

ResearchSpace@Auckland

Version

This is the Accepted Manuscript version. This version is defined in the NISO recommended practice RP-8-2008 <http://www.niso.org/publications/rp/>

Suggested Reference

Archer, E., & Brown, G. T. (2013). Beyond rhetoric: Leveraging learning from New Zealand's assessment tools for teaching and learning for South Africa. *Education as Change*, 17(1), 131-147. doi:10.1080/16823206.2013.773932

Copyright

Items in ResearchSpace are protected by copyright, with all rights reserved, unless otherwise indicated. Previously published items are made available in accordance with the copyright policy of the publisher.

This is an Accepted Manuscript of an article published in *Education as Change* on 17 Apr 2013, available online:

<http://www.tandfonline.com/doi/abs/10.1080/16823206.2013.773932>

<http://www.sherpa.ac.uk/romeo/issn/1682-3206/>

<https://researchspace.auckland.ac.nz/docs/uoa-docs/rights.htm>

BEYOND RHETORIC: LEVERAGING LEARNING FROM NEW ZEALAND'S ASSESSMENT TOOLS FOR TEACHING AND LEARNING FOR SOUTH AFRICA

Accepted for publication in: *Education as Change: Journal of Curriculum Research*

Authors: Elizabeth Archer & Gavin T L Brown

Author details:

Elizabeth Archer

University of South Africa, previously the University of Pretoria

Department of Institutional Statistics and Analysis

University of South Africa

P O Box 392, UNISA, 0003

OR Tambo Building 8-07

email: archee@unisa.ac.za

Tel: +27 12 429 2035

Fax: +27 12 429 2295

Gavin T L Brown

School of Learning, Development & Professional Practice

Faculty of Education, The University of Auckland

Private Bag 92019, Auckland, 1142, New Zealand

email: gt.brown@auckland.ac.nz

Tel: +649 623 8899 ext. 48602;

Fax: +649 623 8827

Correspondence should be addressed to:

Elizabeth Archer, University of South Africa, archee@unisa.ac.za

Abstract

South Africa and New Zealand have similar outcomes-based education curricula and share an assessment philosophy framework that encourages assessment for learning. There are however, weighty differences between the two countries, which effect the implementation of assessment for learning in South Africa. In particular, South Africa is still a developing country, with significant infrastructural and economic challenges. Another difference is that academic performance in New Zealand, by international measures, is superior to that of South Africa. Simple adoption of a policy similar to that of a developed nation by a developing country is not guaranteed to produce similar effects. This study, using qualitative analysis of interviews with privileged insiders, investigates the realities behind the rhetoric of assessment for learning in New Zealand. The views and experiences of ministry officials, researchers, professional developers, and school users of the Assessment Tools for Teaching and Learning (asTTle) Project software are examined. The paper shows that the combination of professional development and assessment tools brought about a fundamental change in the philosophical assessment framework of teachers in NZ. This emphasises the importance of aligning assessment policies, teacher knowledge and infrastructure in schools to support assessment for learning in South Africa.

Keywords:

assessment for learning; asTTle; feedback; policy implementation; New Zealand; South Africa, learning

BEYOND RHETORIC: LEVERAGING LEARNING FROM NEW ZEALAND'S ASSESSMENT TOOLS FOR TEACHING AND LEARNING FOR SOUTH AFRICA

The South African (SA) and New Zealand (NZ) education systems have similar outcomes-based education (OBE) curricula and share policies encouraging assessment for learning. In other respects there are vast differences between the two countries. For example, SA is still a developing country, with grave infrastructural and economic disparities, which complicate the effective implementation of any policy. Another significant difference is that academic performance in NZ, by international measures of mathematics and science such as the Trends in Mathematics and Science Study (TIMSS) 1995, 1999 and 2003, as well as reading, the Progress in International Reading Literacy Study (PIRLS) 2006, is considerably higher than that of South Africa (Harmon, et al., 1997; Martin, Mullis, Gonzalez & Chrostowski, 2004; Mullis, Martin, Gonzalez & Chrostowski, 2004).

This study began with an interest in, apart from demographic and economic explanations, whether differences in how the same fundamental educational policy framework is implemented would have any bearing on the observed differences in outcomes. Simple adoption of a policy similar to that of a developed nation by a developing country is no guarantee that similar effects will be seen. This study focusses on how one of the successful assessment tools employed in NZ (assessment Tools for Teaching and learning [asTTle]) facilitated the implementation of NZ's assessment for learning policy. The aim is therefore to establish how implementation of the SA assessment for learning policies can be supported in a similar fashion, while remaining cognisant of the differences in context. The guiding research question is thus:

- How has asTTle influenced the implementation of the philosophy of assessment for learning in New Zealand?

The sub-question is:

- How can some of the conditions and principles facilitated by asTTle be leveraged to enhance the successful implementation of assessment for learning policies in SA?

The asTTle system is the focus of this study as it has proved successful in the NZ context, but the paper is not advocating for or against the adoption of the system in SA. The paper explores the underlying factors which lead to successful adoption of the tool for assessment for learning in order to examine how these factors may be leveraged to facilitate similar successful implementation of the SA assessment for learning policies. This paper reports a series of interviews and observations conducted in NZ by a SA researcher (first author), refined by dialogue with a NZ assessment academic (second author). The focus is on the views and experiences of ministry officials, researchers, professional developers, and school users of the Assessment Tools for Teaching and Learning (asTTle) Project. This paper is written in the spirit of Alastair Cooke's *Letters from America*, using insightful commentary from a knowledgeable outsider.

1 Educational Assessment Policy Frameworks and Conditions

The following sections provide information on the policy frameworks and conditions in SA and NZ.

1.1 South Africa

The South Africa Revised National Curriculum statement embraced assessment for monitoring and reporting and as a driving force for learning, with the ultimate aim of helping “students to make judgments about their own performance, set goals for progress and provoke further learning” (Department of Education [DoE], 2002, p. 18). Student assessment

reporting demands are extensive, including record books, student portfolios, progression schedules, student profiles and reports (DoE, 2002). These vastly limit the time available for tasks and contribute to a discrepancy between the policy and implementation of assessment for learning. The OBE curriculum allows for a high level of interpretation of assessment standards that leave room for varying standards to be applied across schools. This is especially true regarding teachers who worked under the different education departments of the Apartheid system. That system was well-known for varying education standards and assessment practices. The Department of Education (DoE) had tried to address varying levels of teacher knowledge and skills through the introduction of in-service training. In 2006, the DoE acknowledged that teacher skill levels remain a problem and that the in-service training seems to have failed as “the majority of teachers have not yet been sufficiently equipped to meet the education needs of [the country]” (DoE, 2006, p. 6). This failure is understandable in light of the challenges to in-service training in SA. Not only was in-service training expected to rectify poor initial training received by a large portion of teachers in SA in the Apartheid era, but it was also expected to support teachers through multiple curriculum and assessment practice changes.

Notwithstanding all the effort, investment, and policies of the last two decades intended to improve education in SA, there seems to have been little effect on students’ achievement. This was clearly illustrated in SA’s poor performance on internationally-referenced measures such as TIMSS 2003 (Martin, et al., 2004) and PIRLS 2006 (Howie, et al., 2007). This was further highlighted in national studies such the 2011 Annual National Assessment for Grades 1-6 with average scores of 30% and lower in languages and mathematics at each grade (Department of Basic Education [DBE], 2011e). This was once again reiterated by the poor student performance of Grade 12 (final year high school) students in 2011 with a National Senior Certificate pass rate of only 70.2% (DBE, 2011d).

The DBE has however recognised these difficulties and the SA educational landscape is again changing with the Integrated Strategic Planning Framework for Teacher Education and Development in South Africa (ISP for TED) (Departments of Basic Education and Higher Education and Training, 2011) and the new *National Curriculum Statement Grades R-12* which consists of:

- a) the *Curriculum and Assessment Policy Statements (CAPS)* for all approved subjects for Grades R-12
- b) the *National policy pertaining to the programme and promotion requirements of the national curriculum statement Grades R-12*
- c) the *National Protocol for Assessment Grades R-12*

(Department of Basic Education, 2011b)

The ISPF for TED in SA, is a call for collaboration between the Department of Basic Education (DBE), the Department of Higher Education and Training (DHET) and multiple other stakeholders to address this crisis of the quality and quantity of teacher resources in SA (Departments of Basic Education and Higher Education and Training, 2011). The plan targets the entire career span of teachers from recruitment to preparation of new teachers, through to induction in the workplace and continuing professional development (CPD). Teachers are seen as central to teacher development in the plan.

The *National Protocol for Assessment Grades R-12* (Department of Basic Education, 2011c) emphasises feedback to learners after assessment to enhance the learning experience and guide further learning. The protocol also calls for the use of recorded data for feedback to learners, parents, teachers and other stakeholders as well as for planning for interventions, teaching and learning activities and to assist teachers in new grades students move to. The

CAPS documents introduce a single, comprehensive and concise policy document that will provide details on what teachers need to teach and assess on a grade-by-grade and subject-by-subject basis. This is aimed at decreasing the administrative load on teachers, and ensuring that there is clear guidance and consistency for assessment and teaching, (Department of Basic Education, 2011a)

A gradual implementation process for the schooling system is planned to incorporate all grades (Grade R-12) by 2014. The first round of implementation for Grades R-3 and Grade 10 took place in January 2012. (Department of Basic Education, 2011). It is hoped that these changes will improve the quality of education in South Africa. In light of these changes, it may be beneficial to consider what factors, within the control of educational policy-makers, might be contributing to the greater educational success of NZ.

1.2 New Zealand

New Zealand participates in national and international assessments in education as part of its system monitoring agenda. NZ generally performs exceptionally well on international assessments, relative to its per capita investment in education (Scott & Gini, 2010). For example, NZ's performance in PIRLS 2006 (Chamberlain, 2007), Programme for International Student Achievement (PISA) 2003 (Ministry of Education [MoE], 2007a) and TIMSS 2003 (MoE, 2007c) has been well above average, and has been so consistently (i.e., TIMSS 94/95 and TIMSS 02/03; MoE, 2007c). While structural differences contribute significantly to New Zealand's relative performance, there are interesting differences in how the nation has implemented the assessment for learning policy.

The NZ education system has undergone several changes in the last two decades. The most significant of these changes was the shift from centrally controlled education through a department of education to autonomous schools (Crooks, 2002; Fiske & Ladd, 2001). Under the Ministry of Education (MoE), government funding of schools continues, within a framework of self-governance, self-management, and self-directed improvement. The decentralisation of education increased fears for the maintenance of national standards, especially since NZ's outcomes based education system had already been criticised for allowing too much room for interpretation in terms of levels and outcomes (see discussion in Crooks, 2002; Brown, Irving, & Keegan, 2008). The MoE's strategic policy response was five-fold (MoE, 1994, Brown et al., 2008, Crooks, 2002):

1. Creation of national curriculum statements for all essential learning areas with achievement objectives aligned to eight levels of progression between beginning of primary and end of secondary education;
2. The development and provision of curriculum-aligned teaching materials and programs to aid teacher content and pedagogical content knowledge, with special emphasis on innovations in literacy and numeracy;
3. The development of a toolkit of assessment resources to support teachers in school-based assessment consisting of a wide variety of curriculum-aligned assessment resources, including:
 - a. an online Assessment Resource Bank (ARB) for English, Mathematics, and Science;
 - b. national exemplars of progression in Levels 1 to 4 for all essential learning areas;
 - c. teacher participation in the administration and marking of curriculum monitoring tasks at Years 4 and 8 (i.e., National Education Monitoring Project—NEMP); and
 - d. an electronic Assessment Tools for Teaching and Learning (asTTle) software system

4. Funding of extensive professional development (PD) for teachers with specific attention to assessment for learning (i.e., Assessment for Better Learning and Assess to Learn).
5. A low-stakes educational assessment policy distinguished by:
 - a. No central reporting of school data,
 - b. No compulsory nation-wide testing program in primary school,
 - c. Giving choice to teachers as to which assessment resources or methods to use,
 - d. Aligning assessment resources to curriculum objectives and levels.

These actions taken together created a climate of increasing trust, confidence, and competence in which national monitoring purposes were met by school-based assessments and improvement purposes were clearly foregrounded in the daily lives of teachers and administrators.

The development of the teaching and assessment resources in NZ coincided with extensive PD opportunities for teachers. This included development specifically aimed at assessment practises (e.g. Assessment for Better Learning (Abel) which was later replaced by Assess to Learn (AtoL) (Brown, 2008; Crooks, 2002). Teachers' knowledge of assessment was also expanded by participation in the development of assessments such as the ARBs, national exemplars, and asTTle and participation in the NEMP matrix sampling of student performance (Brown, 2008, Crooks, 2002).

Complementary to this strong emphasis on school-based formative assessment, the government obtained public accountability information through the Education Review Office (ERO) (Brown et al., 2008). ERO is responsible for triennial evaluation of all schools' performances in NZ through a combination of school self-review and on-site inspection visits to establish quality assurance and legal compliance (Fiske & Ladd, 2001). ERO also acts as a resource by providing public accessible support documents.

1.3 Comparing New Zealand and South Africa

From this brief comparison of the SA and NZ educational landscapes three relevant aspects are highlighted (i.e., infrastructure, teacher knowledge and assessment philosophy). Infrastructure refers to the quality of school equipment, buildings, and technology. Teacher knowledge refers to the content, pedagogical, and pedagogical content knowledge of teachers as well as their professional role and position in society. Assessment philosophy refers to the purposes of and policies for assessment. Table 1 summarizes the similarities and differences between countries. It is clear that the discrepancies between the two countries are large in terms of infrastructure and teacher knowledge; whereas, the assessment philosophies are highly aligned. Nonetheless, there are notable discrepancies in assessment for learning resourcing and outcomes between the two societies. This paper examines some of the consequences and causes of the discrepant responding to similar philosophies and asks whether the differences are purely attributable to infrastructure or teacher knowledge factors.

Table 1: Comparison of the South African and New Zealand educational landscapes

	South Africa	New Zealand
Infrastructure	Variable provision Well developed in urban, affluent areas Poorly developed and maintained in rural and low socio-economic status areas.	Advanced provision Equitably distributed High Technology
Educator knowledge	Developing Many educators had their training under the Apartheid system and have received poor training. The professional development system is still immature and experiencing developmental difficulties. There are however a small group of educators who have received good pre-service and in-service training.	Advanced Well established pre-service training and professional development system.
Assessment	Aimed at promoting learning and monitor progress Centralised and mandated assessment for the national senior certificate in Grade 12(75% of marks). 25% of the final result is based on school based assessment.	Aimed at promoting learning and monitor progress Centralised and government mandated assessments for the final years of schooling from Years 11 -13.

1.4 The Research Study: asTTle in NZ

The single most expensive (i.e., more than NZ\$ 17 000 000 between 2000 and 2008) addition to the assessment policy and resource-base or toolkit was the creation of the Assessment Tools for Teaching and Learning (asTTle) software. asTTle is an appropriate choice for this study since the NZ government has invested substantially in the development and deployment of a national curriculum- and normative-referenced educational resource making use of advanced computer technology. More importantly, the development and use of asTTle has been seen as a solution to the negative effects of compulsory national testing, while meeting accountability requirements (Hattie & Brown, 2008). A second reason for focusing on asTTle is the SA effort to develop computer-assisted assessment resources (Makgamatha, & Kanjee, 2008).

The asTTle system has been described extensively elsewhere (Crooks, 2002; Hattie & Brown, 2008; Hattie, Brown, & Keegan, 2003a) and only a brief overview is given here. asTTle is an educational technology resource that permits both improvement and reporting responses to assessed student performance in reading, writing, and mathematics in either English or Maori. Since 2002 schools have been provided, upon request, the asTTle software free of charge and usage is completely voluntary. asTTle allows schools and teachers to create curriculum-aligned customised, standardised, tests from large banks of calibrated test questions for English and Maori medium students. Reporting is against both the objectives and strands of Curriculum Levels 2 to 6 and norms for students in Years 4 to 12.

All asTTle items and tasks were mapped by teachers, content area experts, and curriculum experts according to the NZ curriculum statements for the relevant subjects.

Additionally, all items are mapped to a cognitive processing taxonomy (i.e., the Structure of Observed Learning Outcomes—SOLO) in order to categorise student performance on the various tasks according to broad levels of current functioning (Hattie & Brown, 2004). The test-users can select from a suite of graphical reports (including an online catalogue of curriculum-aligned teaching resources) that allow interpretation of the performance of individuals and cohorts relative to norms, standards, and objectives (Hattie, Brown, Ward, Irving & Keegan, 2006).

2 Methodology

A qualitative, interpretivist research approach was utilised (Rallis & Rossman, 2012). Semi-structured interviews and observations were conducted to give the rich descriptive data about asTTle and the influences that it has had on the philosophy of assessment for learning in NZ. This research approach views meaning and knowledge as being constructed from personal experience and utilises an inductive approach (Morse, 1994). The researcher is seen as inherently part of the process in the role of a co-creator of meaning (Henning, Van Rensburg & Smit, 2004). For this paper, the primary author was an outsider to the NZ context and the asTTle system, which meant that little about the context or the tool was taken for granted. The author's knowledge of the SA system allowed for questions and prompts which could examine transferability to the SA context.

The interpretivist paradigm acknowledges that some subjectivity is inevitable in qualitative data collection, analysis and interpretation. This is mitigated by providing support for interpretations in the form of direct quotations from participants as well as by transparency about the authors' backgrounds and approach. In line with the principles of trustworthiness (Guba & Lincoln, 1985), peer debriefing and member checks were employed to ensure that participants felt that their views were accurately portrayed.

As the data collection and analysis was conducted by the first author, a South African, an outsider's perspective on the use of assessment tools in NZ was developed. The first author originally had limited knowledge of the context and systems in NZ and was building an understanding of assessment usage in NZ and the NZ education context. The insider knowledge of the second author, one of the asTTle development team but now a research academic no longer affiliated with the project, was used to clarify, corroborate, or question insights reported by the first author.

2.1 Participants

Purposeful sampling was utilised to include a wide variety of perspectives on the use of asTTle. Participants were selected who were knowledgeable about asTTle in order to provide rich sources of information. Both the outsider perspective and the choice of rich sources of data contribute significantly to the validity of the study. The groups of participants in this study are described in Table 2¹.

¹ Attempts have been made throughout to protect the identities of the participants. In some cases, the identities of the participants may still be gleaned due to the very specific nature of their knowledge of the asTTle system. These participants have all been briefed on the limitations to confidentiality and have even agreed to have their identities published. All participants received copies of the analysis products in order to review it prior to publication and to re-evaluate their willingness to have the data published.

Table 2: Interview participants

Population	Sample
School Users	Two teachers (Ms Z and Mrs X) and three Year 8 learners from a school that adopted asTTle in 2006. The teachers were identified by their principal as effectively employing asTTle in teaching and learning and the learners have been exposed to asTTle during 2007. E, principal of a school, who did an evaluation of asTTle and has experience both of using asTTle and the professional development associated with asTTle.
Ministry of Education	Two assessment division representatives at the NZ Ministry of Education (NZ MoE) – Y and N. It should be noted that the opinions expressed by these officials does not necessarily represent the official Ministry policy.
asTTle Development Team	Professor J, the creator of the asTTle tool. Dr H, one of the asTTle developers, who had been a secondary school deputy principal and chief examiner for mathematics before joining the asTTle team.
Professional Developers and Researchers using asTTle	B, a professional development provider who was involved in the development of asTTle itself and therefore has a profound content and knowledge about the tool. Two associate directors of Research Centre G (A and D) and Q, a project researcher at the same centre. The centre focuses on research-based educational interventions specifically with Maori and Pacific Island children. Researcher Q uses the asTTle tool in working with schools on writing interventions.

2.2 Data Collection & Capturing

Data for the case study were generated through semi-structured interviews with NZ stakeholders in the asTTle system. The focus of the interviews was on how asTTle was used and the extent of use as well as the factors that facilitate or hinder use of the feedback system. The interview data were supplemented with documents collected in NZ. Interviews were digitally recorded and transcribed and all field notes were captured electronically.

2.3 Data Analysis

The interviews were analysed using pragmatic eclecticism (Saldana, 2009), which means that the researcher keeps herself open during the initial data collection and coding to determine the most appropriate methods of coding. A number of First Cycle coding methods (preliminary coding methods) were combined with Second Cycle coding (categorical, conceptual, and/or theoretical organisation). During the First Cycle, coding and recoding, data were analysed according to meaningful units of text, with codes generated through an inductive process and allocated to each unit individually. Once the First Cycle coding was completed, codes were clustered in meaningful groups to generate themes. For example, the

theme ‘professional development’ includes codes such as *use to increase data-literacy* and *use to transform data into action*. The Second Cycle approach employed in this study was therefore pattern coding which is both inferential and explanatory, pulling large amounts of codes and data into more parsimonious units, sometimes known as meta-codes (Saldana, 2009).

Views collected in this study may be influenced by some participants’ involvement in asTTle, such as the two participants who were part of the development team and the NZ ministry of education participants as the Ministry sponsored the development of various assessment tools including asTTle. However, the school users such as the students, teachers and principals have no vested interest in asTTle and some school users were even averse to the original implementation of asTTle in their schools. The professional developers and researchers using asTTle support multiple assessment tools in the various schools of which asTTle is only one. This possible risk of some participants is somewhat mitigated by having the research done by an outsider and by careful triangulation of views. The researchers also moderated any inherent subjectivity through reflexive notes and memos, as well as the use of peer debriefing, and examination of the audit trail by external consultants. The qualitative data analysis tool, *Atlas.ti*, was employed to facilitate analysis.

3 Findings

From the analysis, three major themes emerged around the introduction of asTTle in the NZ education system. These were: the PD system, the barriers which had to be overcome, and reasons for success. To appreciate these themes, we first discuss the changes that introducing asTTle caused as perceived by our participants.

3.1 Changes attributed to the introduction of asTTle

Six prominent changes in the educational landscape were linked to asTTle. These involved the role of assessment, the ownership of learning, teachers’ views of students, changed teaching practices, teachers’ views of the curriculum, and changes in classroom contexts.

3.1.1 Changes in the understanding of the role of assessment.

While NZ has no compulsory testing in primary school, a great deal of testing still occurred in NZ schools (Croft, Strafford, & Mapa, 2000), mainly to produce results for records. In contrast, asTTle employs a formative, validity-focused process that begins with teachers determining the focus of any assessment, followed by diagnostic interpretation of data directly linked to teacher action to help students to progress to the next level. The tool provides a basis for evidence-based classroom practice which is sensitive to the needs of the students. As PD provider B put it “*for years, we were sort of feeling around in the dark, this might or might not work, and now we have some clear evidence to show where our problems are. We can target our teaching skills*”. Performance is expressed in terms of both national norms and curriculum levels. This latter aspect was viewed positively by PD provider B, “*the reason I prefer asTTle to any of the other tools is that it is linked to the curriculum*”. This operationalisation of assessment principles supports the adoption of assessment for learning principles from an teacher’s point of view.

In some cases, the introduction of asTTle led to greater transparency around assessment. For example, Teacher Ms Z stated: “*I use [the reports] with parents and I say here is the data, this is where the child is at and what we are working towards*” and Teacher Mrs X claimed “[asTTle] gives us the information we need, is informing the practice, and is very easy to share with the students at this age”.

For students, this openness about assessment and results has brought about a shift in their understanding of assessment. The approach to working with the assessment results increased the student engagement and ensured that they were better informed about their own learning. Some students noted that their anxiety about assessment was reduced and comparing of marks to those of other students became less important than focussing on their personal learning needs and how to achieve the next level of proficiency. “[B]efore it used to mean like, it is a test, you got to do your best and it matters what your score is. Now it is about.....what we need to learn. It is not so much ...that you have to do well. It is what you need to carry on with. It is pretty much just finding out things” (Year 8 students).

3.1.2 Shared ownership of learning

By shifting the assessment practices from a purely summative or teacher-centric process to more of an assessment *for* learning approach, students were afforded the opportunity to take responsibility for their own learning. As Teacher Mrs X put it, “*It is a little like doing a dance with them, we are in it together... I think the engagement, self-monitoring, the talking with them [students] makes a difference*”. A group of Year 8 students stated “*if you don’t work for it, you are not going to get it, so you are in control of your learning*”. Openness and sharing of reports from assessments allowed students to gain insight into their current status and what their needs were and motivated them to focused effort. “[T]eachers and students are now engaging in conversation, dialogue about the kids learning, which often didn’t happen before” (Development team Dr H). Students are now able to ask teachers for further support or feedback if they feel their learning needs are not being met. “[I]f it was broad comments, they’ll say it wasn’t helpful and some will say *I didn’t really understand what you meant by this, or can I use my own example*” (Teacher Mrs X). Of course, such knowledge is not without complications: “[K]ids are very proud of their strengths, they are almost angry once they understand the concept of gaps. ‘*Why can’t I learn this? I’ve got the ability. My teacher hasn’t taught it to me’... and that’s a very threatening notion but it’s the right notion*” (Creator of asTTle Prof J).

Students involved in peer marking also gained exposure to assessment criteria that are linked to the curriculum. In this way, asTTle provided a robust basis from which students could improve meta-cognitive awareness of their own work.

3.1.3 Changes in teacher’s perceptions of students.

Some teachers were surprised at how the students reacted to working with the assessment results and reports. “[T]o hear students of [age] 12 saying, ‘*Hey, I know what I need to do to improve my writing. To really score at 4 for reaching my audience, I need to put in this*’. That is like, wow!” (Teacher Mrs X).

Some teachers noted that they had previously tried to shield struggling students from their true level of proficiency (much in the manner reported by Pajares and Graham, 1998). Once presented with truthful and constructive feedback though, students mostly reacted positively and were motivated to improve their achievement. As PD provider B related: “*he said, I can’t believe that nobody has told me that I’m so bad at reading before. And suddenly the light came on for him, he had a sense of urgency about improving his reading, and he went up five reading years in three months.*”

Students showed surprising proficiency in interacting with the assessment criteria when assessing their own and peer work. Knowledge of assessment criteria allowed students to hold teachers accountable for the quality of the feedback.

3.1.4 Facilitation of differential teaching practises

Grouping students within classrooms is a common strategy to provide a more differentiated educational experience in NZ (Wilkinson & Townsend, 2000). asTTle provides various reports, including grouping reports, where students with similar needs are grouped together. Teaching material and activities can thus be differentiated for the group's particular learning needs. *[I]n some things the child may be in the purple group and they just pick it up so easy, so you just move them on. The groups are fluid... they will probably change about six times in a term, easily... (Teacher Ms Z).*

Grouping in such a manner means that students do not associate groups with specific levels, but differing learning needs. No negative connotations of a 'clever' or 'stupid' group are thus created. *"It's never like it is in junior school... like when you get the best readers in the top group. It's like what you got wrong, it is what you don't understand."* (Year 8 students)

3.1.5 Shift in teachers' understanding of curriculum levels and description

The autonomy of NZ schools and the breadth of curriculum outcomes have jointly facilitated a divergence of understanding between teachers as to expected standards. Teachers tend to be exposed to students from a certain region and socio-economic background and naturally revert to a form of norm referencing and personal interpretation of the curriculum standards and outcomes. asTTle, through its writing of items to curriculum objectives and curriculum-levels based standard setting processes, permits the development of a national understanding of progression. *"[A]ll our learning intentions are given to us in asTTle so we can see what a child at that level, at level 2 should be learning, what their learning intentions should be."* (Teacher Ms Z.). This effect was more obvious in the context of written language. As Researcher Q put it: *Explicit, criteria for teachers, because we have a large number of teachers, I think, that don't know, they know good writing, but they don't know why it is good writing, so they have no tools to draw on to help the child move forward.*

3.1.6 Improved participation and classroom discipline

It was noted by the teachers that problems with discipline in the classroom decreased as students took ownership of their own learning. *"They get it faster and their consequences are much stronger... 'I have to do this, I have to fix this' it's personal, it's them"* (Creator of asTTle Prof J). Students were more motivated as they started to see how the classes were linked to meeting their individual learning needs and helping them to achieve the next level of attainment. *"[Y]ou start commenting on the learning intentions and their work, and they get on task. All the behaviour management problems go straight out of the window. It really works. Oh, I am a convert!"* (Researcher Q).

3.2 **Resistance to the introduction of asTTle**

From the above section it is clear that asTTle truly supports assessment for learning, but this requires teachers' commitment. In this section some of the resistance to the introduction of asTTle is discussed.

3.2.1 Fear of high stakes accountability

As asTTle was funded by the Ministry of Education many teachers were afraid that it would be used to monitor teachers through high stakes accountability practises. As Principal E commented: *[A] lot of people thought it would be used as a tool of torture and that it was going to be used to compare school A against school B. It was going to be part of a national monitoring system where schools would have to give the information to the ministry...*

Interestingly, the developers of asTTle at the University of Auckland were vociferous opponents of such use of asTTle (Hattie, 2005).

3.2.2 Wide range of assessment tools available in NZ

asTTle is only one of a range of government-sponsored or approved assessment resources available to NZ schools (Brown et al., 2008; Crooks, 2002). Schools are free to employ any of the tools which they feel are appropriate. Unfortunately, many of the tools have not lived up to expectations (e.g., expensive, time-consuming, or technologically cumbersome) and caused teachers to be hesitant to accept the promises about asTTle.

3.2.3 Vulnerability through transparency.

AsTTle reports are geared towards transparency in assessment. The results are diagnostic and individualised for each student. “[AsTTle] gives us the information we need, is informing the practice and is very easy to share with the students at this age.” (Teacher Mrs X). Principals and HoDs also gain greater insight into the comparative performance of various classes in the school. However, this means a high level of openness about student performance within a school learning community. Some teachers and school-leaders may find this threatening since they may not know how to change their practices and may legitimately fear negative consequences for being seen to have performed poorly.

3.2.4 Shock of standardised results compared to national standards

Given the validity procedures asTTle employed (i.e., independent curriculum mapping, national teacher item review panels, and national teacher standard setting panels) it is highly likely that asTTle curriculum level reports reflect appropriately the objectives of the national curriculum statements. Nevertheless, gaining credibility in the minds of teachers was more complex. Many teachers were shocked at the first results from asTTle (Hattie et al., 2003b), believing that asTTle had given lower curriculum level scores than students merited. “[A] lot of the teachers think these kids are doing well, and then the test is saying they’re not doing well.” (Researcher D). Thus, as Principal E explained, there was a tendency on the part of teachers to question the validity of the asTTle tool, rather than examining the standards they were employing in the classroom.

3.2.5 Fear of change and the novel

Many teachers are entrenched in their assessment practices and hesitant to try a new approach. Many teachers were so accustomed to rank-order interpretations (e.g., Johnny is in the +85th percentile for students in his year) and age-related interpretations (e.g., Johnny is reading at a 14-year-old level) that they found it difficult to perceive the necessity of adopting a testing system that fore-grounded curriculum-level interpretations. As one teacher put it, “it would be a problem for teachers who were entrenched in ‘this is the way I have done it for the last 104 years, it is working, why change it?’” (Teacher Mrs X).

3.2.6 Technological complexity

Although NZ has a very good ITC infrastructure and most teachers are computer literate, some teachers found asTTle challenging. “So teachers do get terrified from it, some of them do... get terrified because it is computers” (Creator of asTTle Prof J). Indeed more positive attitudes towards ICT predicted greater usage of asTTle, which indirectly contributed to more accurate interpretation of asTTle reports (Hattie et al., 2006).

3.2.7 Cost

Printing of asTTle assessments and reports increased stationery expenditure in schools “One principal said to me the other day, it is a dollar for each paper, which is quite a lot it is \$30 for a class. So, that is a barrier for some people.” (PD provider B). Furthermore,

construction of assessments, capturing of marks and printing of reports could be time consuming, particularly if a person were unfamiliar with the program. *“[I]t takes a lot of paper, it takes a lot of time for the teachers to do the marking and the data re-entry”* (Developer Dr H.). Though some schools found these factors outweighed the benefits of asTTle, it could be argued that this was a matter more of changing teachers’ work rather than adding to teachers’ work; the computer saved considerable time to create and analyse tests (e.g., creation of photocopy ready tests took 10 minutes in asTTle, unlike the 4 or more hours needed to prepare tests even when items were cut-and-pasted from previous tests).

3.3 How asTTle overcame the resistance to implementation

3.3.1 Aligned development of infrastructure, teacher knowledge, and assessment philosophy

At the time of deployment, schools had in place the necessary infrastructure of ICT (including copying facilities) so that usage of asTTle was feasible. However, asTTle was presented not as a technology or testing resource, but rather an educational resource (Hattie & Brown, 2008). *“[W]e will never talk about testing, we will talk about teaching and learning-how is it going to make a difference to teaching and learning”* (creator of asTTle Prof J). Furthermore, asTTle was introduced in a policy environment that strives towards assessment for learning (MoE, 1994, 2007b) and enhanced teacher quality. The Ministry provides teachers various forms of PD (e.g., assessment, literacy, numeracy) to reinforce this approach and their pedagogical content knowledge. Therefore the PD, electronic and paper-based support were all aligned to the underlying philosophy of assessment for learning.

3.3.2 Support for use.

asTTle has a support system to help schools employ asTTle effectively. Manuals and instructions are available on-line. Newer versions of asTTle have context-sensitive help functions and PD is provided in the use of asTTle by PD providers. A toll-free, telephone helpline was also provided by the Ministry of Education. Some schools have also created informal support networks where asTTle results are discussed and collaborative planning occurs.

3.3.3 Tool provides sufficient diagnostic information to inform practises.

asTTle differentiated itself from other assessment tools in that it provided highly diagnostic information relative to both curriculum expectations and national norms. The data are also specific in terms of the differential skills of students in different learning areas. *“I had a child last year who on reading tests would actually do really well, but on asTTle it actually showed up that she had a gap in evaluation, she was actually quite low”* (Teacher Mrs X). Results are operationalised in terms of gaps, strengths, weaknesses and things still to be learnt. asTTle then also provides links to what actions can be taken in the class to move students from their current levels to the next level.

3.3.4 Trusting intentions.

From the beginning, the terms of development for asTTle made it clear that asTTle was for school-based use, not government or central agency use. Data from asTTle is not sent to the Ministry (either by regulation or by technological means), although schools may choose to use their data to demonstrate their effectiveness to the Ministry in their triennial reviews. In the words of creator of asTTle Prof J: *I said that that’s [voluntary roll-out] the*

only way that you'll get the teachers to buy in and it was also going to put pressure on me to make sure that it was something that they wanted and would use.

The introduction of e-asTTle (version 7) may make school data more accessible to government agencies; however, there is still a strong commitment on the part of the Ministry not to use school data (which may identify weaknesses, failures, or disappointing outcomes) for external monitoring or school-accountability purposes. This explicit policy of “no control, no compulsion, no central reporting” (Hattie & Brown, 2008) helped to break any distrust schools may have had towards the introduction of a government funded national assessment tool.

The voluntary status of the tool also mattered to teachers: “this is not a country where teachers take kindly to being forced to do things” (PD provider B). That the instrument was designed by a team outside the government and led by a well-known academic figure (creator of asTTle Prof J) further engendered trust in the tool and its intentions. As part of the Ministry contract, teachers were involved in the development process of asTTle and in this way teachers could see the inside workings of the design of asTTle and contribute to it. These teachers later became resources in spreading information on asTTle, either through formal avenues such as PD, or by word-of-mouth. *“Well, people say to me, well how did they write these questions? And I say, well I know exactly the answer to that question, because I helped put it in.”* (PD Provider B).

3.3.5 Success in bringing about student improvement.

asTTle has in many instances formed the basis for significant student improvement students. Once teachers could identify the learning needs, these could be addressed and shifts in the learning could be accurately measured against the curriculum using asTTle. *“[T]hat is just in a term, the difference you can see from just a term, so teach it for a whole year, like it is just exciting to see ...”* (Teacher Ms Z). Systematic evidence, as opposed to this anecdotal evidence, supports the contention that the introduction of asTTle supported substantial learning gains. Like this interview study, Brown and Harris (2009) found in interviews of 26 Auckland teachers that individuals were well-aware of the capacity of asTTle to help with improving student learning outcomes. Significant change in teacher practice in teaching writing and consequential large gains in student achievement were found when the asTTle writing assessment system was used in a two-year PD program in 13 schools (McDowall, Cameron, Dingle, Gilmore & MacGibbon, 2007; Parr, Timperley, Reddish, Jesson & Adams, 2007). It would appear that the asTTle framework provided a coherent framework by which many schools could develop a common understanding of what literacy meant, what literacy pedagogy involved, and what improvement-oriented interpretation of student learning assessment results required.

4 Conclusion

The interacting elements of infrastructure, assessment philosophy, and teacher knowledge provided the opportunity for asTTle to succeed. The principles of AtoL are the backbone for asTTle. asTTle embodies and operationalises the principles, making the assessment philosophy concrete and contributing to the teacher knowledge and understanding of the assessment philosophy. asTTle relied on the well-developed ITC infrastructure of NZ to succeed. Concurrently the asTTle reporting engine has been recognised by the NZ Ministry of education as a technology which can be integrated into other assessments. In this way asTTle has contributed to the development of the infrastructure for education in NZ. There is thus an interaction between assessment policies, teacher knowledge and infrastructure in NZ and development of one aspect influences the others constantly striving for congruence throughout these elements.

In SA the poor infrastructure in some segments of the education system has negatively impacted on teacher development. While the assessment policies have been conveyed to teachers through in- and pre-service education, they have often only been paid lip-service or misunderstood, resulting in a disjuncture between the stated assessment policies, teacher knowledge and infrastructure to support assessment (see Figure 1).

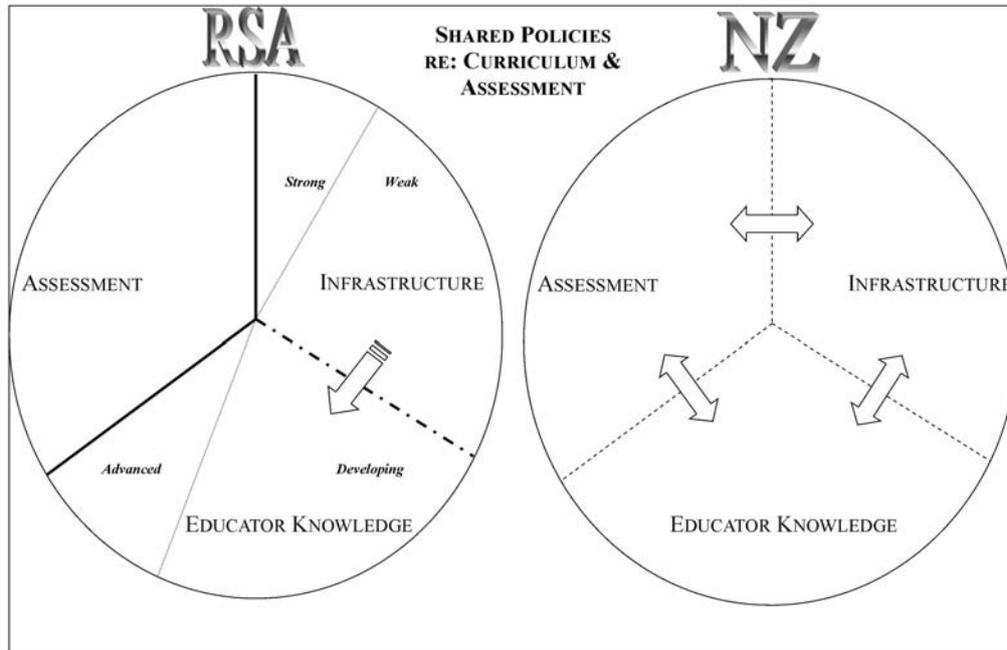


Figure 1. Comparison of the assessment context of the SA and NZ landscapes

5 Implications for SA

In NZ, the combination of PD and assessment tools brought about a fundamental change in the philosophical assessment framework of teachers. Herein lies the promise for SA: This emphasises the importance of aligning assessment policies, teacher knowledge, and infrastructure in schools to support assessment for learning. Currently SA does not have the IT infrastructure to incorporate asTTle on a wide-scale sustainable basis, but the principles which facilitated the success of asTTle in NZ could still be applied in a low technology manner. Monitoring tools should specifically be mapped against curriculum levels. These systems should be linked to full explanations of the aims of various subtests and items as well as reference classroom activities which can help students to achieve the next level. This can be accomplished through-paper based manuals and referenced intervention resources. It is essential that the assessment tools be grounded in and operationalise the principles of assessment for learning as encapsulated in the policy documents. Thus the assessment tools mirror the policy and are feasible and must be presented in a manner which is sustainable given the current infrastructure. The introduction of tools that mirror the assessment philosophy provides an invaluable opportunity to make the assessment philosophies concrete and improve teacher knowledge of the assessment philosophy. In-service training is thus immediately made practical through the implementation of the assessments with real data from teachers own classrooms.

Issues of distrust and fear of high stakes monitoring practices cannot be ignored in the roll-out and it would be wise to involve organisations outside of the DoE and teachers as stakeholders. A staggered roll-out would allow word of mouth support to spread and build up confidence in the new instruments and the intentions behind it. Eventually more high-tech

approaches such as asTTle could be employed as the infrastructures of schools improve along with teacher proficiency with ITC.

6 REFERENCES

- Brown, G. T. L. (2008). Assessment literacy training and teachers' conceptions of assessment. In C. Rubie-Davies, & C. Rawlinson (Eds.), *Challenging Thinking about Teaching and Learning* (pp. 269-285). New York: Nova Science.
- Brown, G. T. L., & Harris, L. R. (2009). Unintended consequences of using tests to improve learning: How improvement-oriented resources engender heightened conceptions of assessment as school accountability. *Journal of Multi-Disciplinary Evaluation*, 6(12), 68-91.
- Brown, G. T. L., Irving, S. E., & Keegan, P. J. (2008). *An introduction to educational assessment, measurement and evaluation: Improving the quality of teacher-based assessment* (2nd ed.). Auckland, NZ: Pearson Education New Zealand.
- Chamberlain, M. (2007). *Reading literacy in New Zealand: An overview of New Zealand's results from the Progress in International Reading Literacy Study (PIRLS) 2005/2006*. Wellington: Ministry of Education.
- Croft, A. C., Strafford, E., & Mapa, L. (2000). *Stocktake/evaluation of existing diagnostic tools in literacy and numeracy in English*. Wellington: NZCER.
- Crooks, T. J. (2002). Educational assessment in New Zealand schools. *Assessment in Education*, 9(2), 237-253.
- Department of Basic Education. (2011, September 12). Approval of the National Curriculum Statement Grades R-12 as National Education Policy. *Government Gazette, No. 34600*, pp. 3-4.
- Department of Basic Education. (2011a). *Curriculum and Assessment Policy Statement Grade 10-12: Economics*. Pretoria: Department of Basic Education.
- Department of Basic Education. (2011b). *National policy pertaining to the programme and promotion requirements of the national curriculum statement Grades R-12*. Pretoria: Department of Basic Education.
- Department of Basic Education. (2011c). *National protocol for Assessment Grades R-12*. Pretoria: Department of Basic Education.
- Department of Basic Education (2011d). *Report on the National Senior Certificate examination 2011: technical report*. Pretoria: Department of Basic Education.
- Department of Basic Education (2011e). *Report on the qualitative analysis of ANA 2011 results*. Pretoria: Department of Basic Education.
- Department of Education, (2002). *Revised National Curriculum Statement (Schools)*. Retrieved October 25, 2006 from <http://www.polity.org.za/pdf/Curriculum.pdf>.
- Department of Education, (2006). *The national policy framework for teacher education and development in South Africa: more teachers; better teachers*. Pretoria: Department of Education.
- Fiske, E.B., & Ladd, H.F. (2001). Self-governing schools and accountability in New Zealand. *Prospects* 31(4), 537-552.
- Guba, E. G., & Lincoln, Y. S. (1985). *Understanding and doing naturalistic inquiry*. Beverly Hills: Sage Publications.
- Harmon, M., Smith, T. A., Martin, M. O., Kelly, D. L., Beaton, A. E., Mullis, I. V., et al. (1997). *Performance assessment in IEA's Third International Mathematics and Science Study (TIMSS)*. Boston College: TIMSS International Study Centre.
- Hattie, J. (2005, August 7-9). *What is the nature of evidence that makes a difference to learning*. Paper presented at the 2005 Acer Research Conference, Melbourne, Australia.

- Hattie, J. A. C., & Brown, G. T. L. (2004). *Cognitive processes in asTTle: The SOLO taxonomy*. asTTle Technical Report #43, Auckland: University of Auckland/Ministry of Education.
- Hattie, J. A. C., & Brown, G. T. L. (2008). Technology for school-based assessment and assessment for learning: Development principles from New Zealand. *Journal of Educational Technology Systems*, 36(2), 189-201.
- Hattie, J. A. C., Brown, G. T. L., & Keegan, P. J. (2003a). A national teacher-managed, curriculum-based assessment system: Assessment Tools for Teaching & Learning asTTle). *International Journal of Learning*, 10, 771-778.
- Hattie, J. A. C., Brown, G. T. L., Keegan, P., Irving, S. E., MacKay, A. J., Sutherland, T., Mooyman, D., & Patel, P. (2003b, November). *Validation Evidence of asTTle Reading Assessment Results: Norms and Criteria*. asTTle Tech. Rep. #22, Auckland: University of Auckland/Ministry of Education.
- Hattie, J. A., Brown, G. T. L., Ward, L., Irving, S. E., & Keegan, P. J. (2006). Formative evaluation of an educational assessment technology innovation: Developers' insights into Assessment Tools for Teaching and Learning (asTTle). *Journal of Multi-Disciplinary Evaluation*, 5(3), 1-54.
- Henning, E., Van Rensburg, W. & Smit, B. (2004). *Finding your way in qualitative research*. Pretoria: Van Schaik.
- Howie, S.J., Venter, E., Van Staden, S., Zimmerman, L., Long, C., Scherman, V. & Archer, E. (2007). *Progress in International Reading Literacy Study 2006 summary report: South African children's reading literacy achievement*. University of Pretoria: Pretoria.
- Martin, M.O., Mullis, V.X., Gonzalez, E.J. & Chrostowski, S.J., (2004). *TIMSS 2003 International science report*. Boston: TIMSS & PIRLS International Study Centre.
- Makgamatha, M. M., & Kanjee, A. (2008). *Development of a Computerised Classroom Assessment System: CEQI Tender Briefing Session*. Retrieved February 8, 2012, from http://www.hsrc.ac.za/research/output/outputDocuments/5532_Kanjee_Developmentofacomputerised.pdf
- McDowall, S., Cameron, M., Dingle, R., Gilmore, A., & MacGibbon, L. (2007). *Evaluation of the Literacy Professional Development Project* (RMR No. 869). Wellington: Ministry of Education, Research Division.
- Ministry of Education (1994), *Assessment: Policy to practice*. Wellington: Learning Media, Ltd.
- Ministry of Education. (2007a). *PISA (Programme for International Student Assessment)*. Retrieved January 29, 2008 from www.educationcounts.govt.nz/data_collections/pisa_research
- Ministry of Education. (2007b). *The New Zealand Curriculum for English-medium teaching and learning in years 1-13*. Wellington: Learning Media.
- Ministry of Education (2007c). *TIMSS (Trends in International Mathematics and Science Study) Home Page*. Retrieved January 29, 2008 from www.educationcounts.govt.nz/data_collections/timss
- Morse, J.M. (1994). *Critical issues in qualitative research methods*. California: Sage Publications, Inc.
- Mullis, I. V., Martin, M. O., Gonzalez, E. J., & Chrostowski, S. J. (2004). *TIMSS 2003 International Mathematics Report: Findings From IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades*. Boston College: TIMSS & PIRLS International Study Center.

- Pajares, M. F., & Graham, L. (1998). Formalist thinking and language arts instruction: Teachers' and students' beliefs about truth and caring in the teaching conversation. *Teaching & Teacher Education, 14*(8), 855-870.
- Parr, J. M., Timperley, H., Reddish, P., Jesson, R., & Adams, R. (2007). *Literacy Professional Development Project: Identifying Effective Teaching and Professional Development Practices for Enhanced Student Learning* (RMR No. 851). Wellington: Ministry of Education, Research Division.
- Rallis, S.H., & Rossman, G.B. (2012). *Learning in the field: an introduction to qualitative research* (3rd ed.). Thousand Oaks: Sage Publications.
- Saldana, J. (2009). *The coding manual for qualitative researchers*. London: SAGE Publications Ltd.
- Scott, D., & Gini, P. (2010). *How does New Zealand's education system compare? OECD's Education at a Glance 2010*. Wellington: Ministry of Education, Strategy and System Performance.
- Wilkinson, I. A. G., & Townsend, M. A. R. (2000). From Rata to Rimu: Grouping for instruction in best practice New Zealand classrooms. *The Reading Teacher 53*(6), 460-471.