA, in-tool support more than adequate
- User friendly tool and reporting
- High target group appropriateness
- Supported evidence based professional dialogue

Teachers rated student engagement between low engagement (0) and high engagement (10). The rating of 10 indicates high student engagement was observed.

The high engagement level observed was surprising – the fact they weren't talking or rushing, it's not usually like this.

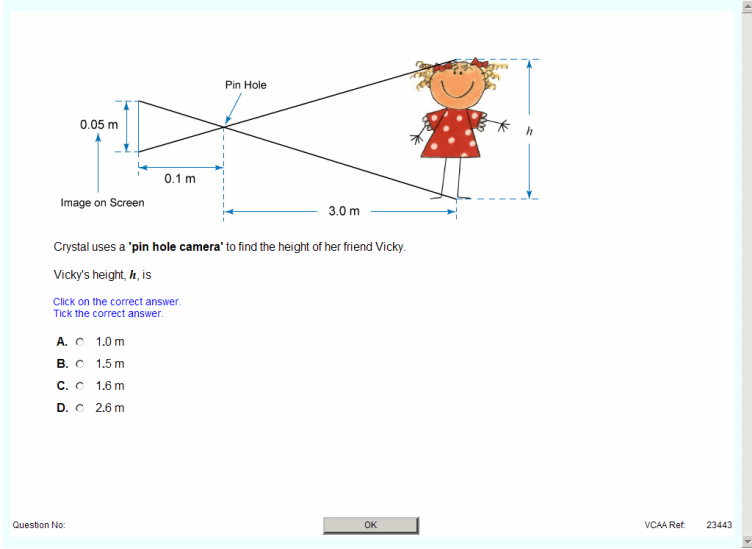
Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The rating of 5 indicates the time to assess was as expected.

The support students required was rated between not manageable (0) and easily manageable (10). The rating of 5 indicates the student support required was manageable.

IT support required was rated between low level support (0) and high level support (10). The rating of indicates IT support is an important requirement.

The time required to administer assessments ranged between 20 and 50 minutes.

Figure 33: Example of student question and interface navigation



The screenshot shows a question interface with a diagram of a pin hole camera. The diagram includes a screen on the left with an image, a pin hole in the center, and a person on the right. Dimensions are given: 0.05 m from the top of the screen to the pin hole, 0.1 m from the pin hole to the screen, and 3.0 m from the pin hole to the person. The person's height is labeled as h .

Crystal uses a 'pin hole camera' to find the height of her friend Vicky.
Vicky's height, h , is

Click on the correct answer.
Tick the correct answer.

A. 1.0 m
B. 1.5 m
C. 1.6 m
D. 2.6 m

Question No: OK VCAA Ref: 23443

Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). The rating of 10 indicates the support provided by the VCAA was comprehensive.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). The rating of 8 suggests the user support within the tool is more than adequate.

Clarity of text and images was rated between not clear (0) and very clear (10). The rating of 5 indicates text and images are clear.

The user friendliness of On Demand was rated between not user friendly (0) and very user friendly (10). The rating of 7 indicates the tool is user friendly.

The trial coordinator commented, *It was difficult initially, but the more exposure and the more opportunities to use, the process became easier.*

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The rating of 10 indicates the tests administered were age appropriate.

Curriculum relevance was rated between not appropriate (0) and very appropriate. The rating of 10 indicates the tests administered were well matched to the curriculum.

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Again this was rated 10, very appropriate.

The school reported this high target group appropriateness *was a very strong feature of the tool. The adaptive tests were ideal for these students as most tests are too hard and students give up when they can't get it right.*

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). This feature was rated 0 which was less time than expected.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). The rating of 10 reflects a high level of user friendliness.

The trial coordinator estimated the time to review reporting to be about 45 minutes and went on to say, *Very comprehensive data (was) provided from this tool and the linear tests give a starting point, diagnostic data you can use immediately.*

The results were judged against 2009 student information and previous NAPLAN results. Teachers were surprised by some of the results. The school used this data to discuss previous sets of data and this promoted very useful professional dialogue. One clear discussion arising was, *What are we going to do to support the top end and the low end? And, how do we push each student?*

The tracking or monitoring capacity was rated 10 very useful.

It provides so much data – collection would be easy.

Reports are generated quickly and precisely.

Access to many forms of the data.

Students displayed a high interest in their results. The most beneficial aspect about the trial for students identified was the opportunity to experience *a different form of assessment.*

The teachers reported the most beneficial aspect of the trial was the data provided through the assessments.

The school was very interested in using the tool again.

Very much so, it helped us in developing a culture of evidence based practice.

Figure 34: Example of adaptive test report

The screenshot shows a web browser window titled "OnDemandReport - Microsoft Internet Explorer". The page has a header with "Print", "Export", and "Close" buttons. Below the header, it displays "User: schladern" and "Date: 04/03/2009 Time: 1:00:05 PM". The main heading is "Class Standard Score Report".

Test details:

- Test Number: 2133
- Test Description: Mathematics - YR08 - General
- Test Domain: Mathematics
- Date From: Any
- Date To: 04 Mar 2009

(Year Level: All, Home Group: All, Gender: All, LBOTE: All, ATST: All)

Number of Students: 1
Number of Test Results: 1

Student Name	Student ID	Test Date	Standard Score	Standard Level 3	Standard Level 4	Standard Level 5
Homer Test Student Simpson	Student01	3/12/2008 10:19:32 AM	Below 2.0	0/0	0/5	0/5

Student feedback

Summary of key points

- Tool easy to use
- Liked being on the computer
- Liked test being quick
- Enjoyed not having to write

- Articulated what they learnt about what they know and can do

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). 98% of students rated the ease of use 5 or higher with 22% giving the highest rating of 10.

Students enjoyed using the computer. They liked the test being quick to complete and the tool being easy to use. Some students who completed multiple choice tests noted they liked not having to write. Students enjoyed the range of difficulty of the questions, like the questions *being easy and hard* and *...the questions suit your level by going hard... and easier*.

Conversely some students rated these factors as aspects they didn't like e.g. *too easy* and a *bit hard*. Some aspects students noted as disliking are not consistent with tool qualities. For example, comments relating to disliking having to scrolling are not consistent with the fact that each item is contained within a standard screen which was deliberately designed so that scrolling isn't required.

Some students commented that they did not like the time limit. This is likely to relate to the 2 minute time limit on the adaptive test questions. The assumption being if a student has not responded to the question within two minutes then it is too difficult for them and therefore treated as incorrect and the next question presented.

Students were able to articulate what they learnt about what they know and can do with responses related to skill mastery such as *I learnt I'm not very good at multiplying decimals* (Year 7 student) and aligned to content of test such as *I learnt a lot about soccer in China*.

Some students reflected on their test taking behaviour with comments such as *I am not too fast at answering* and generalised their learning with comments such as *I can always know more* and *I underestimated myself, I'm smart*.

Links to further information

<http://www.vcaa.vic.edu.au/prep10/ondemand/index.html>

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Online Placement Instrument (OPI)

Tool provider

Australian Council for Educational Research (ACER)

Focus

Literacy: Reading, Vocabulary, Grammar, Punctuation and Spelling

Numeracy: Number, Measurement, Space, Chance and Data

Diagnostic Power

Broad domain achievement information with the capacity to target test difficulty to individual students, Diagnostic Power level 2.

Target student cohort

Primary and Middle Years – Years 3-10.

Brief description

OPI is designed to provide broad information about literacy and numeracy proficiency against expected performance at year level. Proficiency levels are indicated through the use of colour coding to allow test targeting to student achievement levels rather than just to their current year level.

Ideal for using as pre- and post-tests as each test has a parallel form and is mapped to the same scale so results can be compared.

Guidance on time to conduct an assessment is 15 to 60 minutes.

Tool Strengths

Within the context of the trial cohort the following strengths of OPI were identified:

- easy tool to administer with no external training required
The Handbook was excellent.
The booklet not only explained what to do it was easy to follow.
- easy for students to use
It is a simple tool to use.
Many students said it was better than doing a test on paper and they appreciated the quick feedback of results.
87% of students rated the tool between okay and very easy to use.
- easy data collection
It was simple to use; it gave a rough indication as to where the student was sitting academically and it provided results straight away.
- provides capacity to pre- and post-test to measure growth over time.
I would use this tool as a pre- and post-test to see where students were at.
- instant feedback to students and teachers
It showed students had good comprehension but lacking in spelling.
It showed areas of weakness and strength.
- reporting provides broad snapshot of student and group strengths and weaknesses
Target groups were able to be looked at for assistance, for example, in guided reading and Maths groups.

Future use and application potential

OPI is currently available to all Australian schools on purchase.

Further developments planned include streamlining the administration including simplifying passwords. Other instruments will be progressively added to the iAchieve platform OPI is delivered from providing easy access to complimentary forms of assessment.

OPI is considered most useful for

- monitoring student progress over time e.g. a pre-test early in the year and a post-test later in the year.
The pre- and post-tests are mapped to a common scale so provide a mechanism for schools to collect baseline information and following a suitable period retest students to determine progress or growth.
This is particularly useful when schools are implementing intervention programs and are seeking a form of evaluation data to inform the success of the program.
- the easy collection of broad domain achievement data
Computer test delivery, automatic marking and instant results allow easy collection of broad domain achievement data that can be interrogated to identify strengths and learning gaps that need to be addressed.
- providing an overview of class or group progress against a standardised scale
Schools can generate group reports, for example a year level or specific group of students. Group reports reference the school information against a normed sample thus providing schools a source of external referencing.
- providing students with an instant snapshot on their progress
Students appreciated receiving instant feedback on their results. The *Where you're at report* shows student progress on an achievement scale and indicates correct responses. It also provides a summary of strengths and areas for improvement and students receive an item by item summary of their performance.

Considerations before use

The following should be considered before using OPI as the trial experience suggests these are important factors underlying the effective use of this tool:

- the assessment purpose is to provide broad achievement data
OPI is designed to provide broad achievement data rather than detailed diagnostic information.
- the need to scroll through longer texts during the test
Teachers and students noted concern about the need to scroll texts during the test. More difficult texts are often by their nature longer. With the uptake of electronic reading devices scrolling is likely to become more the norm and expectation for reading.
In the meantime teachers should supervise students accordingly to ensure accurate data is collected to inform teaching and learning programs.
- time for the teacher to review the test before administration
Teachers are provided with an extra login so they can review the test in advance of the administration. Reviewing the test will support teachers in knowing what their students are about to undertake and also make the reporting more meaningful.
- appropriate time period between pre- and post-testing

When OPI is to be used as a pre- and post-test adequate time should be allowed between testing e.g. 9-12 months between testing as a guide.

- The cost of the program

ACER advise the pricing structure is as follows.

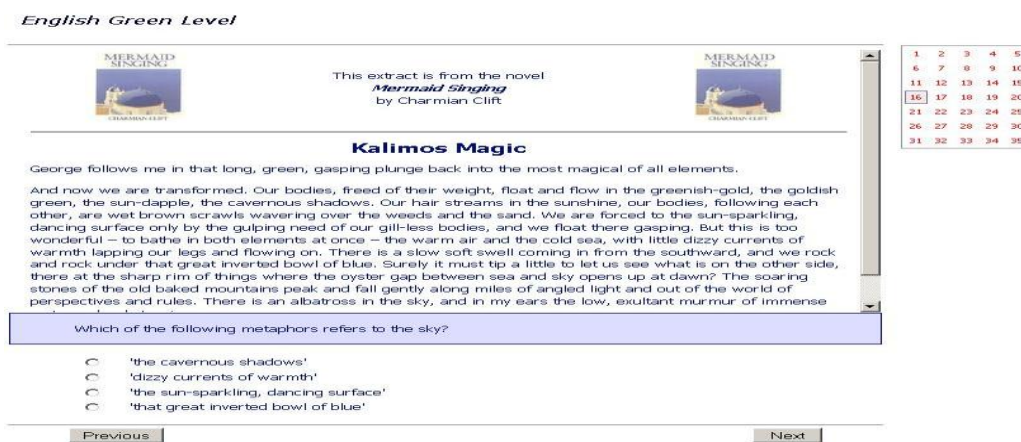
Small school site licence (less than 200 students): \$500 per year

Medium school site licence (201-1000 students): \$1750 per year

Large school site licence (1001 + students): \$3750 per year

For updated information see: <http://www.acer.edu.au/tests/opi/pricing1>

Figure 35: Example of student interface for English test



Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT checks: access to site check, 5 minutes

Tool materials review: 30 to 60 minutes

Recommended training: self directed, tool material review (see above)

Preparation for student assessments: 30 minutes

Conduct student assessments: 15 to 60 minutes

Time to access and interpret reports: 20 to 60 minutes

Minimum IT requirements

OPI requires internet access and is suitable for both PC and Mac operating systems.

The performance of the application will be affected by the communication speed of the internet connection. Recommended connection speed and number of users follows.

Required Bandwidth

The speed of the Internet connection will determine the number of students who can sit a test at any one time. Below are suggested maximum numbers of students for different types of Internet connection.

Connection Type	Connection Speed	Maximum Number
Modem	56K bit/s	1 student
ADSL (basic)	128K bit/s	2 students
ADSL (medium)	256K bit/s	5 students
ADSL (high)	512K bit/s	10 students
ADSL (corporate)	1.5M bit/s	30 students 1 class
Cable (basic)	1.5M bit/s	30 students 1 class
Cable (high)	>3 mb/s	1 - 2 classes

School demographics

OPI was trialled in 7 schools (4 Government and 3 non-Government), across 3 jurisdictions. Four of the schools are in Provincial locations describing their school location as *rural* or a *country school*. One of these schools describes itself as *small*, it has a student population of 70. Three of the schools are in Metropolitan locations describing their location as *capital city*, *urban* and *outer city suburb*. All 7 schools have ICSEA values (refer to Footnote 4, p46) between 900 and 1100.

The range of socio-economic background is diverse with 3 of the schools describing their student population as *low to middle socio-economic* and another school describing this as, *a wide range of socio-economic circumstances*. The student mix at one school includes students who board at the school (*rural and remote*), 2 schools note small Indigenous populations. Two other schools describe the range of their student population as: *mixed backgrounds and mixed abilities*; and, *multicultural cohort, mainly drawing on parents who are studying at university*.

A common motivation for school trial participation was the opportunity to use a new assessment tool, with 5 of the schools interested in this aspect. Two of the schools noted explicit an interest in computer-based tools noting they wanted: *Greater knowledge of computer based programs and tools* and to *Use an assessment tool which makes data analysis simple and clear*. Three schools express interest in assessment tools more generally, with the delivery mode not explicit.

Discovery of useful tool to inform teachers of where students are at, and how to best move them forward.

Develop understanding of accurate ways to assess students.

A knowledge of different assessment tools available to help cater to individual student needs.

School IT infrastructure and support varied across the sites. Two schools noted difficulties: *Difficulties with the server at times, recent upgrade of internet speed*; and, *Old and slow and not always working in classrooms*. Three schools report average or satisfactory IT infrastructure and support. One school reports *Fibre back-bone, up to date backbone with high capacity infrastructure* and *very high IT support*.

Most schools noted their IT infrastructure and support would be adequate to conduct the trial however in some schools this support was only available on certain days each week.

Teacher demographics

Seven teachers formally completed the trial providing feedback both during the trial and on its completion. Five of the teachers have less than 10 years teaching experience, ranging from 4 to 8 years. The other 2 teachers have over 30 years teaching experience. Three have leadership roles in the school such as year level coordinator and literacy and numeracy leadership roles.

All 7 teachers use a range of computer applications citing use of at least 3 of the 6 applications listed with all 4 using email, the internet and word processors. Most teachers also use PowerPoint and spreadsheets. Other applications used include electronic whiteboards, MS Publisher and Photoshop.

Three teachers rated their level of computer expertise as high (*expert, confident, capable*) and the other 4 as average (*good, adequate, satisfactory, quite competent*). Three teachers rated their IT expertise as excellent, a further 3 rated their IT expertise as average and another teacher described their expertise as *limited*.

Further comments on these aspects include:

I'm often scared to use technology as in the past it has not been reliable or available.

I'm open and willing, love using technology in my program. Always looking to find exciting and innovative ways to use technology.

I am a competent user, I easily learn new programs with a little practice.

Teachers were asked to nominate two ways they currently assess. Teachers reported a range of class-based assessment such as: checklists, anecdotal records, reflective journals, oral assessment and rubrics. Also noted was the use of external tests such as the BURT reading test.

The main purpose teachers cited for using assessment data is to inform teaching programs.

To assist me in my teaching – where to next?

To modify teaching plans.

Implementing appropriate strategies to maximise learning.

To understand any misconceptions the students have in the area of maths.

Teachers reported the most useful types of assessment are: *Assessments that provide a diagnostic result; Written, can be analysed in your own time; Rubrics, they have clear criteria, expectations are clear to parents, students and teachers; and, I find using work samples or tests effective.*

The use of student self assessment varied across the trial classes with teachers.

Not used frequently.

Record in a journal, students see this more as a reflection on their learning.

Developing confidence.

One to one with the teacher.

They work with the teacher to develop rubrics or expectation documents.

The most common motivation for teacher participation in the trial was to use an assessment tool, to inform teaching and for professional development.

Become aware of useful aids for teaching.

Use technology and data to assist teachers in their assessment and planning.

Understand more about different assessment tools and how to interpret the information to better inform my teaching.

Data feedback on my students to use in planning to guide my teaching.

A more thorough understanding of assessing and assisting students with Literacy and Numeracy needs.

Figure 36: Example of student report – results by question

iAchieve
online assessment services

ACER

Individual Report for Tim Daws

Dear Tim,

For the Mathematics Green Level Assessment you have just completed you have correctly answered 39 out of 40. Your score is equal to or better than 99.2% of the Year 6 population.

A more detailed summary of your performance is given below. It will show you areas where you have done well and other areas you may need to revise.

For more information about any of the questions you have attempted, click on the question number or the tick or cross in the table below.

Question	Descriptor	Strand	Your Answer	Result
1	Recognises rotated shape.	Space	Option 3	✓
2	Chooses cheapest price.	Number	Option 4	✓
3	Solves simple problem involving multiplication.	Number	Option 4	✓
4	Interprets column graph and adds totals.	Chance and Data	Option 4	✗
5	Reads four-digit number written in words.	Number	Option 3	✓
6	Reads and interprets table.	Measurement	Option 1	✓
7	Identifies digital time and calculates simple elapsed time.	Measurement	Option 4	✓
8	Recognises best method to obtain data.	Chance and Data	Option 2	✓
9	Understands event that is impossible.	Chance and Data	Option 4	✓
10	Identifies net of correct rectangular prism.	Space	Option 1	✓
11	Identifies best chance in simple event.	Chance and Data	Option 2	✓
12	Counts squares on grid including halves to find area.	Measurement	Option 3	✓
13	Interprets Venn diagram.	Chance and Data	Option 3	✓
14	Orders everyday objects from coldest to hottest.	Measurement	Option 2	✓

Student demographics

376 students participated in the trial with 127 providing feedback on the trial. Students providing feedback included: 47 Year 3, 34 Year 4, 17 Year 5, 14 Year 6, and 15 Year 9 students.

The gender balance of trial students is 190 boys (51%) and 186 girls (49%) and the students providing feedback – 41% boys and 59% girls. 45 of the trial students (12%) are identified as ESL learners (English as a Second Language) with 12 (3%) identified as Indigenous. 334 of the students (89%) speak fluent English.

Five of the schools report ability ranges of up to 2 years below year level. The other 2 schools reported similar ranges but also high ability students working at 1 to 2 years above their year level.

85% of students report using a computer at least once a week with 30% using a computer most days. Apart from using a computer at school 87% of students also report using a computer at home, 40% at family or friends' homes and 35% at the library. 62% of students report playing games on computers very often. Students report using computers sometimes to find information, to play music or DVDs, for word processing and to use graphics programs.

Tool provider support

Schools were provided with access information (school code and site licence for unlimited use during the trial period) and the OPI User Guide. A 20 minute teleconference was conducted to introduce teachers to OPI. ACER followed up with schools who were unable to attend the teleconference.

Schools ordered the tests online, including the number of tests required and the type and the level of the test.

Helpdesk support was available during the trial period via phone and email contact.

Trial activity reports indicate the following tests were completed (by school):

School 1 – 184 English and 122 Maths tests

School 2 – 125 Maths tests

School 3 – 18 English tests

School 4 – 48 English tests and 47 Maths tests

School 5 – 48 English tests and 47 Maths tests

School 6 – 25 Maths tests

School 7 – 63 English tests

Teacher feedback

Summary of key points

- Low level IT support required
- Student support required manageable or easily managed
- Students enjoyed being tested on computer
- Quick and easy method of collecting data
- Reports provided broad view of strengths and weaknesses of individuals and across groups
- Noted students didn't always scroll down to read text before answering questions
- Recommend passwords are made more user friendly

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings of 5-10 suggest average to above average student engagement was observed: *Students loved using the computers, a different way of assessment.*

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 5-10 indicate the time to assess tended to be more than expected.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings of 4-10 indicate the student support required was considered manageable or easily managed.

IT support required was rated between low level support (0) and high level support (10). The ratings of 1-5 suggest average to low level IT support was required.

The time required to administer assessments is estimated to be 15 to 60 minutes.

Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). The range of ratings of 3-10 suggests some schools would have preferred further support while others were very satisfied with the support. [Note that one school advised they had experienced internal communication difficulties resulting in their trial teacher not being provided with the User Guide and other information provided by ACER.]

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). The ratings of 5-10 indicate the support within the tool is more than adequate.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 5-10 indicate text and images were very clear.

The user friendliness of OPI was rated between not user friendly (0) and very user friendly (10). The ratings of 0 and 8 suggest the trial teachers had different experiences using the tool although only one of the seven teachers rated the tool not user friendly.

Two schools commented on the quality of the user guide, *The booklet explained what to do and was easy to follow*; and, *Handbook was excellent*.

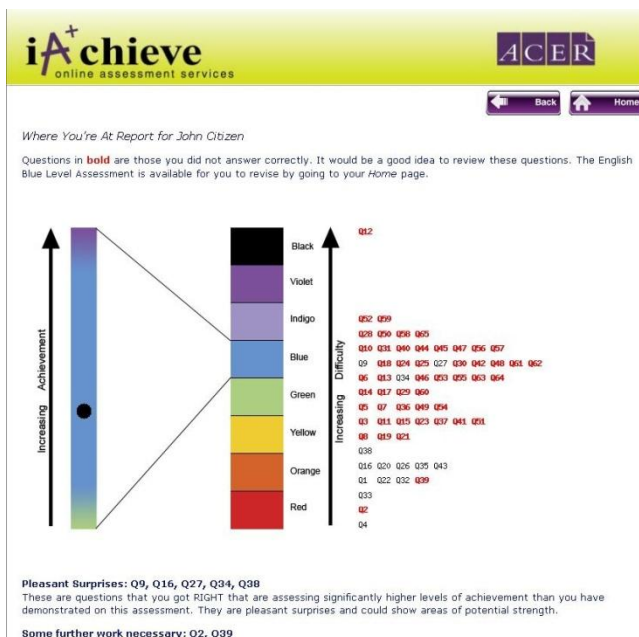
Two issues identified by teachers related to the scrolling sometimes required to access test material and the composition of student passwords.

Student passwords were very difficult.

Some questions in the test required students to scroll.

I observed that many children didn't read the passage before answering the question.

Figure 37: Example of student report – Where you're at report



Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 4-10, indicating the assessment is age appropriate.

Curriculum relevance was rated between not appropriate (0) and very appropriate.

Teachers rated this 2-10, indicating the teachers had varying views on this aspect. (ACER advises that OPI is not directly mapped to any one curriculum rather it reflects developing numeracy and literacy skills, knowledge and understandings.)

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 0-8 with 6 schools rating this as appropriate or very appropriate and one school rating this as not appropriate.



The test was appropriate for students who have difficulty writing their answers. Also one question per page meant less distraction.

The children appeared interested during the session.

Some students with learning difficulties found it difficult in some areas even my high ability students had difficulty with the instructions.

Great questioning techniques.

Figure 38: Example of a group report

Group: 6

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total Raw Score	Scaled OPI Score	All Students' State		
Strand	S	N	N	C	N	M	M	C	C	S	C	M	C	M	N	N	S	S	N	N	M	N	M	N	N	N	C	N							
Total correct	10	10	10	10	10	10	10	10	10	10	4	5	5	4	4	6	5	4	5	5	5	5	5	5	5	6	6	6	4	6					
% Correct (this group)	91	91	91	91	91	91	91	91	91	91	36	45	45	36	36	55	45	36	45	45	45	45	45	45	55	55	55	36	55						
% Correct (All students)	98	97	93	92	91	91	90	90	89	85	84	81	80	77	77	73	68	65	64	60	58	56	55	55	53	51	51	48	48	48					
	Correct Option																																		
Student	c	d	d	c	c	a	d	b	d	a	b	c	c	b	d	b	d	a	a	d	a	c	b	a	a	a	d	c	c	c					
sample, Gam	a	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0	52	0.1	
Barbarella, Melanie	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	a	b	a	b	✓	b	c	✓	c	✓	b	c	✓	b	b	✓	b	✓	b	✓	b	21	497	30	
Chau, Stacey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	b	✓	a	✓	a	c	✓	b	✓	b	b	✓	c	b	b	c	b	b	b	b	19	474	19.7	
Enriques, Ricardo	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	d	b	✓	a	✓	b	b	c	c	b	a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	31	601	85.8	
Harrison, Annabelle	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	c	b	d	✓	a	a	✓	b	a	b	a	b	b	a	b	b	b	b	b	b	b	13	410	4.3	
Hills, Tracey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	c	d	✓	a	c	✓	c	b	b	c	b	a	a	b	b	b	c	b	b	d	12	397	3.6		
Hobbs, Jeremy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	b	✓	c	c	✓	b	b	✓	b	✓	c	✓	✓	✓	✓	✓	✓	✓	✓	✓	25	536	55.3	
Hopetoun, Bob	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	a	✓	b	c	✓	✓	b	b	✓	✓	✓	✓	✓	✓	✓	d	✓	✓	✓	b	✓	30	589	82.1	
Pham, Cindy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	c	b	b	c	c	c	c	✓	✓	✓	c	✓	✓	✓	b	✓	✓	✓	✓	b	✓	24	525	48	
Reeds, Michael	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	38	728	98.9
Reynolds, Abraham	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	b	✓	✓	✓	✓	✓	✓	✓	39	783	99.2

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). Teachers rated this 3-10 indicates teachers had a different view on this aspect.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings of 0-9 again indicate teachers differed in their view of this aspect with 2 schools rating it very user friendly and another 3 as user friendly.

Teachers estimate the time to review reporting to be 20-60 minutes. Teachers found the results were generally as expected, judging the results against results from standardised tests such as NAPLAN and teacher classroom assessments.

- Comments about the value of reporting varied with comments such as:
- Fantastic, students could get their own results as well as teachers.*
 - Could see individually areas for specific children that need assistance.*
 - Helpful to see common gaps in student performance.*
 - It gave a brief summary at class level that was helpful.*
 - Was able to see the whole class needed assistance e.g. inferring or number lines etc.*

This is in contrast to comments such as: *The report was not easy to read;* and *Of limited value at individual level.*

Teachers rated the capacity to track or monitor over time from not useful (0) to very useful (10). Teachers rated this 3-10 suggesting it would be a useful tool for tracking or monitoring progress. One teacher noting: *I think it would be good to do this assessment again to see how students have improved.*

Three teachers discussed the results with students commenting: *We discussed why they may have not done as well as expected;* *We looked at the questions a lot of students got incorrect;* *We discussed the use of apostrophes.*

- Teachers note the most beneficial aspects of reports are:
- Getting results straight away.*
 - Knowing what response students gave and what the particular question was.*
 - Highlighting strands they are having trouble with.*
 - Common answers they are getting incorrect.*
 - Student responses showing their answers.*

To collate results into individuals, groups etc.

Two teachers reported they used the results to modify or confirm their teaching: *They enjoy the grammar focus we have implemented at the start of each writing session;* and *They are more engaged.*

Teachers reported the most beneficial aspect of the trial for students was:

Being able to get instant results.

Exposure to a different form of assessment.

Highlighting areas that need improvement and areas they feel confident.

They enjoyed being on the computer as opposed to pen and paper tests with lots of writing.

The teachers reported the most beneficial aspects of the trial from their perspective.

It was simple to use and gave a rough indication of where students were and it provided results straight away.

The ease of collecting data for my grade and the whole year 5/6 group.

Another great tool to assess student's knowledge and understandings.

The collated results.

Seeing how students went about answering the questions.

Five of the 7 trial teachers expressed interest in using OPI again, their reasons include:

I would use as a pre- and post- test; It is so convenient and useful.

The level of engagement of the students was high, they enjoyed doing the test.

If we used this every term students would visually see improvements or areas they need help.

Student feedback

Summary of key points

- Easy to use
- Liked being on the computer
- Liked questions being easy and challenging
- Most students could identify self assessment outcome

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). 87% of students rated the ease of use 5 or higher with 30% of students giving a rating of 8 or above.

Students were asked what they like about using OPI. The most common responses were: being on the computer, the difficulty level of test finding it easy and challenging and that it was fun. 6% of students did not identify an aspect they liked.

When students were asked what they didn't like, 9% said there was nothing they disliked. 20% of students said the test was too hard or too easy, 15% noted computer use aspects such as needing to scroll, login difficulties and 'drop outs'. 20% cited particular aspects of the test they didn't like such as the amount of reading or a lack of interest in the content.

66% of students identified something they had learnt about what they knew or could do.

I learnt I need to practise my grammar.

Learnt I'm doing okay.

I'm good at Maths and bad at Literacy.

I'm actually smarter than I thought.

That I can read and answer questions from the reading.

5% of students said they had learnt nothing about what they knew or could do and a further 28% either didn't know or gave no response to this question.

Links to further information

Access to further information about OPI, including sample questions for Literacy and Numeracy.

<http://www.acer.edu.au/tests/opi>

Contact Details

Contact details are available at: <https://iachieve.acer.edu.au/au/portal.php>

PERFORMANCE INDICATORS IN PRIMARY SCHOOLS (PIPS)

Tool Provider

University of Western Australia

Focus

Literacy: Reading, Writing, Phonics

Numeracy: Number, Measurement

Diagnostic Power

A responsive test that identifies strengths and weaknesses in literacy and numeracy. Capacity to track student progress over one year with a Diagnostic Power levels 3 and 4.

Target student cohort

Early Years. On-entry students (Prep, Reception, Kindergarten, Transition, Foundation).

Note: This trial also focussed on assessing Indigenous students in Years 4, 5 and 6 with the intention to gain an insight into the content and age appropriateness of the tool for older Indigenous students.

Brief description

PIPS assist teachers to assess the progress of students in literacy and some aspects of numeracy. It can:

- diagnose individual students and provide data to indicate what areas students are achieving or underachieving.
- predict future performance for identifying individuals who might benefit from early intervention.
- provide comparison charts used to inform schools about performance in comparison to other Australian schools.

The time to complete an assessment is approximately 15 - 45 minutes

Tool strengths

Within the context of the trial cohort the following strengths of PIPS were identified:

- user friendly with clear instructions
We actually found that it was quite easy to use. If you read the book we didn't feel there was anything else you needed to know to actually administer the tests.
- comprehensive user guide
Good quality and easy to use
- images clear, colourful graphics, attractive and popular amongst students
I thought the images were clear and colourful so the kids enjoyed looking at them and using them. Basically everything that they needed to find was there and they could be found easily if they actually knew what it was.
- provides a clear view of where students are at highlighting areas of need and identifying specific groups
From the information we were able to hone in on a group of children who needed more one-to-one or small group to bring them up to speed on a concept.
- data easy to interpret

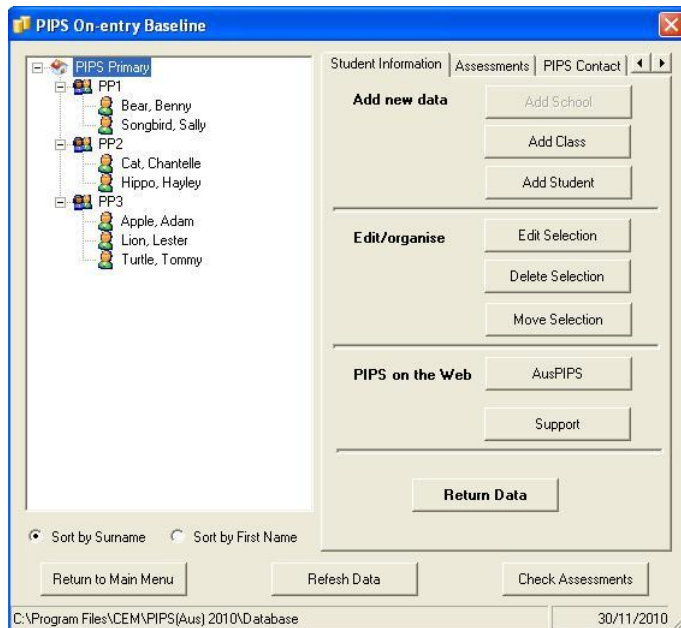
I liked the reports because they were quite simple and just in the graphs so you could quickly look at it and confirm that student is there and this student is here. There was not a lot of reading and it was quite visual.

I liked the disparity of the reports. It gave you the lowest and highest and a medium. The bell curve really helped me discuss with staff... it was great to see something defined. It will really be interesting to see what the end of year test tells us.

- observations about student learning made during the assessment

The most beneficial aspect was the one-to-one assessment opportunity in a closed room.

Figure 39: Example of main menu where teachers enter students' names during set up.



Future use and application potential

PIPS is currently available to all schools in Australia on purchase. Further developments planned include improving the quality of vocalisations where required and the inclusion of further referencing in the manual to support teachers in quickly locating required information. PIPS is considered most useful for:

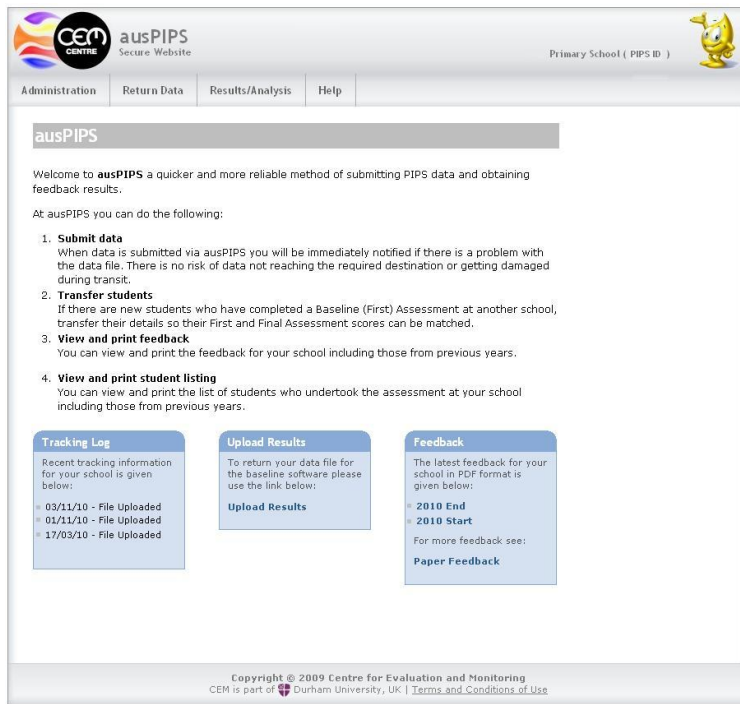
- predictive forecasting that can alert teachers to intervention required.
Each of the questions is designed to provide information about a student's knowledge and understandings in literacy and numeracy.
- providing comparative student literacy and numeracy information at the beginning and end of the year.

The first assessment is administered early in the year and provides the baseline score. The second assessment is administered late in the year and shows how well students have progressed relative to their starting point in the first assessment. The data is submitted to the AusPIPS website and is then compared with a similar cohort at the beginning and at the end of the year.

- collecting diagnostic data to inform teaching and learning needs.
The data collected assists teaching staff and leadership teams to target teaching programs to individual and class needs.

- instant feedback on literacy and numeracy achievement.
Once assessing a student is complete teachers are able to print a raw score report and conduct an initial analysis of the data.
- comparison against state and territory cohorts.
Teachers submit their data to the AusPIPS website and it is mapped against standardised cohorts. Schools are then provided with comparative reporting against other schools in their jurisdiction.

Figure 40: Example of ausPIPS secure website where students' data is uploaded.



Considerations before use

Before using PIPS schools should consider their capacity to meet the following criteria as the trial experience suggest these are important factors underlying the effective use of this tool.

- It is recommended that the classroom teacher is the best person to administer the assessment.
During the trial teachers noted that one of the most beneficial aspects of conducting the one-to-one assessment was the first-hand insight gained into individual student's abilities, strengths and weaknesses that they may not have had the opportunity to observe at the beginning of the year. Therefore, it is suggested teachers administer their students' assessments rather than an assistant teacher or similar. The information gained by the teacher will inform future teaching.
I think that was important that we did it (rather than a teaching assistant) because then we could actually see what the students could and couldn't do as well so we could go straight in and start teaching.
- Time is required to become familiar with the user guide and to enter class and individual student details onto the tool's database.
During the initial stages of becoming acquainted with PIPS teachers require preparation time. Teachers should expect to spend more time to prepare for the one-to-one assessment than they might with other types of assessment tools. Such preparation

includes becoming familiar with the user guide, setting up the CD ROM and entering student details into the PIPS assessment data base.

The best feature of support provided was obviously the relief time. There is no way you could have done it and been teaching at the same time.

I actually input all the student's names into the data base during my senior release time as well for the 4 classes so they were all there ready to go.

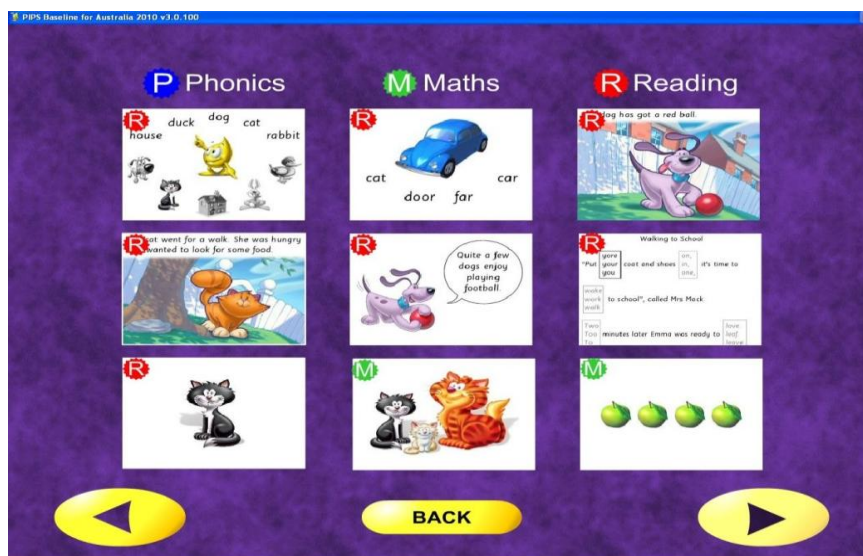
I took it home and had a go so then I knew how to do it because I knew once at school it would be too difficult.

Our relief money didn't cover the time to do the assessment.

- School data is required to be uploaded to enable the provision of standardised reports. It is important that users familiarise themselves with the AusPIPS site prior to the first assessment at the beginning of the year. This will ensure that when it is time to submit the data they are well prepared to use the different features.
- A school fee and an amount per student are charged which includes the baseline and final assessments and covers data analysis.

The 2011 costs are a \$205 school fee, which covers materials and services plus \$6.35 per student which includes the baseline and final assessment and data analysis. (Prices do not include GST).

Figure 41: examples of the phonics, maths and reading questions



Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT check: 5 – 30 minutes

Tool Material Review: initially, familiarisation with comprehensive manuals and reading materials may take up to 3 hours.

Entering student data up to 1 hour.

Time to conduct student assessments: 15 to 45 minutes per student depending upon the student.

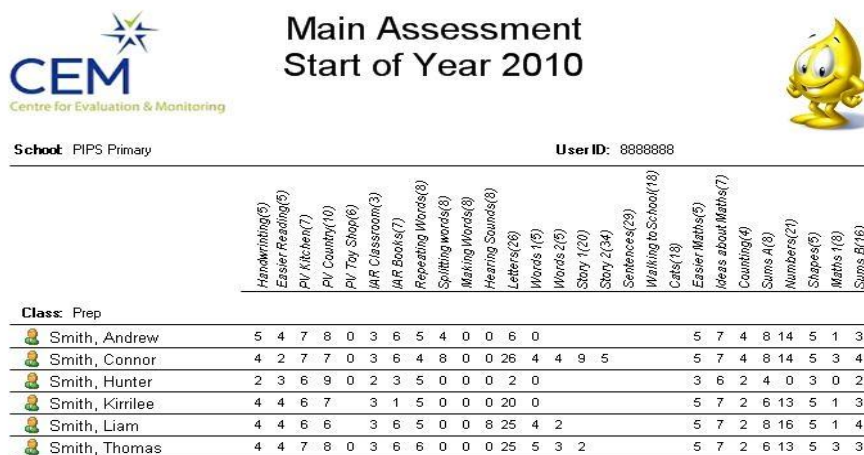
Time to access and interpret reports: 30 to 60 minutes (some reports are available immediately, while others are available after the data analysis period).

Minimum IT requirements

PIPS is delivered via CD ROM. Standardised reports are accessed on the AusPIPS website. Computer software required includes:

windows 98/2000 or XP
 PC compatible 486 or better (Pentium recommended)
 CD ROM Drive, sound Card
 Internet Explorer version 5 or later

Figure 42: example of raw score data report screen



Class: Prep	Handwriting(5)	Easier Reading(6)	PV Kibben(7)	PV Country(10)	PV Toy Shop(6)	WAR Classroom(3)	WAR Books(7)	Repeating Words(8)	Spelling words(8)	Making Words(8)	Hearing Sounds(8)	Letters(26)	Words 1(5)	Words 2(5)	Story 1(20)	Story 2(34)	Sentences(29)	Walking to School(18)	Cats(13)	Easier Maths(5)	Ideas about Maths(7)	Counting(4)	Sums A(3)	Numbers(21)	Shapes(5)	Maths 1(3)	Sums B(16)
Smith, Andrew	5	4	7	8	0	3	6	5	4	0	0	6	0							5	7	4	8	14	5	1	3
Smith, Connor	4	2	7	7	0	3	6	4	8	0	0	26	4	4	9	5				5	7	4	8	14	5	3	4
Smith, Hunter	2	3	6	9	0	2	3	5	0	0	0	2	0							3	6	2	4	0	3	0	2
Smith, Kirrilee	4	4	6	7		3	1	5	0	0	0	20	0							5	7	2	6	13	5	1	3
Smith, Liam	4	4	6	6		3	6	5	0	0	8	25	4	2						5	7	2	8	16	5	1	4
Smith, Thomas	4	4	7	8	0	3	6	6	0	0	0	25	5	3	2					5	7	2	6	13	5	3	3

School Demographics

PIPS was trialed in 3 schools in 1 jurisdiction. The following information was provided by the 3 Government schools that completed the trial. Two trial schools are in Provincial locations, with 1 school located in a Very Remote region. All 3 schools have ICSEA values between 600 and 900 (refer to Footnote 4, p46) below the Australian average. The school population descriptions were quoted as *diverse mix of ESL, Indigenous and Caucasian; low socio-economic cohort* and *100% Indigenous*.

The schools' common motivation for trial participation was to use: *A comprehensive assessment of literacy and numeracy levels across early childhood and (a tool) to use to identify areas of need when programming for classes/students.*

All 3 schools reported adequate school IT infrastructure to conduct the trial successfully. Two schools reported their IT support within the school to be *fair* and *good*. One school stated they were short staffed.

Teacher demographics

Ten teachers participated in and formally completed the trial. All of the 10 teachers provided written feedback. Four of the teachers provided further feedback via interview after completion of the trial. The following information is based on the responses from the 10 teachers.

The trial teachers' years of teaching experience ranged from 2 to 28 years. Teaching roles within the school included 4 primary school teachers, 4 early childhood and 2 teachers with a leadership role as early childhood mentor.

It was reported that all 10 teachers usually use a computer for email, internet and word processing. A range of computer expertise was reported amongst the teachers which varied from *minimal* to *excellent* with the majority of teachers reporting that their IT skills as adequate. Three use the computer to construct spreadsheets, with 4 teachers using a computer for PowerPoint and games.

Teachers were asked to nominate 2 ways they currently assess. They reported a range of class- based assessment e.g. observation, discussion, anecdotal notes, First Steps.

The main purpose teachers cited for using assessment data is to inform teaching programs for individuals and the class e.g. to find out *'where the students are at – useful planning and starting point*.

Teachers reported the most useful types of assessment were formative e.g. *Using daily tasks reflects where they are at and how well they are implementing and retaining knowledge*. Moderation, samples from curriculum and First Steps were other useful types of assessments as *These allow me to know that I am assessing fairly and consistently again curriculum outcomes*.

Teachers reported that student self assessment was either not currently used or used minimally and verbally communicated.

The most common motivation for trial participation was to use assessment data that provides an evidence base to inform teaching and learning programs and enhance understandings of literacy and numeracy levels amongst students.

Student demographics

110 students participated in the trial with 46 providing feedback on the trial.

The feedback provided included 24 Transition students, 12 in Year 1, 1 in Year 4, 5 in Year 5 and 4 in Year 6. The gender balance of students was 31% boys and 67% girls (one student was not identified).

33 students (30%) are ESL learners (English as a Second Language) and 55 (50%) were identified as Indigenous. 47 students (43% of students) speak fluent English.

The ability levels of early years' students ranged from low to average while the older students were reported as well below their year level in their achievement standards.

Students were asked to rate how often they used the computer, on a scale between not very often (0), once a week (5) and most days (10). Responses ranged between 0 and 9.5. 57% of students gave a rating of 5 and over indicating they use a computer at least once a week.

100% report using a computer at school while 59% report using a computer at home. 28% report using a computer at family or friends and 24% at the library.

The majority of students in the trial have had the experience of playing games with 28% playing games on the computer very often and 61% playing computer games sometimes. 50% of students reported listening to music or watching DVDs on a computer sometimes with 15% listening to music and watching DVDs very often.

Tool provider support

Teachers were provided with the PIPS 2010 manual and CD ROM and access to the AusPIPS website to upload student data. Information was also available at <http://www.education.uwa.edu.au/pips>. Standardised reporting was generated on receipt of school data. Helpdesk support was available during the trial via email and phone contact. Trial activity reports all 3 schools participated in the trial.

Teacher feedback

Summary of key points

- High level of student engagement
- One-to-one administration considered valuable by teachers
- Easy to use
- Clear text with attractive images
- Data informs planning and programming
- Some vocalisations needed to be clearer

Teachers rated student engagement on a scale between low engagement (0) and high engagement (10). The ratings of 5 to 9 reflect moderate to high student engagement.

The kids loved it.

Learners found it easy to use, PIPS assessment matched what the students had been learning.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). While 2 teachers gave a rating of 3 and 5 all other teachers gave a rating between 8 and 10 reflecting the time required was more than expected. The time required to administer assessments ranged between 18 and 27 minutes.

The support students required was rated between not manageable (0) and easily manageable (10). The ratings of 5 – 8 indicate the support students required was manageable.

IT support required during the trial was rated between low level support (0) and high level support (10). The ratings of 0 - 5 indicate a low level of student support is required whilst they engage in the tests.

Using the tool

IT support within the school during the trial was rated between low level support (0) and high level support (10). The ratings ranged between 3 and 9. However, the majority of teachers required a low to moderate level of support.

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). Ratings ranged between 2 and 8 indicating this aspect was viewed differently by participants.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). All ratings were between 5 and 8 suggesting the support within the tool is more than adequate.

Clarity of text and images was rated between not clear (0) and very clear (10). While 3 teachers gave ratings between 2 and 5, all others gave a rating between 8 and 10.

I thought the clarity of text and images was pretty good.

I thought they were excellent.

The user friendliness was rated between not user friendly (0) and very user friendly (10). The ratings of 5-10 indicate the tool is user friendly.

I think we were nervous about using it at first because it's the first time we'd done any computer testing. But once we'd started and found it quite easy we were zipping through them. It showed me things I just presumed they would know. I didn't think I had to teach that. I have to now. That was really good.

I think we picked up a lot just observing the student being tested. I probably gained more from doing the test than seeing the actual results.

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this between 5 and 10 indicating the assessment was age appropriate. *Learners found it easy to use.*

Curriculum relevance was rated between not appropriate (0) and very appropriate (10). Again teachers rated this between 3 and 10. Five of the 9 teachers rated this 8 and above indicating the tests administered were curriculum appropriate for their students.

Matched what the students had been learning.

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 5-9 with all 6 schools rating this as appropriate or very appropriate indicate that PIPS is appropriate for use with a range of students.

Reporting

The teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). Responses ranged between 0 – 9. The majority of teachers gave a rating of 5 or above indicating the time to access and interpret reports was more than expected.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings of 0 – 8 reflected a range of responses.

Teachers rated the capacity to track or monitor students over time from not useful (0) to very useful (10). Teachers rated this 4.5 – 9 indicating it would be a useful tool tracking or monitoring progress. A teacher stated: *Another assessment tool to use to give a more complete picture along with others to gain evidence.*

Figure 43: PIPS example of a standardised report

name		maths scores			reading scores			total scores				value added		attitude
		start	end		start	end		start		end		maths	reading	
		raw	raw	std.	raw	raw	std.	raw	std.	raw	std.			
Adam	Apple	35	40	40	29	78	41	78	47	135	41	-	-	**😊
Bethany	Banana	32	43	44	31	101	47	72	45	154	45	average	average	**😊
Chloe	Cherry	30	46	48	25	117	50	66	43	178	50	average	+	**😊
Danny	Date	38	45	46	52	119	51	101	55	181	50	-	average	**😊
Eva	Endive	37	58	61	39	113	49	88	51	188	51	++	average	**😊
Fred	Fig	34	47	49	36	126	52	87	50	190	52	average	average	**😊
Georgie	Grape	28	47	49	38	143	55	77	47	204	54	average	+	**😊
Harry	Honeydew	37	51	54	56	140	55	107	58	208	55	average	average	**😊
Ingrid	Ice	41	59	62	36	137	54	83	49	210	55	++	+	**😊
Jacob	Jam	32	55	58	52	142	55	95	53	214	56	+	average	**😊

The most beneficial aspect of the trial for students identified by teachers was the testing being conducted on computer.

The teachers reported the most beneficial aspect of the trial for them was being provided with the opportunity to sit one-to-one with each student and to gain an understanding of where they are at early in the year for planning and to get to know students.

Teachers noted beneficial aspects of reports.

I like the reports because the kids came out more or less where I thought they would but some surprised you.

It gave me things where I thought "oh I thought they would just know that." For example, the question: "Where is the writing and where is the picture?" Some of the kids didn't know what the writing part was so I just took it for granted. It definitely helped me.

Two of the 3 schools are keen to use the tool again. One Principal said that she wanted an efficient method of collecting and analysing student data for programming and planning needs with the potential for developing a data literate culture within the school. One Senior Teacher stated: *I was very impressed with the assessment data that came back. It gave us a lot of information.*

Student feedback

Summary of key points

- Enjoyed computer delivery
- Liked the colourful images
- Some students had difficulty understanding vocalisations

During the PIPS assessments students view text and images on the screen and give their answers to the teacher who records these responses on to the computer. On the whole, students were positive about their experience with using PIPS assessment in this way.

Students were asked what they liked about using PIPS. The most common responses related to computer delivery with many students expressing how they enjoyed using the computer. Various students liked the colours, pictures, choosing and pointing to their answers on the screen.

working with the teacher

the lady on the computer talking to me.

I liked PIPS because it was fun.

It was good 'cause' it had little kids stuff.

Students were asked what they didn't like about the tool. Various students stated *nothing*, while some students were challenged by the *hard words*, *sounding out* and *listening to sounds*.

I didn't like the story thing when I had to say the words.

I had to answer hard questions.

I didn't like how you had to do the sound at the end. That was a bit hard.

The majority of students identified something about what they knew or could do. Answers included: *I can count and do plusses and I could find hiding places, I can read, I can do my sounds; I knew how to listen and answer some of the questions.*

Links to further information

Performance Indicators in Primary Schools Home page

<http://www.education.uwa.edu.au/pips/home>

About PIPS Reports

<http://www.education.uwa.edu.au/pips/current/feedback>

Recent changes to PIPS

http://www.education.uwa.edu.au/pips/current/2010_pips_report

Links to sample questions

<http://www.education.uwa.edu.au/pips/future/questions>

Contact Details

PIPS Project Coordinator

<http://www.education.uwa.edu.au/pips>

SPECIFIC MATHEMATICS ASSESSMENTS THAT REVEAL THINKING (SMART)

Tool provider

University of Melbourne

Focus

Mathematics: Number, Measurement, Space, Algebra, Chance and Data

Diagnostic Power

SMART provides fine grain diagnostic information about sub-skills in Numeracy with Diagnostic Power estimate level 4.

Target student cohort

Middle Years – Years 7, 8 and 9. (Year 6 is in development.)

Brief description

SMART tests are designed to reveal the thinking behind student responses and provide teachers with informative diagnosis of their student's conceptual understanding in mathematics. The diagnosis of responses is research based and provides rich formative assessment information. SMART tests support teachers with or without expertise in mathematical research.

Guidance on time to conduct an assessment is 10 to 20 minutes.

Tool Strengths

Within the context of the trial cohort the following strengths of SMART were identified:

- provides useful research based hierarchy of mathematical thinking development
 - The most useful part of the reporting was the explanations that went with the categorisations.*
 - Understanding the thinking of each student was very useful.*
 - Results highlighted the basic concepts that had not been taken in by the class as a whole.*
 - My teaching program has been enhanced.*
- identifies strategies to support learner needs
 - Enabled grouping of students according to their strengths and weaknesses.*
 - It impacted on the way I taught the topics.*
 - It's very valuable in organising class activities.*
- easy to administer
 - The run-through of the PowerPoint was useful and user-friendly.*
 - The tool is reasonably self-explanatory to use, not a lot of support is required.*
 - It was very easy to follow directions for both myself and the students.*
- quick to administer
 - Teachers reported the time to administer a quiz was between 2 and 20 minutes. 10 of the 11 teachers reported the time to conduct the assessment was either as expected (5) or less than expected (5). 10% of students surveyed reported the aspect they liked the most about SMART was how quick the testing was.
 - This tool is time saving.*
 - The tool is easy to setup and doesn't take students long to complete.*
 - Pre and post tests could be administered quickly and easily.*

Future use and application potential

SMART is available for research purposes until the end of 2010. Further availability is funding dependent. SMART's future use requires a review of the site design and layout to improve the user friendliness of the tool. Further test development would be undertaken, current estimates are the quiz range available currently is 75% complete for Year 7, 40% complete for Year 8 and 35% complete for Year 9. There are also Year 6 Number quizzes with the range available approximately 40% complete.

The importance of supporting teachers in formative use of assessment data has been key to the effective use of the tool during the piloting stage. Future use of the tool would require professional development to ensure teachers are equipped to use data to directly inform their teaching. Although costing models are not yet established one model would be an annual charge per student for use of the tool plus initial training costs.

Within this context SMART is considered most useful for:

- its potential to support formative assessment use in teaching and learning programs
Teachers are provided with information they can share with students about their learning. One teacher reported *Students enjoyed having their information from the test. It wasn't hidden away, they can see what they need to learn and understand properly so they can do something about it. We can see a change in how they think about what they know and understand.*
- pre-topic testing to identify student understandings and misconceptions to guide teaching and learning requirements
Teachers are able to identify general gaps or misconceptions across their class and at the individual level. This information supports teaching programs by enabling the teacher to focus on the next learning requirements of individuals and the group rather than teaching concepts already mastered or tackling ones for which students are not yet ready.
- post-topic testing to gauge the effectiveness of the teaching program
Post-topic tests are a useful way to ascertain the effectiveness of the teaching program. One teacher reported the pre-test identified a common misconception in algebra regarding the value of letters. The teaching program then focussed on addressing this misconception. A post-test could be used later in the topic to confirm the initial misconception had been addressed.
- building teachers professional knowledge of evidence based common misconceptions
The results include development stages or categorisations for each focus area for example one stage in decimals is *longer is larger* where students believe the more digits a decimal has the larger it is. An understanding of the developmental stages supports teacher understanding about maths learners.
- supporting teachers with strategies to target teaching needs
Resources are provided to support teaching and learning programs based on student categorisations. Links to further resources are also provided.

Considerations before use

Before using SMART schools should consider their capacity to meet the following criteria as the trial experience suggests these are important factors underlying the effective use of the tool.

- Tool access – availability is dependent on further funding

This is a tool in development and its research grants funding is due to conclude at the end of 2010. Ongoing access to the tool will be dependent on new funding sources.

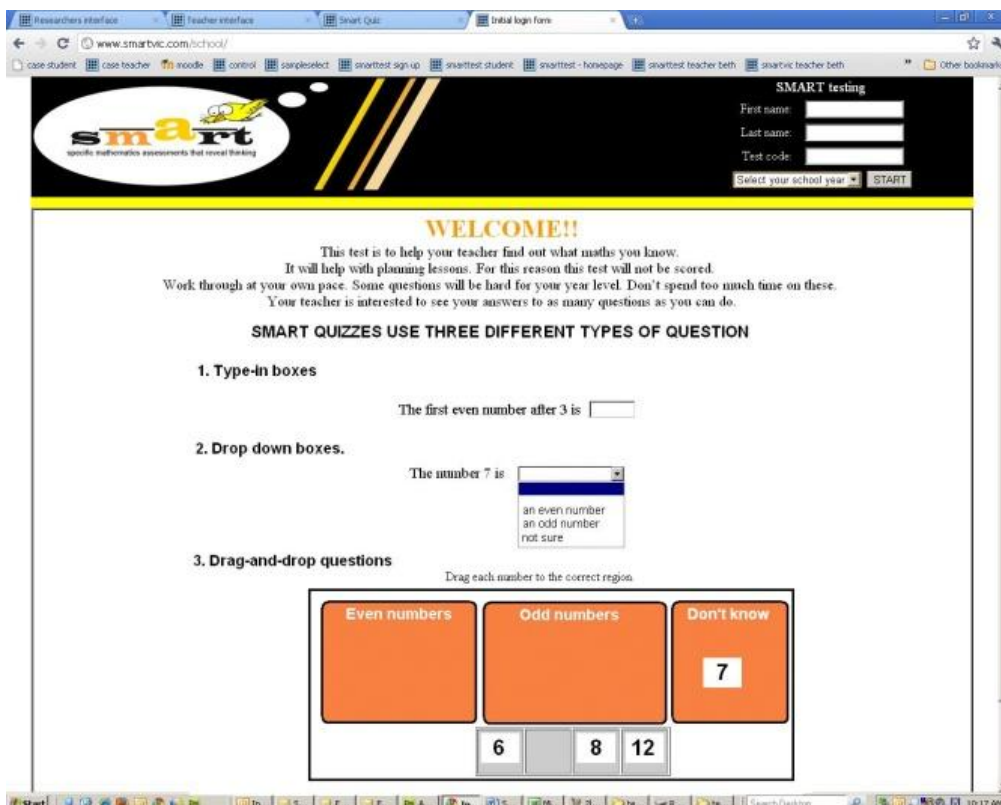
- Focus area quiz availability and status of research base
Some quizzes are still being finalised, currently the development stage is indicated through a star system. One or two stars indicate the quiz is in development, a three star quiz is fully developed. Planned future developments include further building the research base through available literature and data from the tests and the provision of further teaching suggestions to support the needs identified.
- Training requirements to support effective use of the tool
A training program, the equivalent of 3 hours is recommended to orientate teachers to the use of formative assessment and familiarise themselves with the tests available and the diagnosis provided.

Session 1: What is formative assessment, how does it support mathematics teaching?

Session 2: Understanding student learning in mathematics, understanding how development occurs, the nature of student errors, diagnosis and test validity.

Session 3: Building SMART tests into your school program.

Figure 44: The test item types students will encounter in the quizzes.



Time requirements guidance

The following guidance on time requirements is based on trial feedback and subsequent discussions with the tool provider.

IT checks: access to site, 5 minutes. Webinar access setup (if required) 10-20 minutes
Tool materials review: 30 minutes
Recommended training: equivalent of three hours training
Preparation for student assessments: allow one hour initially to familiarise with quizzes
Conduct student assessments: 10 to 20 minutes
Time to access and interpret reports: 5 to 30 minutes

Minimum IT requirements

Delivery platform is internet, current browsers supported.

Note: aspect ratio may impact on the accuracy of diagrams, for example in the geometry quizzes. This needs to be checked before administering any quizzes.

School demographics

SMART was trialled in 3 jurisdictions. The following information was provided by the 7 Government schools that completed the trial.

Two schools are in Metropolitan locations and 5 in Provincial locations. Six schools have ICSEA values between 900 and 1100 (refer to Footnote 4, p46) while the remaining school has a value below this standard range. The schools cover a variety of locations with their location descriptions being remote (2), remote rural (1), rural city (1) and urban (3). One school noted an annual turnover of about one third of their students with *a high percentage of Indigenous students and Defence families*; another school noted *a full range of abilities and aspirations* and another school noted a small number of *Aboriginal enrolments and refugee students*.

A common motivation for trial participation was the opportunity to use a computer-based tool citing its ease, speed and potential to promote student assessment. The opportunity to understand student thinking in mathematics more, the use of data to understand student progress better and to ensure teaching program relevance were also key motivators for school trial participation.

All 7 schools reported adequate school IT infrastructure and support to conduct the trial effectively.

Teacher demographics

Eleven teachers participated in the trial providing feedback both during the trial and on its completion.

The 11 teachers' teaching experience ranges from 2 years (1 teacher) to having 38 years experience (1 teacher). On average the teachers have 20 years experience.

The teachers' current teaching roles included Maths teaching responsibilities, with Maths being the main focus, either teaching or coordination roles, for all but one trial teacher. One teacher also holds an executive role in their school.

The teachers use a range of computer applications citing use of at least 4 of the 6 applications listed with all using the Internet, email and word processing applications and 10 using spreadsheets. Four teachers noted using other software including the use of a Smart board in class.

Three teachers rated their level of computer expertise as adequate, 6 rated as competent and 2 as very competent, one of these teachers is a certified programmer. Six teachers described their IT expertise as minimal or limited, 3 teachers rated this as competent and 2 as very competent.

Teachers were asked to nominate two ways they currently assess. Teachers reported a range of school based assessment such as: *real life contexts, rubric criteria, direct investigations, observation, assignments, annotated work samples, problem solving and unit tests.*

The main purpose teachers cited for using assessment data is to inform teaching programs and to measure progress e.g. *to design student centred learning activities and to inform what and how I am going to teach a topic.*

The majority of teachers reported the most useful types of assessment were *tests* as they provide an *overview of class understanding and mastery, identify strengths and weaknesses* and *(you) can be sure it's student's work.* Problem solving was reported to be useful due to its potential to engage students and the complexity level potential. Annotated work samples were useful to promote discussion.

Eight teachers reported that student self assessment was either not currently used or used minimally with 2 noting *reflective practice* and the use of self assessment to *compare to the teacher grade.*

The most common motivation for teacher participation in the trial was to gain explicit teaching support.

Get a better understanding of where students are starting from.

Modify my classroom delivery on the basis of the results.

Get some feedback as to how I can help my class with deeper understanding of concepts in Maths.

Figure 45: Example of the student interface

The screenshot shows a web browser window titled "Smart Quiz" with the URL www.smartvic.com/school/quiz.php?firstname=Jack&lastname=Jones&testcode=bp56888&schoolyear=98. The interface includes a header with user information: Student: Jack Jones (with a "Log out" link), School: Uumelb, and Teacher: Mrs Price. The main content area features a diagram of three yellow squares arranged in a 2x2 grid pattern, with the bottom-right position empty. Each square has a side length labeled as 'm'. Below the diagram, the text reads: "3 squares are shown in the diagram. Each has a side length of m. Choose the correct expression for the total area of the 3 squares." The options are: A 36, B 3m, C 6m, D 12m, E 3m², and F m³. At the bottom, there is a text input field labeled "Total area of the 3 squares =" and a "Next" button.

Student demographics

283 students participated in the trial with 137 providing feedback on the trial. Students providing feedback included: 60 Year 7, 33 Year 8, 44 Year 9 students.

The gender balance of trial students is even across boys and girls (52% and 48% respectively) and this balance is also reflected in the students providing feedback. 6% (17) students are identified as ESL learners (English as a Second Language) with 4% (11) students identified as Indigenous. 204 students (72%) speak fluent English.

Nine teachers reported their student abilities ranged from up to 4 years below the year standard to the year level or year above. 88 (66%) of students report using a computer most days and 13 students (10%) reporting they do not use computers very often. 94% of student report using a computer at home, with 47% reporting computer use at family or friends and 30% at the library. Over 50% of students reported using the computer very often to play music and DVDs and also for social networking. Other regular computer use reported was to find information, do word processing, using spreadsheets and for graphics.

Tool provider support

Participants attended two webinars, the first as an introduction to SMART and setting up a quiz while the second focussed on access to and interpreting reports. Teaching strategies were also discussed.

A helpdesk was available 3 days each week of the trial. Trial participants were provided email and phone contact details.

Trial activity indicated the following test completion during the trial:

2 schools completed less than 100 tests

2 schools completed 100-200 quizzes

3 schools completed 200-300 quizzes

Schools were advised they could continue access to SMART during 2010. One school has taken up this offer and by August had completed approximately 300 more quizzes. A teacher from this school commented *I found talking to individual students about their results and where they need to go is very useful. It's nice to have a diagnostic tool rather than just a test.*

Teacher feedback

Summary of key points

- Easy to administer
- Quick to administer
- Provides hierarchy of mathematical thinking development and identifies common misconceptions
- Informs future teaching and the way topics taught
- Identifies strategies to support learner needs and access to support activities online
- Suitable for a diverse range of ability groups

Teachers rated student engagement between low engagement (0) and high engagement (10). The ratings of 5-10, reflect average to above average student engagement was observed.

Teachers rated the time to conduct the assessment on a scale between less than expected (0) and more than expected (10). The ratings of 2-7 indicate the time to assess was generally as expected or less than expected.

The support students required was rated between not manageable (0) and easily manageable (10). Ratings of 3-10 were given however all responses apart from the one rating of 3 indicated the student support required was manageable or easily managed.

IT support required was rated between low level support (0) and high level support (10). The ratings of 0-7 suggest this varied across sites however the support required appears to be more related to the setup required for the web conference or access to computers rather than IT requirement to administer the tests themselves.

The time required to administer assessments averaged between 2 and 20 minutes.

Figure 46: Example of the list of quizzes available to test understandings in Algebra.



Using the tool

Teachers rated the tool provider support between not adequate (0) and comprehensive (10). All ratings were 5 or above suggesting adequate or more than adequate support was provided.

Teachers rated the support provided within the tool itself between not adequate (0), adequate (5) and comprehensive (10). Teachers rated this 3-10 however only one teacher rated this below 5 suggesting on the whole the support with the tool was adequate or more than adequate.

Clarity of text and images was rated between not clear (0) and very clear (10). Ratings of 4-9 indicate text and images were clear.

The user friendliness of SMART was rated between not user friendly (0) and very user friendly (10). The ratings of 4-10, with 3 schools giving the highest rating 10, indicate the tool is user friendly.

Teacher comments relating to using the tool include:

Easy, simple instructions.

Very easy to follow directions for both myself and the students.

Students occasionally requested clarification, but mostly were able to use the tool independently.

Some diagrams were difficult to interpret as the screen was busy with information.

Target group appropriateness

Teachers rated the age appropriateness between not appropriate (0) and very appropriate (10). The teachers rated this 4-10 indicating the tests administered were age appropriate.

Curriculum relevance was rated between not appropriate (0) and very appropriate.

Teachers rated this 5-10, indicating the tests administered were curriculum appropriate.

Teachers rated ability range appropriateness between not appropriate (0) and very appropriate (10). Ratings of 5-8 reflect the tool being quite appropriate for the ability range within their student cohort, noting the diverse range of abilities reported by teachers.

Comments related to target group appropriateness include:

Careful selection is needed to match to students.

Question language was age appropriate.

It was a student group who dislike Maths, by and large with big gaps in knowledge.

The number tests were most appropriate for younger students.

A little challenging for this group.

Reporting

Teachers rated the time to access and interpret reports between less than expected (0) and more than expected (10). This feature was rated 3-10 suggesting the time to access and interpret reports is about the time expected or more.

Report user friendliness was rated between not user friendly (0) and very user friendly (10). Ratings of 2-9 reflect a range of responses to this aspect. One teacher noted *It showed groupings within the class* whereas another teacher commented *I needed to collate the students' data to see class value.*

Teachers estimated the time to review reporting to be 5-30 minutes and went on to say:

It did highlight weaknesses.

Sometimes wanted more detail about specific question.

Enables grouping of students according to their strengths and weaknesses.

For the whole class it was a little bit confusing.

When multiple diagnoses are given it would useful to separate those into separate columns rather than the teacher doing it in a spreadsheet later.

You are able to identify gaps.

The results were validated against 2009 student information and classroom based assessments. Teachers reported the results were on the whole as they expected, aligning with other information they had collected about students. One teacher went on to say *I wondered whether some of the surprises were due to random clicking* and another teacher commented *Some students rushed and made careless errors.*

Teachers rated the capacity to track or monitor over time from not useful (0) to very useful (10), Teachers rated this 4-8, finding it a useful tool to track or monitor. Comments relating to this aspect include:

Pre- and post-tests could be administered quickly and easily.

With more post-tests to go with current tests I think it could be useful.

Results from the diagnostic tests often added supporting evidence to known individual student weaknesses.

This would be helpful in designing activities for future teaching.

Three teachers discussed the results with students.

I explained the results and what they meant for learning.

We had a general discussion on a class level.

I did have some individual discussions regarding misconceptions while teaching.

We talked about place value and the role of zero to hold other digits in the correct columns.

Six teachers reported the most beneficial aspect of the trial for students was the opportunity to work on the computer. Other aspects teachers commented on include: *A different testing activity, The opportunity to work independently, provided general revision, A new way of evaluating their progress and It was non-threatening.*

The teachers reported the most beneficial aspects of the trial from their perspective were: *The ease of use and results being generated for the teacher.*

Gave a snapshot of student existing knowledge.

An insight into what students already knew and were successful with and so gave a lead in how to structure future lessons.

It was good preparation for NAPLAN.

It impacted on the way I taught the topics.

It confirmed problems and sometimes revealed them.

Ten of the 11 trial teachers expressed interest in using SMART again, their reasons included: *Tool is easy to setup and use and doesn't take students long to complete; and, When more tests are available and are more thoroughly prepared.*

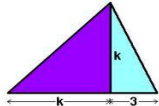
Figure 47: Example of the support provided to teachers, developmental stages and likely misconceptions.

Detailed explanations of developmental stages and common misconceptions

Stage 0 students are below stage 1. These students cannot yet write algebraic expressions of these types.

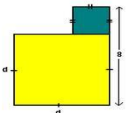
Stage 1 students can write algebraic expressions involving square terms that are of the forms ax^2 and $ax^2 \pm b$ in which the unknowns are used directly. These are produced by finding the areas of shapes made from several squares where some side lengths are given and others are labelled with a pronumeral. For example, they can write $2x^2 - 1$ for the area of 2 squares each of side x with a square of side 1 removed from a corner.

Stage 2 students can also write expressions that combine the expressions of Stage 1. For example they can express the total area below as $0.5k^2 + 1.5k$ (adding the separately calculated square and triangle expressions) or they can write $2x^2 + x$ for the area of 2 squares each of side x and a triangle of height x and base 2.



Stage 3 students can make expressions for areas using lengths that are themselves algebraic expressions. For example they can deduce that the length of the base of the triangle above is $(k + 3)$ and use this in an area expression as $0.5k(k + 3)$.

Stage 4 students can, as well, make expressions that combine the areas in Stage 3. For example the area of the green square shown below is $(3 - d)^2$ so the total area is $d^2 + (3 - d)^2$.



Misconceptions
Code N - Only selecting numerical answers: These students are at an early phase of learning algebra where they do not accept answers involving letters.

Student feedback

Summary of key points

- Easy to use
- Enjoyed or disliked test difficulty level (easy or challenging versus too easy or too hard)
- Enjoyed working on the computer
- Enjoyed short length of test
- Prefer a higher quality of test display

Students rated the ease of tool use on a scale between very hard to use (0), okay to use (5) and very easy to use (10). 92% of students rated the ease of use 5 or higher and 18% of these students giving the highest rating of 10.

Students were asked what they like about using SMART. The most common responses by response rate were: the ease of use; the test difficulty level (some students liking the easy questions and others enjoying the challenging questions); using the computer and the short length of the tests. Other responses included: *the set out of the questions, the alien* (a graphic displayed at the end of each test); enjoying the change from usual activities.

When students were asked what they didn't like 28% said *it's okay, there's nothing* (they) *didn't like* or students reported: *I don't know what I didn't like*. The next highest response category was related to test difficulty, *too easy* or *too hard*. Other responses include: *not getting results; the layout; lack of colour* and *the types of questions*.

Note: The tool providers confirm that layout features such as font size, colour and spacing are factors that have not been fully addressed in the pre-release version of the tool currently available. Consideration has been given to providing students with results however the current information provided is not suitable for a student audience and is best mediated through the teacher.

31% of students identified a specific skill that they either learnt something about or identified as an area requiring further work with responses such as: *Longer isn't larger; I confused \$ and cents; I can simplify fractions* and *I am a ratio legend*. A further 10% gave more generic responses including: *I am smarter than I thought, I can work very quickly* and *I'm not good at it*.

58% of students could not articulate what they had learnt about what they know and can do.

Figure 48: Example of developmental stages and teaching suggestions.

MY QUIZ ACCESS DETAILS

Student test code: 095688	Available for students: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Test attempts: 1 see results here see results in a new window	
Quiz attempted on:	Name:	Diagnosis:	Questions attempted:
1 June 3, 2010, 9:16 am link	beth p	Stage 2	78.9%
export as csv (excel) format			

Developmental Stages and Teaching Suggestions

Writing expressions using area rules

- [Mathematical focus and overview of developmental stages](#)
- [Detailed explanations of stages and common misconceptions](#)
- [Teaching suggestions](#)
- [References](#)

Mathematical focus and overview of developmental stages

This quiz tests the ability to formulate algebraic expressions involving square terms or square and linear terms. Each item is given in the context of finding the area of squares and triangles separately and in combination. Some lengths are labelled by pronumerals and some by numbers. The area context is a readily accessible one to practise building algebraic expressions from component parts.

Stage 1	Students can make algebraic expressions involving square terms, of the forms ax^2 and $ax^2 + b$.
Stage 2	and make expressions for areas that combine the expressions in Stage 1.
Stage 3	and make expressions for areas using lengths that are themselves algebraic expressions.
Stage 4	and make expressions for areas that combine the expressions in Stage 3.

Misconceptions

N	These students select only numerical answers.
P	These students confuse area with perimeter.
VL	These students combine visible labels, rather than calculating areas. Students who correctly calculate

Links to Further Information

<http://www.smartvic.com/smart/index.htm>

Sample items and diagnosis

<http://www.smartvic.com/smart/samples/sample.htm>

Research papers available on site include:

SMART Assessment for Learning, Stacey et al SMART Assessment for Learning ISDDE conference 2009

Getting SMART about Assessment for Learning, Submitted to 2009 Annual Conference of the Mathematical Association of Victoria.

Investigating students' numerical misconceptions in algebra.

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SECTION 5

Survey templates

Project Evaluation 1: Form A – Trial School Information

Purpose: The purpose of the collection of this information is to gain an understanding of the school context.

Who completes: School contact

When due: Please return by **Friday 19/2/2010**

Trial school

School name _____ State/Terr _____

School type Government Catholic Independent

What is your school student population? _____ (If larger than 100, round to the nearest 50)

How would you best describe your school location? E. g. capital city, urban, remote, very remote

How would you best describe your schools' student population?

Tool you will trial _____

What are two things your school would like to achieve through participation in this trial?

1. _____

2. _____

How would you best describe your schools' IT infrastructure?

How would you best describe your schools' IT support?

Please add any further comments you would like about your schools' trial participation.

Project Evaluation 1: Form B – Trial Teacher Information

Purpose: The purpose of the collection of this information is gain an understanding of the trial by collecting general information about the teachers participating in the trial.

Who completes: Trial teacher

When due: Please return by **Friday 19/2/2010**

Trial teacher

Your name _____

School _____ State/Terr _____

Tool you will trial _____

What are two things you would like to achieve through your participation in this trial?

3. _____

4. _____

Teacher experience

How many years have you been teaching? _____ years

How would you best describe your current teaching role?

What do you usually use your computer for? Choose one or more answers.

- email
- internet
- word processing
- spreadsheets
- power point
- games

Other (please list) _____

How would you best describe your level of computer expertise (using the computer software)?

How would you best describe your level of IT expertise (understanding of the technology)?

Please add any further comments you would like about your teaching experience or experience using technology.

Current use of assessment

Briefly describe two ways you currently assess students.

1. _____
2. _____

Briefly describe two ways you currently use assessment information.

1. _____

2. _____

What type of assessments do you find the most useful?

Please explain why

How best would you describe your students' current use of self assessment?

Do your students know they are part of the National trial? Yes No

If yes, how would you describe the attitude of your students towards the trial. Mark on the scale or give a score between 0 (very excited) and 10 (apprehensive).

0 _____ 5 _____ 10
Very excited Apprehensive

Please add any further comments you would like about your use of assessment.

Students in the trial

How many students in your class are participating in the trial? _____

Please indicate numbers per year level. Y3 ___ Y4 ___ Y5 ___ Y6 ___ Y7 ___ Y8 ___ Y9 ___

What is their age range? Between ___ years old and ___ years old.

What is the gender balance? ___ Girls ___ Boys

How many are ESL learners? ___ ESL ___ fluent English

How many Indigenous students are in your class? _____

Please provide an estimate of the range of ability levels in your class (this may be by year levels, bands, jurisdiction standards or other any measure recognised in your jurisdiction or sector).

Ability levels range from _____ to _____

What would the average ability level in your class be? _____

Trial readiness

How would you describe your readiness to commence assessments with your students?

Do you have any recommendations on how to improve this process in the future? Yes No

Please briefly describe any recommendations _____

Have you gained professionally or personally from the training preparation activities?

Yes No Please briefly describe any benefit _____

How would you describe the attitude of your students towards the trial. Mark on the scale or give a score between 0 (very excited) and 10 (apprehensive).

0 _____ 5 _____ 10
Very excited Apprehensive

Please add any further comments you would like about the trial preparation activities.

What happens next – when is the next evaluation?

You will be sent a survey to give students after they complete an assessment. We will ask you further questions later this term after you have trialled your tool and reviewed the reporting.

Project Evaluation 4: Trial reflection

Purpose: The purpose of this evaluation is to reflect on the trial as a whole and provide feedback that will inform any future use of your trial tool in Australian schools.

Who completes: Trial teacher Please return by **Friday 14/5/2010**

Your name _____ School _____ Tool _____

Context of tool use during the trial

Had you or your students used this assessment tool before the trial? Yes No
If yes, briefly outline previous use or level of experience with the tool before the trial.

Were there any unexpected events during the trial period that may have impacted on your capacity to give the tool a good trial? Yes No
If yes, briefly describe the event and its potential impact.

Do you think your school IT infrastructure and IT support was adequate to enable the tool to be used effectively? Yes No Please explain your answer.

Teacher time and in-school support

How would you describe the time required to conduct the student assessments?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
Less than expected More than expected

The approximate time required for a student to complete an assessment was between _____ and _____ minutes.

How would you describe the in-school support you were given to conduct the trial?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
Less than usual Standard More than usual

How would you describe the support you needed to provide students during the trial?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
Not manageable Manageable Easily managed

What level of IT support did you require during the trial?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
Low level support Standard High level support

Any other comments about teacher time or support?

Using the tool

How would you describe the support provided by the Tool Provider during the trial?
(This might be direct support e.g. Helpdesk, or support provided through documentation e.g. User guide)

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
Not adequate Adequate Comprehensive

How would you describe the user support provided within the tool itself?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Not adequate Adequate Comprehensive

What was the best feature of the support provided (either external to or within the tool)?

How would you rate the clarity of text and images displayed?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Not clear Very clear

How would you rate the user friendliness of your tool?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Not user friendly Very user friendly

Please comment on the reasons for your rating above.

Target group appropriateness

How age appropriate was this tool for your particular student group?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Not appropriate Very appropriate

How curriculum relevant was the assessment tool for your particular student group?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Not appropriate Very appropriate

Any comments about the age or curriculum appropriateness for your student group?

How suitable was the tool for the range of abilities in your student group?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Not appropriate Very appropriate

Please comment on the elements that contribute to your rating above.

How would you best describe student engagement while using the tool?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Low engagement High engagement

Any further comments about target group appropriateness?

Report information and results

How would you describe the time required to access and interpret reporting?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Less than expected More than expected

The time taken to review the reporting was approximately _____ minutes per student/per class.

Please rate the user friendliness of the reporting.

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Not user friendly Very user friendly

Please comment on how well the reporting highlighted strengths, weaknesses and learning gaps?

For individuals: _____

For groups: _____

For the class: _____

On the whole how would you describe the student results?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Very surprising or unexpected No surprises or as expected

What information did you draw on to make this judgement? Choose one or more responses.

- 2009 student information
- standardised test results (e.g. NAPLAN, commercial test)
- classroom teacher assessment
- other Please list _____

Any other comments about your student results?

Using the reporting information

How useful do you think the reporting would be in assisting you to monitor or track student progress over time?

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10
 Not useful Useful Very useful

Please explain your rating above

Which aspects of the reporting did you find most useful?

Informing future use

What do you think students found the most beneficial aspect of being in this trial?

What did **you** find the most beneficial aspect of being in this trial?

Would you be interested in using your tool again in the future? Yes No

Please explain your answer.

Do you have any recommendations to inform future use of the tool? Yes No

Please list any recommendations _____

At the start of the trial you identified goals you wished to achieve through your participation in the trial. In what way have you achieved your goals?

Would you be prepared to be interviewed by one of the project team? Yes
(Please note this would be a 5-10 minute phone interview at a mutually convenient time.)

Please list the name and role of any specialist or assistant at your school who assisted you in, or observed, the trial. Please add more lines if required.

Name _____ Role _____

Name _____ Role _____

Would the teacher(s) or assistant(s) listed above be prepared to be interviewed? Yes No

Thank you for your valuable feedback

Thank you very much for being one of our trial teachers and for providing valuable feedback to the project. Your views form a very important part of the evaluation. If you are interested in what other trial participants had to say please visit the Project Portal.

Student Survey

Year level ____ Girl/Boy? ____ School _____

1. How often do you use a computer? Mark on the scale below.

0 _____ 10
 Not very often _____ once a week _____ Most days

2. Tick (✓) where you use a computer.

School ____ Home ____ At a family or friend's home _____ At the library _____

	How often do you use your computer to	Very often	Sometimes	Not very often	Never
3	find information (e.g on the internet)				
4	do word processing (e.g. write stories)				
5	Use spreadsheets (e.g. graph results)				
6	listen to music or watch DVDs				
7	play games				
8	draw, paint or use graphics programs				
9	to Twitter, Chat, use Facebook or email				

10. Which assessment tool did you use? _____ (your teacher will tell you this)

11. How easy was it to use your assessment tool?

0 _____ 10
 Very hard to use _____ Okay to use _____ Very easy to use

12. What did you like about your assessment tool?

1. _____

2. _____

13. What didn't you like about your assessment tool?

14. Did you get a report on how well you went in your assessment? Yes No

15. What did you learn about what you know and what you can do?

1. _____
2. _____

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- Kaleen High School
- Kingsford Smith Primary School
- Lanyon High School
- Latham Primary School
- Macgregor Primary School
- Mount Rogers Primary School
- Richardson Primary School
- Stromlo High School
- Taylor Primary School

Theodore Primary School
 Wanniasa Senior Campus
 Wanniasa Junior Campus

NSW

Bellingen Public School
 Carlingford West Public School
 Coffs Harbour High School
 Coreen School
 Hanwood Public School
 Koorringal Public School
 Lockhart Central School
 Mount Austin Public School
 Niland School
 Plumpton House School
 Repton Public School
 Tumbarumba Public School

NT

Alyangula Area School
 Araluen Christian College
 Braitling Primary School
 Clyde Fenton Primary School
 Durack Primary School
 Gapuwiyak School
 Gray Primary School
 Humpty Doo Primary School
 Katherine South Primary School
 Malak Primary School
 Nhulunbuy Primary School
 Palmerston High School
 Sacred Heart Primary School

SA

All Saints Catholic Primary School, Seaford
 Angaston Primary School
 Annesley College
 Antonio Catholic School
 Blackfriars Priory School
 Bordertown High School
 Caritas College
 Faith Lutheran Secondary School
 Grant High School
 Immanuel Primary School
 Islamic College
 Kersbrook Primary School
 Mount Gambier High School

Nuriootpa Primary School
Pembroke School
Penola High School
Pilgrim School
Redeemer Lutheran School
Samaritan College
Southern Vales Christian College, Morphett Vale Campus
St Columba College
St John Bosco School
Thorndon Park Primary School
Wasleys Primary School
Woodcroft College

VIC Clayton North Primary School
Heathmont East Primary School
Wheelers Hill Secondary College
Yawarra Primary School