Technical Report # 41

A National Teacher-Managed, Curriculum-Based Assessment System: Assessment Tools for Teaching & Learning (asTTle)

Abstract: This report explains the national assessment system underlying the creation and functionality of the asTTle system. asTTle is an electronic tool designed to give teachers a curriculum-based assessment system (English, Mathematics, Pangarau, & Te Reo Maori) that they manage to obtain nationally referenced performance indicators. It argues for a curriculum-based, teacher-managed approach to national assessment as the best means of improving achievement, reporting to teachers, schools, and systems, and generating confidence in schooling.

Submitted by the Assessment Tools for Teaching and Learning team,

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National Teacher-Managed, Curriculum-Based Assessment System: Assessment Tools for Teaching & Learning (asTTle)

asTTle is funded by the Ministry of Education to Auckland Uniservices Ltd. at the University of Auckland to research and develop an assessment application for Reading, Writing, Mathematics, Pānui, Pāngarau, and Tuhituhi for Years 5-7 (Levels 2-4) for New Zealand schools. We acknowledge this funding, and thank the Ministry of Education for their continued assistance in the development of this project.

This report explains the national assessment system underlying the creation and functionality of the asTTle system. asTTle is an electronic tool designed to give teachers a curriculum-based assessment system (English, Mathematics, Pangarau, & Te Reo Maori) that they manage to obtain nationally referenced performance indicators. It argues for a curriculum-based, teacher-managed approach to national assessment as the best means of improving achievement, reporting to teachers, schools, and systems, and generating confidence in schooling.

This paper was prepared by Dr Gavin Brown and presented at the international Learning Conference, July 15—18, 2003, in London, UK. It calls on his PhD thesis work and an earlier Poster presentation at the Hawaii International Conference on Education prepared by three key asTTle team (John Hattie, Gavin Brown, & Peter Keegan).

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This paper seeks to outline a new effective system for national assessment based on an analysis of the positive and negative consequences of mandated, high-stakes systems and on an understanding of teachers' conceptions of assessment. Based on such analyses, a new system of national assessment that emphasizes teacher-control of high-quality, curriculum-based assessments is proposed as a system that will mitigate the negative consequences, enhance the positive consequences, and achieve acceptance from teachers. The paper concludes with a demonstration of a new assessment tool that it is argued is a significant step towards fulfilling the new system. I begin the analysis with a short examination the New Zealand primary school context, followed by a review of research into teachers' conceptions of assessment and a description of eight principles for a new system of national assessment, which is based on a poster presented by Professor John Hattie at the Hawaii International Conference in Education in 2003 (Hattie, Brown, & Keegan, 2003). After briefly describing the main characteristics of the Assessment Tool for Teaching and Learning (asTTle) (Hattie, Brown, & Keegan, 2002), the asTTle Version 2 software will be demonstrated to show how it can be used as part of a national teacher-managed, curriculum-based assessment system.

New Zealand has approximately 2,200 primary and intermediate schools that by legislation are self-governing and self-managing. The teachers are of a relatively mature age and on the whole are highly experienced. There is no compulsory state mandated assessment regime and so all assessment practices are voluntary and low stakes. To balance this relatively free hand, the government has mandated accountability inspections conducted by the Educational Review Office (See Crooks, 2002 for further details of the New Zealand school system and the Ministry of Education guide to schooling in New

Zealand [http://www.minedu.govt.nz/web/downloadable/dl6169_v1/Schooling Guide.pdf]). The New Zealand Ministry of Education has a policy of assessment for learning wherein assessment is used primarily to obtain information to assist instruction.

It has been established that teachers' knowledge and practice are linked to the beliefs they have about the nature and purpose of various educational acts, including assessment (Pajares, 1992; Thompson, 1992). Further, it has been shown that teachers' beliefs are socially shared (van den Berg, 2002) and may change according to context. Teachers' conceptions of understanding do affect their comprehension of and response to assessment policy, innovations, and practices. In order to effectively introduce better quality pre-service training, in-service professional development, policy, interventions, and innovations we need to understand what teachers believe about assessment.

Brown (2002) has shown that teachers' conceptions cannot be adequately described as being predominantly of one type, rather he has demonstrated that teachers' conceptions of assessment contain four major facets. The four conceptions of assessment relate to (a) improvement of teaching and learning, (b) school and teacher accountability, (c) accountability or certification of learners, and (d) rejection or treatment as irrelevant. New Zealand primary school teachers' conceptions of assessment can be classified as primarily agreement with both the improvement and the school accountability purposes and rejection of the student accountability purpose (Brown, in review).

Resnick and Resnick (1989) proposed three assumptions about the effect of 'national' assessment upon educational systems:

- You get what you assess
- You do not get what you do not assess

- You should build assessments towards how you want educators to teach

To which we add two more assumptions:

- Teachers AND students need to be active participants in the process of interpretation and construction of meaning
- 'National' Assessment should aim to enhance future teaching and learning, not merely report on past teaching and learning.

We argue that there are eight principles for building an excellent system of 'national' assessment that can help maximise the advantages and minimises the disadvantages as outline above. The principles assert that 'national' assessment should (a) mirror important rich ideas, (b) make rich ideas rather than items dominant, (c) have low-stakes consequences, (d) use more than tests to communicate standards, (e) ensure 'national' compatibility information is available, (f) ensure that teachers value it as part of teaching, (g) assess what is taught, and (h) provide meaningful feedback to all participants.

(a) ***'National' Assessment should mirror what is important:***

Any 'National' Assessment system can assist in mirroring what is important. We assert that 'national' assessment should follow from and not dictate the curricula (although dictation is exactly what occurs with most nationals testing systems). Further, we assert that it can assist in the process of communicating what the curricula actually intends because without clarity of specification high quality assessment is not possible. 'National' assessment can identify the rich curricular ideas, what may be missing or under/over emphasised, and raise generate debate in the national community about the standards of performance within curricula domains.

(b) ***Make the "rich ideas" underlying the curricula not the items dominant.***

Most 'National' assessments are designed on national curricula specifications and a lot of care is usually taken to relate the assessments to the curricula. However, as the tests are "secret" the teachers have to cover the whole curricula broadly to ensure that their students have maximum preparation. Too often, this means teaching the curricula a meter wide and a centimetre deep. Instead the aim ought to be to create assessments that (a) are but *samples* of the rich ideas underlying the curricula, (b) help teachers understand the *levels* of performance as outlined in the curricula, and (c) help advance the debate about *improvements* to the curricula. One way around the issue of teaching the items in assessments is to ensure that the items remain indicators of important curricula topics, and not the outcomes themselves. Items should be sampled from a larger curricula domain to allow teachers to concentrate on the curricula topics and processes, and use assessments as indicators of these.

(c) ***Reduce the stakes of the assessments from high to low.***

Note, that many of the negative consequences accrue because 'national' assessment has become high stakes, which means that the nature of the school day, the teaching methods, and the student learning experiences change -- to more closely match the assessments. If the stakes are lowered, then the assessment becomes more a tool for teaching, learning, and feedback (to the various stakeholders), and it becomes less dominant as the "method to mimic". Such a reduction in stakes, we assert, will not impact negatively on providing accountability information in environments where teachers self-manage schooling (Brown, 2002).

(d) ***Make 'National' Assessment part of a larger assessment strategy.***

Too often 'National' Assessment becomes the strategy, rather than part of a larger assessment strategy. It is vital that 'national' policy ensures that the 'national' testing is only one, although critical, aspect of the evidence teachers use to demonstrate that they have covered the curricula, and addressed the "rich ideas". As a case in point, the New Zealand Ministry of Education has supplemented 'national' tests with exemplars, online pedagogical (www.nzmaths.co.nz) and assessment (www.nzcer.org.nz/arb) resources, and national monitoring information (nemp.otago.ac.nz).

(e) ***Ensure comparability information is available, but avoid league tables.***

As Timperley and Robinson (2002) have demonstrated, teachers set their standard relative to what they believe their students can accomplish (and sometimes this can be set too low). 'National' assessment must provide comparability information about student performance relative to other (similar) students, and indicate appropriate expectations of performance and growth to teachers, parents, students, and administrators. While comparability is critical, this must not lead to league tables otherwise the high stakes nature of these tables will destroy many of the advantages of the assessments. There are two major problems with league tables. No one has yet worked out a way that leads to consistently fair, credible, and defensible interpretations, and the information in league tables is more at the school level – which can mask information about teachers, teaching, and students. Thus, league tables are highly unlikely to alter teaching and learning, and we assert must be avoided. Nevertheless, we argue that teachers provided with such comparability information are more likely to appropriately respond to learning needs when they are understood in the context of relative to truly good or poor performance.

(f) ***Ensure that the assessments are valued by teachers as part of the teaching/learning process.***

Assessments can only be valued by teachers if the information from the assessments tells the teachers what they could not have known from other, less costly (in time and money) methods. In other words, when teachers use 'national' assessments they must learn something they did not already know about teaching or learning. As most 'national' tests often provide little beyond "ability" rather than calibrated achievement estimates, the information is of low quality to those people tasked with the responsibility of improving teaching and learning. The benefits for teachers accrue only if the feedback information is powerful, preferably oriented to the specific class of students (or even at the individual student level) as to what learners can and cannot do, compared to similar students, and which indicate to teachers the next appropriate teaching actions in order to optimise the use of time and resources and to maximise the learning gains. In addition, the information needs to be powerful for improving future teaching and thereby enhancing teachers' knowledge of their students' proficiencies.

(g) ***Assess what has been taught, not teach what is to be assessed.***

Teachers are expected to teach to the 'national' curricula, but not necessarily in a particular order, to a particular depth, or in a particular way. Thus, any assessment system needs to allow for these particulars, and a system must be devised whereby teachers can choose assessments relating to the particular emphases of the curricula they intend to or have been teaching. In this way the assessments can make a difference while teachers are teaching and the students are learning (see Clarke, Timperley, & Hattie, 2003).

(h) ***Ensure the assessment system provides feedback information to teachers, students, principals, systems, and parents about:***

Feedback must answer three key questions for it to be powerful. These are:

- What is the target? -- related to both the *rich* ideas underlying the curricula and to the desired levels of proficiency as expected by the 'National' Curricula;
- Where are we relative to the target? -- current status of performance comparable to appropriate (similar sub-) groups and to expected performance;
- Where to next? – directions related to future teaching, learning, curriculum innovations, and system policies.

The Assessment Tool for Teaching and Learning (asTTle)

The key learning characteristics upon which the asTTle tool was developed include that it (a) be based on the official curriculum statements of learning objectives, outcomes or intentions, (b) offer teachers choice over when, who, and what would be assessed, (c) be calibrated to both national norms for sub-groups and populations and achievement standards within curriculum levels, (d) seek novel means of communicating interpretive information to teachers, (e) avoid compulsion, and (f) not be centrally controlled or reported. Reports outlining the research processes and basis for the design and build of asTTle are available on the asTTle web site (www.asttle.org.nz).

The asTTle tool provides teachers with mechanism for creating a 40 minute test of reading, writing, or mathematics in either English or Maori, and asTTle Version 2 presently has norms for students in Years 5-7 and approximately 2000 assessment items covering curriculum levels 2—4. Upon entry of data, asTTle V2 allows teachers to obtain graphical reports of student achievement relative to norms, standards, objectives,

strengths or weaknesses at both individual and group levels. Further, asTTle V2 provides links to an indexed web catalogue of teaching resources intended to assist with the What Next feedback question. asTTle Versions 3 and 4 are presently in development with the goal of providing materials to cover levels 5-6 and norms for years 4—12.

Having laid the groundwork for the asTTle tool, what follows is best appreciated as a demonstration of test creation and reporting mechanisms in the functioning asTTle tool. This section outlines the features seen upon demonstration. In creating a test, asTTle gives teachers control and choice over not only the content (rich ideas) but also the difficulty of the material within the test, such that teachers design a test according to their own understanding of the teaching and learning agenda or needs of their own students. Note that this process in effect answers the feedback question of "Where am I going?". Having administered the paper-and-pencil 40-minute test and entered the data into the software, teachers are offered opportunity to obtain feedback as to "Where am I now?". The reports are (a) calibrated to populations and sub-populations of interest to teachers and administrators (Console Report), (b) calibrated to curriculum achievement objectives or learning intentions for both individuals and groups (Learning Pathways Reports), and (c) calibrated to curriculum standards based on teacher-panel judged cut-scores (Curriculum Levels Report). In this way teachers can test their interpretations of student learning needs by comparison to criteria, standards, and norms and in so doing identify strengths, gaps, and learning priorities and establish the degree of severity for each. Furthermore, the reports attempt visual, non-numeric, communication of performance to better inform teachers' interpretation and resulting action decisions. Nevertheless, simple listing of student scores is available (Tabular Report). An indexed catalogue of teaching

resources, calibrated to the curriculum content and difficulties used in creating asTTle tests has been made available to teachers on the Internet through the What Next Profile Report. This website allows teachers to answer the third feedback question "Where to next?". In this way, asTTle fulfils its designed objective of providing teachers with a resource that has the power to improve the quality of their teaching and students' learning.

We assert that a 'national' assessment system, of which asTTle is but one part, can be devised by equipping teachers with a self-managed, curriculum-based set of tools calibrated to the curricula and to appropriate performance norms and that such a system can maximise the benefits and minimise the negatives of 'national' testing. Indeed, we argue that the asTTle tool in such a system permits the improvement of teaching and learning and will fulfil social requirements for accountability information. The asTTle application (www.asttle.org.nz) has been designed with these eight learning-focused assessment principles as its basis, and its success can be judged by these principles.

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