

Enacting Policy, Curriculum and Teacher Conceptualisations of Multimodal Literacy and English in Assessment and Accountability

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Abstract: This article examines synergies and gaps in the construction of English, literacy, multimodality in policy and curriculum in Australian education with a focus on current assessment practices and educational accountability in order to make recommendations for future practice for teachers and for policy-makers. The article builds on analyses of the historical development of literacy, English and multimodality in Australian policy and curriculum published previously. In this article, we examine desirable constructions and activities for assessment of multimodal English in classrooms and research on student engagement in multimodal English tasks. The multimodality focus examined in this article is the use and role of technologies in English and assessment and the way new and emerging technologies can affect student learning processes and outcomes. The article concludes with recommendations for changes both for classroom assessment practice and also for future educational accountability practice, if the goals of the Melbourne Declaration of 2008 (MCEETYA, 2008) and the Australian English curriculum are to be attained.

Introduction

In a previous article we traced developing recognition in national and state policy and curriculum of the complexity of English–literacy in the ever-growing technological world (Cumming, Kimber & Wyatt-Smith, 2011). We noted identification of information and communication technology skills as essential for learners and workers in the 21st century. We also tracked developing educational accountability policy in Australia, from initial formation of the national literacy and numeracy benchmarks, through state tests to the current National Assessment Program–Literacy and Numeracy (NAPLAN), to the current high stakes nature of NAPLAN outcomes for schools and teachers through public reporting on the MySchool website (www.myschool.edu.au).

We provided evidence from national submissions to a Senate enquiry (Cth Australia, 2010) and from a Queensland research project (Cumming, Wyatt-Smith, Elkins & Neville, 2006) that teacher conceptualisations of English literacy may be narrowly focused on skills paralleling the functional skills of the early literacy benchmark descriptors and tests. Such skills remain the focus of NAPLAN tests. We noted that high stakes focus on NAPLAN outcomes may serve to continue or further narrow teacher construction of English–literacy in classroom practice

at the expense of the broad and engaging curriculum and policy already in existence and the new Australian English curriculum.

In this article, we examine the nature of learning processes in a 21st century English curriculum and how these engage multimodality and technology with optimum effect. The following discussion shows that when a multimodal technological English curriculum is implemented, the resultant learning is more than the sum of the parts. Further we examine issues that arise for valid and authentic assessment in such a curriculum.

Classroom English: Assessment challenges for a 21st century curriculum

The historical and current contexts for English-literacy provided in our previous article (Cumming et al., 2011) frame an understanding of the emergent priorities within English classrooms from early years through to high school graduation. Whether subject English is understood as a foundational discipline for achieving academic and future career success, or as a window into the nation's literary heritage, a uniform goal is the enhancement of students' abilities to read, write, speak, interpret, appreciate, critique and create a range of genres involving a variety of print and non-print texts. Contemporary English in 2012 and beyond is not just an extension of previous generations of literacies (Unsworth, 2008), nor can it necessarily be discussed in similar terms. As the *Australian Curriculum: English* recognises, modern-day literacy demands require an expanded definition that endorses fluency, accuracy and communicative clarity, not just in spoken and written texts, but also in multimodal texts created with new technologies.

The multiplicity of ways currently open for composition and communication in today's world challenges long-held understandings of literacy education and the classroom repertoires of English teachers. Being print-literate is neither sufficient nor easily transferable to a screen-dominated age, and given the almost daily rate of technology change, '[n]ew literacies will continuously be new, multiple and rapidly disseminated' (Coiro, Knobel, Lankshear, & Leu, 2008, p. 5). Here, the term 'new literacies' encompasses ways of being literate in a digital world and suggests that the naming of multimodal texts and multimedia in curriculum documents could well be superseded by newer forms, not yet invented. Subject English could well be in a perpetual cycle of redefinition and reconstruction. This fact in and of itself magnifies the import for

English teachers to prepare their students for increasingly screen-based, technology-driven lives. Burke (2009, p. 51) extended this concern when considering its possible impact for reading, curriculum and assessment:

We need to think about what new literacies actually mean and how defining and assessing them according to past understandings neglects the nature, practicality, and implementation of such real literate experiences for the children in our schools. Reading books and reading screens are not the same experience, though they may share elements in common.

While there are similarities in reading print and non-print texts, there are distinct differences and these need to be accounted for in the manner of assessment and instruction. These distinct differences extend to the range of skills and attributes designated as desirable for twenty-first century students (CISCO, 2007; Partnerships for 21st Century Skills, 2009). Yet as Reeves (2010) has argued, these types of skills, outcomes and student attributes cannot be properly measured by standardised tests, so it is up to schools to investigate how their curriculum delivery and assessment systems foster this growth.

If students are to be exposed to 'increasingly complex and sophisticated spoken, written and multimodal texts across a growing range of contexts' (ACARA, undated), then both the texts selected for study or creation and the means by which they are assessed need also to offer opportunities for students to demonstrate their familiarity with that increasing sophistication. This involves ways of 'reading' the different texts and being able to recognise if not reproduce their distinctive features. Research into modern day multimodal texts and practices, when considered against the longer traditions of literacy education, is very much in its infancy; however, evidence has indicated (a) less than sophisticated use of screen-based information to create new multimodal texts (Buckingham, 2007; Cheong & Cheung, 2008; Kimber & Wyatt-Smith, 2010; MCEETYA, 2007; MCEECDYA, 2010); and (b) several instances of envisioning appropriate, authentic assessment for them (Bearne, 2009; Kimber & Wyatt-Smith, 2010; McLay & Mackey, 2009; Reeves, 2010). Both these issues are addressed in the following sections.

Towards facility with 'increasingly complex and sophisticated ... Multimodal texts'

When the Melbourne Declaration on Educational

Goals for Young Australians asserted that 'in this digital age young people need to be highly skilled in the use of ICT' (MCEETYA, 2008), broad targets were set for action in schools. With an across-curriculum focus on the development of students' ICT skills, all subject disciplines share responsibility. While progress has been made through the Digital Revolution program of the Australian Government as well as increased home usage, the evenness of its uptake and increase in student skills appears marginal. The 2011 *National Assessment Program – ICT literacy Years 6 and 10* testing is as yet incomplete, but progress in students' ICT literacy development from 2005 (MCEETYA, 2007) to 2008 (MCEECDYA, 2010) was minimal, with clear differentiation by gender, socio-economic background, geographical location and indigenous status. About 8 000 students were tested and their performance results mapped onto a specially designed ICT Literacy Scale that helped chart students' performance and progress along three 'strands': (i) working with information; (ii) creating and sharing information; and (iii) using ICT responsibly (MCEECDYA, 2010, p. 7).

Pertinent to our discussion are the following points from the 2008 Report (MCEECDYA, 2010):

- At Year 6, but not at Year 10, there was a statistically significant increase in the percentage of students at or above the Proficient Standard¹, and in the mean ICT literacy score between 2005 and 2008 (p. 31).
- At both Year 6 and Year 10 the tendency was for metropolitan students to record higher ICT literacy scores than students in provincial areas who, in turn, recorded higher scores than those in remote areas (p. xvii).
- The gap in ICT literacy achievement between Indigenous and non-Indigenous students is greater in 2008 than it was in 2005 (p. xv).
- Overall social communication is the group of most frequently used applications followed by entertainment and school utilities with computer technology being the least frequently used group of applications (p. 57).
- The development of ICT literacy does not simply result from using computers but requires systematic teaching about how the ICT medium can be applied to support communication (p. 64).
- Many students use ICT in a relatively limited way and this is reflected in their overall level of ICT literacy (p. 73).

These points indicate several areas of concern for education generally and English curriculum in particular. The last point above seems to indicate that 'many students' are not engaging effectively with simple, online texts, let alone 'increasingly complex and sophisticated multimodal texts'.

Another Australian longitudinal study, 2003 to 2008, (see Appendix 1) focused on secondary school students' online use and creation of multimodal texts. This study sought to obtain a 'point in time' capture of the students' digital capabilities in completing a curricular-related online task that involved online research and the creation of a multimodal text. The intent was to track students' progress from 2004 to 2006. The research focused on *how* and *how well* secondary school students, firstly, used information and communication technologies to search for and read online texts, and, secondly, created and communicated new knowledge. While this study was designed to be implemented in any classroom, many of the task elements could have been rightfully claimed as traditionally falling to 'English' – reading onscreen texts, searching for information, critiquing sources and information, designing new knowledge, preparing a presentation multimodal document, communicating ideas to an intended audience. Results indicated that the majority of the 984 student cohort in both 2004 and 2006 scored below what was designated as a general proficiency level (Kimber & Wyatt-Smith, 2010). Very few students attained a level comparable with what ACARA would term 'complex and sophisticated' usage in negotiating online content or in creating a well-crafted multimodal presentation according to the assessment criteria developed for these evaluations (e-proficiency, content, design or cohesion) (Wyatt-Smith & Kimber, 2005; Kimber & Wyatt-Smith, 2010; Levy & Kimber, 2009). We will revisit these concepts in discussion in the next section.

Elsewhere overseas, other researchers appear to endorse the need for students to become more discriminating users of new technologies. Cheong and Cheung (2008), for example, found that only 57 per cent of the Singaporean thirteen and fourteen year old student cohort using an online discussion forum contributed comments that indicated higher level information processing or their defence of a position. Buckingham (2007) noted that young people's use of technologies was superficial and banal, rather than innovative or academically rigorous. These instances illustrate how important it is for English teachers to assist their

students to engage more critically with multimodal texts with a view to increasing levels of complexity and sophistication in source texts as well as student creations.

Taken collectively, such research findings from diverse areas indicate a need for schools to adopt more systematic approaches to pedagogy and assessment if young people's critical appreciation and creative usage of new technologies are to be significantly enhanced. These goals rest on extended notions of literate performance that go well beyond print-based classrooms and assessments. They offer exciting directions for transforming English teaching and assessment in ways that complement high-stakes assessment. More fundamentally, they call for authentic assessment tasks incorporating multimodal texts with reconceived notions of assessment criteria and standards, and in ways that value the centrality of teacher judgment and social moderation (Wyatt-Smith, Klenowski, & Gunn, 2010).

Towards authentic assessment of multimodal texts

In the section title above, 'authentic' is taken to have added significance when aligned with multimodal texts beyond its usual use with assessment. While 'authentic assessment' is regularly associated with real-world tasks, attempts to account for a range of student abilities and achievements, and criterion-referenced assessment as distinct from norm-based assessment (see Cumming & Maxwell, 1999; Mueller, 2005), to link 'authentic' to the assessment of multimodal texts is to recognise that reading and creating with multiple modes is different from working with print only and as such, assessment criteria should match the specific nature of working with multiple modes more closely. Informing this usage are key conceptual advances reached as outcomes of the longitudinal research study into secondary students' online use and creation of new knowledge in multimodal texts, as outlined in Appendix 1.

'Transmodal operation' (Wyatt-Smith & Kimber, 2005) was identified as one key concept encapsulating what the production of multimodal texts might entail. The evaluation of over 900 student-created multimodal texts in terms of e-proficiency, content, design and cohesion (Wyatt-Smith & Kimber, 2005) had revealed that very few of the students were able to demonstrate effective operation across multiple modes, including technology platforms, while using online sources and creating a 'new' text. When students placed greater focus on the online content in the time available for

their construction of a new, multimodal text, they did not necessarily simultaneously achieve a sophisticated level of design. If they placed a greater focus on how their presentation was to look, that is its visual appearance or dynamic movement via technology, their inclusion of rigorous content was scant. These findings indicated that for multimodal creation, where multi-tasking and moving across different platforms and modalities are required, being able to move fluidly across modes in an online environment required a complex, sophisticated mix of skills that drew together higher order thinking, technological facility and creativity into one package. Hence, 'transmodal facility' (Kimber & Wyatt-Smith, 2010) emerged as a central concept and desirable attribute to cultivate, defined as the:

fine-tuned ability to work with and across source texts, technology platforms and modes of representation to create new digital texts where critical thinking about content and concepts is balanced with the aesthetics of design. (Kimber & Wyatt-Smith, 2010, p. 616)

By extension, as many students' preparatory work often showed, considerably more information was displayed there than in the 'finished' product. The researchers therefore concluded that 'staged multimodality' (Wyatt-Smith & Kimber, 2009) in fact represented how multimodal creation was an organic, dynamic process wherein a combination of modes would be utilised, but *over* time and not necessarily *at the same* time.

So while English teachers are generally and of necessity experienced assessors of student reading, writing and speaking, with considerable skill in identifying markers of quality in student written and oral work, their comparable experience with specific elements of multimodal production may be somewhat less. Even when multimodal text reading and creation have been incorporated into classroom activities or assessment pieces as vehicles for composition or oral presentations, rarely do substantial criteria of quality relate specifically to discrete multimodal components. For students to be able to attain higher levels of literate performance with 'complex and sophisticated' multimodal texts, their induction into the knowledge of criteria and standards that relate specifically to those features will be tied to greater certainty about 'authentic' descriptors and meaningful feedback. As McLay and Mackey (2009, p. 120) cautioned about assessing New Literacies:

Assessment must proceed from an explicit understanding of what constitutes development and how development is manifested in students' work, behaviour, and metacognitive reflection.

As multimodality, especially with new technologies, is complex and multi-layered, sophisticated reading and authoring skills are required and English teachers will need to find ways to support young people in developing these skills throughout the whole process of learning and 'working transmodally'. English teachers of necessity need to extend their print-dominant perspectives on texts to include distinctive features of multimodal, screen-based texts, especially how the different modes are required to work together to create meaning. This would suggest that what we have traditionally come to know about criteria and standards in assessment do not necessarily carry forward into today's digital world. What we know about achievement in former eras of schooling in defined curriculum areas does not extend to these new ways of working online. Teachers have particular responsibilities to elevate what has been reported as superficial levels of online activity to more critical, creative, empathetic and ethical activity. We are challenged to find ways to assist in their development in all these areas, and subject English with its focus on communication, literate proficiency and literary representations offers the prime focal point.

Attempts have been made to distinguish and value the notion of literate proficiency with multimodal texts. Stein (2004) observed that as multimodal texts offer multiple modes of representation, they have the potential to change the nature of the language and literacy class, but they can only have value if they come to form 'an integral part of assessment practices in which each mode is accorded a specific value' (p. 112). Such an understanding requires teachers of English to be well-versed in both alphabetic and digital notions of literacy, and well-equipped to design tasks for students' multimodal text production – and then to assess the quality of those multimodal productions. All this, when high-stakes testing like NAPLAN is predominantly print-based, increasingly incorporating images, but not necessarily reflecting the complexity that is involved in multimodal text creation. Bearne (2009, p. 31) indicated the breadth of possibilities requiring consideration when assessing multimodal creations:

Any consideration of multimodal assessment needs to be seen in the context of a changing world of communication ... assessment of multimodality will also need

to include performance, three-dimensional constructions, music, moving image, collages of different kinds of texts accompanied by spoken explanations or sound recording ... much more work needs to be done in developing ways of describing complex composition of texts which might combine, for example, movement, sound, image and words.

McLay and Mackey's (2009) research with Canadian English teachers of middle years' students noted the tension between professional dedication to the teaching of writing but a lesser uptake of Web 2.0 technologies in their classrooms. These researchers challenged the inflexibility of rubrics or summative assessment regimes:

Templates, rubrics, and provincial examinations do not offer us the flexibility we need to explore new ways of thinking, composing and critiquing; we must find a way of assessing work that is innovative and responsive to the opportunities offered in new literary environments. (p. 115)

In thinking of ways to enact a more flexible, Web 2.0-appropriate, more expansive view of assessment, McLay and Mackey advocated 'distributed assessment' (p. 113) as a way of drawing students, online community members and teachers into a shared negotiation of activities and assessable formats. They argued that distributed assessment would entail 'principled negotiations of purposes, tools, and appraisals' (p. 118) that would offer a myriad of opportunities for developing the knowledge of both teachers and students. 'Sideshadowing' protocols were suggested as ways of helping the learner to reflect on the process of writing, and heighten metacognitive capabilities about the creative process. They posited that distributed assessment was both an appropriate and an authentic means by which to assess new literacies.

In the United Kingdom, Bearne (2009) reported on an approach using specially defined descriptors for talking about the developmental changes in young people's print-based and multimodal writing. With hand-drawn, image-text narratives as examples, not digital creations, the descriptors offered ways of talking about the students' facility with multimodal creation by placing them on a continuum described as early stages, increasingly assured, more experienced and often independent, or assured, experienced, and independent multimodal text makers (see pp. 22–23). Progress was marked by an increasing ability to attend to a series of specific aspects associated with matching mode and content to specific purposes and audiences,

structuring texts, using technical features for effect, and reflecting.

These few examples illustrate some of the ways in which assessment can become more authentically attuned to screen-based working. If English teachers are to support young people's creative and critical growth with new literacies, then assessment practices need to be more in tune with the digital communication landscape and multimodal texts in particular. Attention needs to focus on how the student has created her/his own multimodal text for specified purposes and audiences, and whether source images and texts have been duly acknowledged, transformed, interconnected and assembled in original, aesthetic ways. This could well involve a range of software and media sources utilised to effect, in efficient and fluid ways, as well as shared negotiation and explicit articulation of task, criteria and standards between teacher and students (Kimber & Wyatt-Smith, 2010). The dynamic possibilities of multimodal texts need to be matched by dynamic assessment practices with criteria and standards that take account of such elements. These are best carried out in the classroom and not in high-stakes assessment items. They cannot be attained through the current NAPLAN assessment formats. They should take account that engagement in and creation of multimodal texts require time and an appreciation of the whole learning process, not just focus on the complete product itself. Student reflection on the screen-based learning process could become a key indicator of learning in this environment.

Developing broader assessment frameworks for English curriculum, multimodality and national assessments for educational accountability purposes

During the Senate enquiry mentioned previously, suggestions were made that different approaches to national testing could be undertaken using technology with students completing different items to provide more comprehensive representation of the curriculum (Cth Australia, 2010, p. 44). However, such approaches tend to use technology as a tool to present items similar in form and content to current testing programs. Other projects are exploring integration of technology in programs to assess and teach 21st century skills (ATC21S) such as 'ways of thinking', 'tools for working', 'ways of working' and 'ways of living in the world' (University of Melbourne, CISCO, Intel, Microsoft, 2009–11). The ATC21S project aims

to develop an assessment framework mapping how students learn collaborative problem-solving and ICT literacy in digital networks. The assessment frameworks will address both identifying student achievement and reporting outcomes and providing feedback to assist improvement of instruction and student learning. This project would appear to provide a thinking framework for a closer look at English literacy from traditional, digital and multimodal perspectives.

Such projects and approaches are clearly expensive. This project is supported by major multinational software companies. The scope of such assessment for all Australian students at key years would appear to be beyond a federal budget. However, richer information on the progress of education in our states and schools can be obtained by a sampling process. Such an approach has been in operation in the United States of America (US) for some time through the National Assessment of Educational Progress (NAEP) and was once instituted in Australia.

NAEP in the U.S. commenced in 1969. It was instituted as a way to identify overall achievement of students in primary and secondary schools in government schools in the U.S., using a sampling approach to student assessment on a rotational basis for twelve subject areas.² While NAEP is not without its own issues, not least of which being the lack of a national curriculum to enable appropriate comparative interpretations of state outcomes, it has long provided an exemplary approach to complex standardised assessment data. The key approach of NAEP assessments is that simple assessments are obtained for large random samples of students while more complex information is obtained through random subsampling. For example, through this process, oral reading skills are assessed. The 2002 data collection of oral reading involved computer-assisted collection of digital recordings of students reading aloud. While this approach is still using technology as a tool, rather than as a learning area integrated with technology as considered in the previous section, the principle shows that more complex and technologically-related assessments of English literacy could be undertaken in Australia using a subsample of the students who complete the current NAPLAN tests. In 2002–3, NAEP included a technology-based assessment undertaken by the National Center for Education Statistics (NCES). To counter the expense of the testing and the breadth of coverage, the national monitoring assessment does not target as many year levels as the current NAPLAN in

Australia. NAEP data provide for further examination of performance for groups of students of interest, In Australia these are rural and Indigenous students in particular, who may be most at risk not just in terms of developing basic skills but also in missing out on the digital revolution and multimodal English curriculum and assessment.

A sampling approach with nested information was previously undertaken in Australia. In 1996 the National School English Literacy Survey investigated student literacy achievement in a large sample of government and nongovernment schools. The survey assessed writing, reading, viewing, speaking and listening. For writing and speaking, 'samples of student work and teachers' classroom assessment records also were collected'. Teachers were 'trained in the assessment procedures and worked with external assessors to assess student work against common marking guides' (NSELS, 1997). Unfortunately the reporting of the outcomes of this project became politically-compromised (see, e.g., Freebody, 1998, p. 13) and the value of an approach to accountability assessment that considered a broad range of literacy skills and the engagement of teachers as professionals in the assessment has not been revisited.

By contrast, in New Zealand, statements of National Standards for literacy have been developed for all schools. The focus of the standards is still fundamental: reading and writing (Ministry of Education, 2011). However, the approach to educational accountability assessment reflects research on best assessment practice. The main approach is to use teacher judgment with moderation. Advice is available online to assist teachers in selecting assessment tools, making overall judgments and moderating evidence of student achievement with other teachers.³ Such an approach in Australia would allow a longer term multimodal and technology-based task to be in place and the design of criteria and standards appropriate to the task.

The benefit of the New Zealand teacher judgment approach is that it allows much greater congruence between assessment of student achievement and the full curriculum. This, in fact, is the rationale for the considerable school-based assessment components in the high-stakes senior schooling systems across Australia (Cumming, 2010; Cumming & Maxwell, 2004, pp. 93–94). School-based but moderated assessments in senior schooling can provide for the rich practical and contextual assessment tasks explored in the previous sections. They provide immediate scope for

engagement with technology, virtual worlds and multimodal literacy. High reliability can still be obtained but not at the expense of validity (Maxwell, 2010).

Directions for future policy and practice

The previous discussion has identified the richness that has developed in our understanding of English literacy in the 21st century. Students entering schools in 2012 will graduate from secondary school in 2024. The future technological world is unenvisionable. It is important that we embrace at least the preparation of students for what we know now. The Melbourne Declaration and Australian English curriculum address this need. The concern is that the educational agenda as currently implemented through the narrow literacy forms of NAPLAN testing will drive teachers to narrow curriculum, concentrate on aspects of literacy and test preparation, and lose opportunities to engage students in full curriculum activities. At a time when national policy is to 'narrow the gap' for students with disadvantage, these are the students, research has shown, who are most at risk of reduced curriculum experience as teachers focus on test scores not overall learning.

From this discussion, several recommendations are made for the future to ensure the realisation of the Australian English curriculum.

1. *The joint federal, state and territory ministers need to ensure that educational accountability reinforces the complete range of learning expectations in the Australian English curriculum.*

The Australian Senate has recommended the need to examine how national educational accountability assessments should have greater alignment with the full curriculum. This is essential. Most importantly, national educational accountability systems need to include reading, writing, listening, speaking, viewing (and shaping and designing) in a range of contexts and multimodal texts. This is communication for the future.

2. *It may be timely to consider our approach to national educational accountability assessments of literacy.*

A range of options already exists for how our national educational accountability can be improved. If the current NAPLAN cohort testing is maintained, additional assessments could be incorporated for random samples of students. While assessment-driven instruction is not necessarily positive, the knowledge that your school could be required to participate in a

wider variety of assessments of learning, including oral reading, speaking, listening, technology-interfaced activities, would demonstrate that these are valued outcomes from the curriculum. The approach taken in NSELS using moderated teacher judgment would allow much richer assessment tasks, with work at the national level to identify the appropriate criteria and standards that could inform assessment in multimodal technology-based English. Perhaps in time, these could replace the current simple format of NAPLAN testing to provide richer data on student achievement to inform the MySchool reports.

3. *Emphasis needs to be given to professional development of teachers.*

Teachers are the starting point for ensuring that students have the opportunity to learn the full curriculum. The brief overview of literacy and English policy and curriculum provided here shows that teachers have had to adjust their professional knowledge and teaching focus many times over a few years. The expectations do not become fewer, they intensify to reflect the complexity of modern communication. Professional development should not focus on teachers' technology skills. It should focus on the Australian curriculum, the intentions and elaborations provided to assist teachers, and ways to enact the curriculum expectations through classroom assessment activities.

4. *A recommendation for teachers.*

A teacher at this time, confronted with once more a new curriculum for implementation and the public agenda of NAPLAN testing and reporting, may be torn in deciding what is best for their students and their school. However, while research has shown the potentially negative impact of educational accountability testing on classroom practice, other research has consistently found a positive effect of rich learning activities on student learning outcomes. Students who have the most exposure to rich learning activities with breadth and depth of learning and varied assessment opportunities and feedback are not only able to demonstrate more achievement in the classroom. They are also able to demonstrate strong outcomes on standardised testing, including disadvantaged students (see, e.g., CTGV, 1992; Newmann, Bryk, & Nagaoka, 2001⁴; Wiliam, Lee, Harrison, & Black, 2004). Teach the full curriculum, engage yourselves and students with technology, the results should follow. As Wiggins and McTighe (2007) have noted:

Schools exist to cause learning that is intellectually vital, generative of future self-directed learning, personally meaningful and productive, and socially valuable. (p. 12)

Notes

- 1 A 'proficient' standard was defined as a 'challenging but reasonable' expectation for typical Year 6 and 10 students to have reached by the end of each of those years of study (MCEECDYA, 2010, p. xi).
- 2 See <http://nces.ed.gov/nationsreportcard/> for full information about NAEP.
- 3 See <http://assessment.tki.org.nz/> (retrieved 9 September 2011).
- 4 Wiliam, Lee, Harrison, & Black (2004) question whether the teachers in schools reported by Newmann et al. (2001) as using high level instruction and tasks were already better teachers. However, the implied logic is that by doing so you will be a better teacher and your students will learn well.

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Appendix 1

The Using and creating online knowledge study

Overview

Using and creating knowledge in the high school years: Performance, production, process and value-adding in electronic curricular literacy (2003–2008) was funded by an Australian Research Council Discovery Grant and hosted by Griffith University. The intent was to obtain a 'point in time' capture of secondary schools' students digital capabilities in completing a curricular-related online task involving online research and the creation of a multi-modal text, and to track students' progress across a two-year period.

Key questions

1. How and how well do high school students combine symbolic systems in their use and production of curricular knowledge in high school curricular activities?
2. How and how well do high school students work individually and collaboratively in these multi-modal curricular activities?
3. What features of classrooms (e.g., pedagogies, assessments, materials) and schools (e.g., policies, support systems) relate to value-adding to performance and process?

Participants

Sixteen government and independent secondary schools across a range of socioeconomic areas in Queensland participated in this study. Participants included 736 students from Years 8 and 10 in 2004, and 248 from Years 10 and 12 in 2006. 138 students were common to both data collection rounds.

The tasks

Two separate online tasks were devised in consultation with a teacher advisory group, following a pilot study in 2003. The aim in devising both tasks was to embed them in curriculum requirements for Years 8, 10 and 12

in national priority areas (English, science, mathematics), while also taking account of the set curriculum in history, studies of society and the environment, and technology.

The 2004 task was designed as a cross-curricular, inquiry-based activity that focused on the environmental threats posed by plastic bags. The 2006 online task retained its inquiry-based framing but had a greater emphasis on web site evaluations. It focused on biometrics, global warming, or the participating school's own curricular focus. Unlike the 2004 task where students were required to present a solution to a problem, the 2006 task required students to investigate alternative views on the topic and represent findings.

Data

A range of data types was collected in 2004 and 2006. This data included

- a. surveys (918 student and 272 adults) – on out-of-school technology use
- b. product data (841 student-created multimodal texts) – mostly *PowerPoint*, some *Word* documents, a few web sites
- c. process data (concept maps, decision-making matrix, web site evaluations – completed as students were using online knowledge and creating their own multimodal text – and their reflections of the process, their product and the experience) plus
- d. screen capture recordings of students' real time working online, searching the Internet, selecting relevant resources and constructing their texts), and
- e. interaction data – recordings of talk as a sub-set of students as they worked in pairs to collaborate on the 2004 task.

All data were created, collected and archived electronically.