The relationship between assessment and curriculum in improving teaching and learning

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Acknowledgments: John Martin and Kirran Follers

This is a story about an educational reform process. Our view is that educational reform cannot focus on structural reform only, that teaching and learning are the core business of education, and that teachers should be given the time and space to reflect on classroom practice.

In his foreword to *Queensland State Education 2010 –A Future Strategy* (hereafter QSE 2010) (Education Queensland, 2000), Premier Peter Beattie articulated that students were to be provided with the opportunities to access the benefits of “the knowledge economy of the future” in order to create the “Smart State”. To achieve this aim, a consultation process was undertaken where many teachers, parents, students and school administrators raised questions about the appropriateness of current curriculum arrangements. They were concerned that the world is rapidly changing and that what is happening in schools is not keeping pace with this.

The QSE 2010 strategy begins from a focus on social, economic and cultural contexts of Queensland and Australia, and describes the need for schooling to focus not only on employment but also on enhancing social cohesion and senses of community and identity. The prime educational goal of QSE 2010 is to increase student achievement levels. According to OECD and EU data, lower achievement levels are affiliated with a host of negative social consequences including institutional impacts on social services, health, policing and other services (Cullen, Cosier, Greco & Payne, 1999). The aim of QSE 2010, then, is the educational construction of a globally competitive workforce and community for the development of Queensland. While other state curriculum frameworks and initiatives also recognise the importance considering post-industrial condition, the strength of the QSE 2010 strategy is its formulation around a futures perspective.

Community expectation for learning that prepares students for the complexity of modern life means that teachers must, to a certain extent, reinvent themselves. And this cultural shift is what the New Basics Project catalyses.

The New Basics currently being trialled in Queensland schools is an integrated framework for curriculum, pedagogy and assessment. It defines essential areas of learning, appropriate and effective approaches to teaching, affiliated modes of assessment, and assurances about student development at key points of schooling.
Within the New Basics Framework, there are four curriculum organisers, the New Basics categories, which are clusters of practice that are essential for flourishing in the worlds that students have to deal with. The framework incorporates Productive Pedagogies, which draw on the results of a recent longitudinal study conducted in Queensland state schools. The framework also includes Rich Tasks, which allow students to display their understandings, knowledges and skills through performance on transdisciplinary activities that have an obvious connection to the wide world. This paper elaborates these three elements, explores their interaction, and describes progress in trial schools towards the goal of improving teaching and learning.

There are 38 schools in Phase I of the New Basics Trial. They spent last year talking about and planning for the New Basics and have started implementing the framework with their students this year. This phase of the project will be completed in 2003. The trial has attracted the interest of the Queensland Government, to the extent of an extra one million dollars being promised before the recent state election. Consequently, 21 Phase II schools have just joined the project and this phase will be completed in 2004.

The New Basics Project attempts to deal with the imperatives of QSE 2010—to improve student outcomes and improve retention rates through a rigorous empirical analysis and revitalisation of classroom practices, including pedagogy and assessment, the relationship between which is the topic of this paper. Under the New Basics Framework teachers will have the opportunity to reflect on how they teach, review their colleagues’ methods, and talk about effective strategies. They will also be required to organise student activities and assessment around Rich Tasks. In fact there is a strong programmatic emphasis on assessment—statewide standards of performance and the moderation of teacher judgments to deal with the potential for “dumbing down” in classrooms.

**New Basics Framework**


The New Basics are clusters, families or groups of practices that are essential for survival in the worlds that student have to deal with. There are four clusters that act as curriculum organisers and are entitled, *Life Pathways & Social Futures, Multiliteracies & Communications Media, Active Citizenship, and Environments & Technologies*. These clusters are intended to help students answer these important questions:

- Who am I and where am I going?
• How do I make sense of and communicate with the world?
• What are my rights and responsibilities in communities, cultures and economies?
• How do I describe, analyse and shape the world around me?

This framework attempts to empower and encourage teachers, support them as they focus on their core business of teaching and learning, unclutter the curriculum, up the ante intellectually, deliver fewer alienated students, prepare students for a future in an uncertain world, and position the classroom in the global village.

**Queensland School Reform Longitudinal Study**

In 1997, Education Queensland commissioned The University of Queensland to investigate the extent to which reform of central office support and school organisational capacity was capable of generating pedagogical change and improved student outcomes. The *Queensland School Reform Longitudinal Study* (QSRLS) (The University of Queensland, 2001) began at the time of the Leading Schools program of school-based management in Queensland schools. The Leading Schools program was primarily concerned with structural reform rather than pedagogical reform, yet its central goal was to enhance student outcomes.

In 1998, the QSRLS began the largest observational study of classroom pedagogy and student outcomes to date in Australian education. The QSRLS research design included large-scale surveys of teachers and principals for systems-wide data on school reform, case study analyses of the impact of management in 24 schools, coded observation of over 1000 lessons, evaluation of student work from those lessons and a meta-analysis of their achievement using conventional measures. Classroom observations were conducted in Years 6, 8 and 11 in the curriculum areas of mathematics, science, English and social science. The inclusion of observations in other subject areas occurred during the second and third years of the study. Classroom observations informed the QSRLS of the extent and nature of current pedagogical practices in Queensland classrooms, and the extent to which these practices were consistent with the productive pedagogy model.

The findings of the three-year study reflect international research, which has demonstrated that “education systems had focused on structural change instead of teaching practices”. The report states there is a need for ongoing teacher professional development with a focus on enhancing teacher knowledges and practices. The report also encourages the establishment of whole-school communities as learning organisations in which on-going teacher learning is complementary to student learning and which encourages the widespread practice of productive pedagogies.

**Productive Pedagogies**

Lingard, Hayes and Mills (2000) refer to “pedagogy” as the interrelationship between teacher practice and student outcomes. They then use the term “productive” with
“pedagogies” because teacher practices or pedagogies are crucial in the production of meaningful student outcomes. Within the QSRLS, productive classroom practices, consisting of both pedagogies and assessment practices, lead to productive performance. The QSRLS developed the concept of productive pedagogies to describe approaches to teaching that are linked to improved intellectual and social outcomes for all students. Productive pedagogies are intellectually challenging, they recognise difference, they are embedded within a highly socially supportive classroom and they are strongly connected to the world beyond the classroom (Hayes, Mills, Lingard & Christie, 2000). The research found that all four elements are highly connected with each other. Intellectual quality and social support have the strongest links with academic outcomes, while connectedness and recognition of difference have the strongest links with social outcomes. Recognition of difference through intellectual quality also results in high-level academic outcomes.

This productive pedagogies model of classroom teaching and learning practices was derived from Newmann’s (1996) construct of authentic pedagogy. Newmann’s measure of authentic pedagogy consists of four items: higher-order thinking, substantive conversation, depth of knowledge and understanding, and connection to the world beyond the classroom. In developing a classroom observation instrument for use in the QSRLS, an additional 16 coding categories were introduced, which contain other elements of teaching and learning and classroom behaviour and interaction.

This table below shows the relationship between the four dimensions and the 20 elements of productive pedagogies.

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<th>Intellectual quality</th>
<th>Social support</th>
<th>Recognition of difference</th>
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<td>Problematic knowledge</td>
<td>Students’ direction</td>
<td>Cultural knowledges</td>
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<td>Higher-order thinking</td>
<td>Explicit quality performance criteria</td>
<td>Active citizenship</td>
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<td>Depth of knowledge</td>
<td>Social support</td>
<td>Narrative</td>
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<td>Depth of students’ understanding</td>
<td>Academic engagement</td>
<td>Group identities in learning communities</td>
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<td>Substantive conversation</td>
<td>Student self-regulation</td>
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The theoretical rationale that underpins this concept was developed from a variety of other educational research literatures explaining student outcomes. These include
sociology of school knowledge, school improvement and school effectiveness research, critical literacies and ethno- graphies of classroom discourse.

**Productive assessment**

As with productive pedagogy and its development beyond authentic pedagogy, the QSRLS conception of productive assessment contains core items from the Newmann study. The table below shows how these were expanded upon to produce an 18-item task scale.

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<tr>
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<td>Problematic knowledge:</td>
<td>Students’ direction</td>
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<td>construction of knowledge</td>
<td>Explicit quality performance</td>
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<td>Problematic knowledge:</td>
<td>criteria</td>
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<td>consideration of alternatives</td>
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<td>Higher-order thinking</td>
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<td>Depth of knowledge:</td>
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<td>disciplinary content</td>
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<td>Depth of knowledge:</td>
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<td>disciplinary processes</td>
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<td>Elaborated written communication</td>
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<td>Metalanguage</td>
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<th>Social support</th>
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<td>Explicit quality performance criteria</td>
<td>problem connected to the world</td>
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<td>beyond the classroom</td>
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<td>Knowledge integration</td>
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<td>Link to background knowledge</td>
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<td>Problem-based curriculum</td>
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<td>audience beyond school</td>
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<td>Group identities in learning</td>
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Although the direct link between productive assessment and productive performance is very high, the results suggest that even better outcomes are achieved if these elements also appear in the pedagogical practices of the classroom. For instance, if intellectual quality is not demanded in the assessment instruments then students will not achieve at a very high level.

There is consistent educational evidence that higher expectation raise standards of attainment. Students learn more if they are taught more and are expected to perform as a consequence. Students also infer that what is assessed is what the system values.
Rich Tasks

The Rich Task is a reconceptualisation of the notion of outcome as demonstration of mastery; that is, students display their understandings, knowledges and skills through performance on transdisciplinary activities that have an obvious connection to the wide world. These activities draw upon skills across disciplines while retaining the integrity of each disciplinary methodology. Their approach is not the same as that of the interdisciplinary activities, which seek thematic links between disciplines.

Rich Tasks are the assessable and reportable outcomes of a curriculum plan that prepares students for the challenges of life in “new times”—a term coined to describe the combined phenomena of globalisation, the shift towards local and service-based economies, new and constantly changing technologies, complex transformations in cultural and social relationships, fluid demographics, and a sense of uncertainty about the future.

The Rich Tasks require students to solve problems, be critical and analytical thinkers, and use the knowledge and skills they have acquired, in a variety of contexts in a variety of ways. The Rich Tasks also require students to tie new learning to what is already known, to have a clear statement of expectations and realise that their knowledge can be transferred to new situations.

In the primary and lower secondary school there is no mandatory assessment beyond the national literacy and numeracy tests at Years 3, 5 and 7. Matters (2001) maintains that “testing regimes of this scope and dimension yield useful data but miss more than they capture. Neither do they provide insights into the varied achievements of students across disciplines”.

A fresh approach to illuminating complex learning outcomes through evidence-based assessment is overdue in primary schooling. Rich Tasks meet these criteria and offer relief to the overcrowded curriculum. Furthermore, by sharp focus and definition of boundaries, Rich Tasks lend themselves to standard moderation procedures to ensure statewide comparability.

In the primary and lower secondary schools assessment is at the crossroads. The choice for the policy-makers is between a plethora of standardised tests and authentic performance-based assessment. Performance-based assessment is not a new concept. What is new is the notion of attaching hard-edged accountabilities to it as in the New Basics Framework.

The aim of the New Basics is to teach students how to locate and evaluate critically the knowledges and skills they need in a particular situation. Even the most expensive state-of-the-art pen-and-paper tests cannot get at such subtleties. And there is no point in having students and teachers undertake a large volume of work for a low information yield on student achievement. The design of Rich Tasks is not reduced to things that can be easily or superficially assessed.
The Queensland model of Rich Tasks is not a call for integrated, holistic teaching. It is a call for a rigorous intellectual focus for student work that cuts through a crowded and potentially diffuse curriculum. A Rich Task is a culminating performance that is purposeful and models a life role. It presents real, substantive problems to solve and engages learners in forms of pragmatic social action that have genuine value in the world. Each task demands that students engage in solving particular problems of significance and relevance to their world, community, school or region. The problems require identification, analysis and resolution and require that students analyse, theorise and intellectually engage with that world. In this way, tasks have a connectedness to the world outside school. The QSRLS research identified intellectual engagement and relevant work as the two necessities for improved outcomes.

The accompanying example demonstrates how the different aspects of a Rich Task are presented to teachers.
Year 9 Rich Task#1 — SCIENCE AND ETHICS CONFERENCE

New Basics referents
Multiliteracies and communications media
- Mastering literacy...
Active citizenship
What are my rights and responsibilities in communities, cultures and economies?
Environments and technologies
- Developing a scientific understanding of the world
- Working with ... engineering technologies

Targeted repertoires of practice
- Understanding of what constitute ethical questions and principles
- Understanding of various biological and chemical structures and systems, and the associated concepts, nomenclatures and notations
- Focused research and analytic skills
- Critical thinking and problem-solving
- Etiquette of formal correspondence and protocols of introduction
- Organising ideas and data, sifting through them, arranging them wisely and making sense of them
- Laboratory practices

Students will identify, explore and make judgments on a biotechnological process to which there are ethical dimensions. They will identify scientific techniques used, along with significant recent contributions to the field. They will also research frameworks of ethical principles for coming to terms with an identified ethical issue or question. Using this information, they will prepare pre-conference materials for an international conference that will feature selected speakers who are leading lights in their respective fields.

Ideas, hints and comments
- Take into account the diversity of activity encompassed by the terms biotechnology and engineering technologies.
- Think of the various opinion-makers and stakeholders in science, ethics, religion, public policy, economics, and special interest groups etc.

Task parameters
- Task intensity: high
- Students may work individually or in pairs/triads or in groups of four.
- Students must write their explanations (A) individually, under controlled conditions, with no time limit, and without seeking clarification of that science during this time.
- Students must provide a folio containing all information on which their work is based.
- Available grades: 4 (subject to outcomes of the paneling process)

A Provide a written explanation of the fundamental technological differences in some of the techniques used, or of potential use, in this area. (Include this in the pre-conference package for delegates who are not necessarily experts in science.)

B Consider the range of ethical issues raised in regard to this area’s purposes and actions, and scientific techniques and processes.

For an issue about which there is ethical debate, present a deep analysis of that issue in terms of a relevant ethical framework.

Highlight aspects that will be the focus of the conference speeches.

Identify six real-life people you would choose to be keynotes speakers, each of whom could make a valuable contribution to the proceedings of an international conference with the theme “Biotechnology: Science and Ethics Confer”. Your choice of speakers should help fulfill your personal aim that the conference foster appreciation of the range of views you uncovered in B and showcase scientific research and developments which have resolved, or might resolve, one of the ethical objections.

Indicate, for each speaker, his/her contribution by providing a précis of 150–200 words, which gives the credentials of the speaker, why the speaker is eminent in your chosen area, and what the speaker will be contributing through his/her speech.
Each task is presented in detail thus:

- The task specifications are given as an annotated and embellished flowchart.
- The flowchart is complemented by a written synopsis of the task. This task description appears in the upper centre of the flowchart under the task identifier.
- Text in the top left-hand corner gives the New Basics referents.
- Text in the bottom left-hand corner gives the targeted repertoires of practice (and operational fields of knowledge).
- Text in the top right-hand corner gives ideas, hints and comments relating to how the task might be woven into the curriculum plan and how students might be set up to undertake the task.
- Text in the bottom right-hand corner gives the task parameters in order to clarify and enrich the Rich Task’s function.

Each task is accompanied by a statement of “desirable features”. These are the task-specific properties of student work that demonstrate achievement in the targeted repertoires of practice and other aspects signalled within the diagrammatic representation of the task. The desirable features, therefore, contribute to the determination of the grade awarded to the student for that task. They include statements outlining evidence of high-quality performance and for acceptable performance (i.e. successful task completion).

The desirable features in this exemplar task are given below.

High-quality performance is evidenced by:
- deep understanding and mastery of aspects of language use with respect to style, tenor and intention. This task demands language use in the following ways:
  - précis writing, protocols of introduction and formal correspondence;
  - explaining chemical and biological structures and systems with due regard to nomenclature and notations of science.
- accurate and detailed knowledge of a range of scientific techniques, and meaningful contribution.
- deep analysis of a biotechnological issue, examined by means of presentation abstracts for six real-life people who can be seen to make distinctive, valuable contributions and who collectively fulfil the conference aim to foster appreciation of the range of views uncovered.

Acceptable performance (successful task completion) is evidenced by:
- identification of the science and ethical implications of an issue in a biotechnological process.

As well as having a real-life slant, these tasks are also rich in their application. They represent an educational outcome of demonstrable and substantial intellectual and educational value. Rich Tasks have salience and power in new worlds of work and
everyday life. It is important that they have recognisable face validity with educators, parents and community stakeholders as being significant and important. Finally, it is crucial that tasks be rich in developmental, cognitive and intellectual depth and breadth to guide curriculum planning across a significant span of schooling.

Standards against which student work is to be judged will be pitched to the later half of the common juncture years for reporting (3, 6 and 9). The same standards will apply even in schools where students complete some tasks before the end of the three-year span.

**Productive performance**

The QSRLS also claims that there is a set of productive performances that demonstrate students’ achievement of academic and social outcomes from schooling. Productive performance draws upon theories of learning that are evident in the syllabus documents of the Queensland Board of Senior Secondary School Studies and the Queensland School Curriculum Council. This archetype of learning encourages students to work from their own knowledge base to construct new knowledges through the use of complex reasoning skills, such as hypothesising, synthesising and evaluating.

The QSRLS performance scale consists of eight elements designed to measure student performance:

**Intellectual quality**
- Problematic knowledge
- Higher-order thinking
- Depth of understanding
- Elaborated written communication

**Connectedness**
- Connectedness to the world beyond the classroom

**Recognition of difference**
- Cultural knowledges
- Responsible citizenship
- Transformative citizenship

Students’ performances are heavily dependent upon what is asked of them in the assessment instrument, as well as on the teaching strategies that are applied to their learning. The QSRLS suggests that there must be a strong alignment between assessment and pedagogy. It also suggests that student outcomes desired by the whole school community, which are ideally negotiated and explicitly stated, are reflected in classroom assessment tasks. When teachers focus on high-level performance and have high expectations of their students, not only are all students from all backgrounds
more likely to achieve greater intellectual quality, but also the pay-off would be achievement of the “basics” (old and new).

**Current application in trial schools**

**Teaching teams**

Rich Tasks intertwine curriculum and assessment and are transdisciplinary in nature. This model of assessment has required schools to rethink their mode of teaching and learning and organisational structure and leadership to support this change. Teams of high school teachers from various subject disciplines are required to plan, teach and assess together. Planning across disciplines has injected new life into a traditional curriculum, assessment and reporting paradigm through the exchange of new and interesting curriculum ideas, teaching strategies, movement from the traditional to the performance-based assessment and, for the first time, moderation in the junior secondary school. Teachers across discipline areas have articulated where they feel their expertise is best suited within each Rich Task and whether they have a major, minor, incidental or embellishment role. Planning across disciplines has also created an audit of discipline content and has forced teachers to analyse critically their choice of content and, as a result, unclutter the curriculum. On the other hand, teachers in primary schools have had to assess their strengths and weaknesses and determine where they will require external expertise. This may be found in school support staff, the school or wider community.

**Primary–secondary interface**

The inclusion of Year 7 teachers into the planning process has been an awakening for high school teachers. The dialogue between sectors has created a curriculum audit that is well overdue. Viewing assessment pieces and work samples, and sharing pedagogical practices with the primary teachers has enabled high school teachers to pitch Year 8 work at an intellectually demanding level and, in many cases, has encouraged teachers to re-evaluate their expectations of students. Discussion on curriculum suitability has also had a direct effect on teacher perception of student ability.

**Planning process**

A planning process has been developed that interrelates productive performance/assessment/pedagogies with the New Basics referents, operational fields of knowledge and repertoires of practice. Teams of teachers map backwards from the Rich Tasks, identifying what students have to produce for assessment, and the features that typify high-quality performance. Having identified and made principled selections from the targeted repertoires of practice required to complete the task successfully, teachers then design intellectually demanding learning experiences, under the four New Basics referents, to develop these skills and knowledge in their students. They then design teaching strategies, using the Productive Pedagogies model, catering for a range of learning styles and capacities for engaging students, in meaningful and relevant learning activities.
Development of teacher professional learning communities

Teacher professional learning communities are the crucial practical link to pedagogic reform (Luke et al., 2000). The achievement of professional learning communities is currently a challenging aspect of the New Basics “taskforce”. This group has a responsibility to consult with their own faculty and to feed information and concerns back to the taskforce. Other schools have established planning teams within which professional risk taking is encouraged. Teachers become engaged in professional learning communities through a shared dialogue about philosophy, aims, communities and social differentiation. Similarly, Senge (as cited in Hayes et al., 2000) maintains that teachers are responsible for building organisations where people continually expand their capabilities to understand complexity, clarify vision, and improve shared mental models.

Conclusion

The New Basics Project provides Education Queensland with a framework to integrate the three message systems of curriculum, pedagogy and assessment. It is a response to the concerns expressed in QSE 2010 about education in a time of rapid change, and it builds on the findings of the QSRLS. The New Basics Framework epitomises the relationship between assessment and curriculum in improving teaching and learning. The Rich Tasks represent curriculum and assessment intertwined as well as assessment and pedagogy “feeding off each other” (Fullan, 1993). They are at the one time an assessment device and part of a strategy for educational reform. They depend on the intellect, imagination and expertise of teachers, are motivating to students and are learning activities in themselves. The New Basics Framework Research Program will incorporate feedback from teachers on their motivational and transformational powers. The research report is due at the end of 2003.

References

Available on request.