'OBEDIENCE, LEARNING, VIRTUE, AND ARITHMETIC'

KNOWLEDGE, SKILL AND DISPOSITION

IN THE ORGANISATION OF SENIOR SCHOOLING[1]

A discussion paper prepared for the Queensland Studies Authority by

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[T]he main skill and groundwork will be to temper [students] with such lectures and explanations upon every opportunity as may lead and draw them in willing obedience, inflamed with the study of learning, and the admiration of virtue … gain them to an incredible diligence and courage: infusing into their young breasts such an ingenuous and noble ardor. At the same time, some other hour of the day, might be taught them the rules of arithmetic.

John Milton *Tractate on Education*, 1644

Introduction

Foreshadowing a re-parcelling, re-organisation or re-sequencing of teaching and learning activities in schools amounts to an invitation to a debate: To change schooling is to raise deep issues about what schooling is for, and about what kinds of futures individuals and communities can expect to be put on offer through schooling. In addition, *the reason why the curriculum can cause these eruptions of public controversy is that **what** we know affects **who** we are*[2]. As is clear from Milton's *Tractate on Education*, at stake in education are not just knowledge of the contents of a traditional curriculum and the 'arts' of physical health and 'prowess', but options for individual and collective morality and identity.

The heat in the debate is turned up when the foreshadowed reforms are aimed at the senior years of schooling, with their more obvious responsibility for both academic and vocational preparation, and their immediate consequences for the conduct, attitudes and life pathways of young citizen-workers. An additional ingredient in the mix in the Queensland setting is the recent move to expand the number of students staying on in school for the senior years: The consequences of school experiences are thrown squarely into the spotlight.

This paper aims to inform discussion about the contents and organisation of senior syllabuses; so it begins by outlining a position on the functions of schooling and the desirable attributes of syllabuses in general. It proceeds to lay out a set of ideas and terms for describing and evaluating syllabuses, focusing in particular on the relationship between knowledge, disposition, and application. It draws along the way on variations in syllabus organisation found outside of Queensland to illustrate contrasts in the bases of frameworks and in their applicability to a variety of local economic, cultural and professional settings. It concludes with summary answers to questions about current curricular formations, whom they serve and fail to serve, and what the consequences might be of selected re-emphases in the senior school years.

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[2] Moore, R. (2000: 17). For Knowledge: tradition, progressivism and progress in education –reconstructing the curriculum debate, *Cambridge Journal of Education,* 30(1), pp. 17-36.

The purposes of schools

To provide some background to considerations of syllabus structure and content it is worth sketching a position on some starting points for discussion, firstly about the functions of schooling. Hunter[3] has outlined of a set of purposes for schooling that make a useful starting point:

- a *pastoral* function, that children should be given caring and humane environments in school in which to grow and develop;

- a *skilling* function, that schools should play a significant role in the production of a skilled and competent workforce;

- a *regulative* function, that schools should transmit forms of orderliness and control to an otherwise potentially disorderly populace;

- a *human-capital* function, that the investment of effort and money in schools should directly enhance economic productivity in general and contemporary labour market patterns in particular;

- a function of *individual expression*, that schooling should be a safe setting in which individuals can learn to explore, develop, and express their personal goals and aspirations;

- a *cultural-heritage* function, that people, especially young people, should be introduced to the ways of thinking and acting that have been and valued over time - cherished art works, and disciplines of scientific inquiry, and the rest;

- a *political* function, that schools should produce a citizenry knowledgeable about and dedicated to the preferred political principles of the society.

While at different times contemporary political, economic, and cultural conditions have called upon schools to give priority to one or more of these functions, a key point of Hunter's is that all are in play simultaneously at all times. The apparent dominance of one or the other of these functions in community, professional and policy debates about

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[3] Hunter, I. (1993). The pastoral bureaucracy: Toward a less principled understanding of state schooling. In D. Meredyth & D. Tyler (eds.) *Child and citizen: Genealogies of schooling and subjectivity.* Brisbane: Institute for Cultural Policy Studies.

education among professional educators and community members usually leads to a resurgence of concern over the others. These competitions are not finally soluble; they are evidence of the multi-functionality of schooling across different times and places. The conditions surrounding Milton when he wrote the *Tractate on Education* – the politico-religious wars around a god-anointed king and a god-fearing parliament – gives some purchase on Milton's urgent call for schooling to drive home the 'upstanding' moral virtues, with obedience at the forefront, and, with time permitting, the rules of arithmetic.

Public and professional understandings about each of the functions above are shown in discussions about self-expression, back-to-basics, performance standards, moral education, supportive school environments, inquiry-based learning, multi-cultural education, education for democracy, citizenship education, critical education, vocational education, transitional education, and so on. These deliberations persistently traverse formal and informal educational debates – in newspapers, homes, curriculum development branches, school staff rooms, teacher-parent nights, policy committees, taxi cabs, parliamentary sub-committees, and all the rest. Each, as well, has implications for what counts as the specialist knowledge and practice of 'the teacher'; each projects different bodies of knowledge, skill, disposition, and value for teachers, students, and, ultimately, for the 'educated society'; and each has distinctive implications for policies about and the design of curriculum and syllabus. It is important to keep in mind, however, that no single one or subset of the functions mentioned above can be taken to determine alone decisions about syllabus design and execution. Schools function in young people's lives, and in a society more broadly, for better or worse, in ways that have both direct and consequential effects on all of these counts.

To illustrate, one instance of a curriculum frame that starts with an explicit analysis of these deep-purpose issues is the Paideia program[4], based on a proposal originally put by Adler some decades ago, and now enjoying some popularity especially in the US. The program represents a reaction among a group of US educators against what they saw as a

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[4] See, e.g., Adler, M. (1982). *The Paideia proposal*. NY: MacMillan, and (1984). *The Paideia program*. NY: MacMillan; The Paideia Proposal: A Symposium, Special edition of *Harvard Educational Review*, 1983, 53, 377-411; and Billings, L. & Roberts, T. (2002). Dialogic discussion and the Paideia seminar. *American Educational Research Journal*, 39, 907-941, and at http://www.paideia.org/content.php/system/index.php (retrieved Jan 6, 2006).

dilution of the intellectual quality of educational offerings, in particular those provided to students attending working-class and minority schools. In Paideia classrooms, the goal is that all students be involved in a range of academic work and social practices aimed at: i) becoming good citizens, ii) earning decent livings, and iii) leading good lives. To those ends, Paideia teachers are charged with using three general instructional techniques: i) didactic instruction, for enhancing students' factual knowledge and recall, ii) intellectual coaching for developing students' cognitive and communicational skills, and iii) Socratic-style seminar dialogue to strengthen students' conceptual understanding. Table 1 illustrates the relationship of goals, means and content[5].

Table 1: The top-order strands and means of the Paideia project

	Acquisition of organized knowledge	Development of intellectual skills – skills of learning	Enlarged understanding of ideas and values
Means	Didactic instruction lectures and responses Textbooks and other aids	Coaching, exercises, and supervised practice	Maieutic or Socratic questioning and active participation
Areas, operations, Activities	Language, literature, and the fine arts	Reading, writing, speaking, listening	Discussion of books (not textbooks) and other works of art
	Mathematics and natural science	Calculating, problem-solving observing, measuring, estimating	Involvement in artistic activities e.g., music, drama, visual arts
	History, geography, and social studies	Exercising critical judgment	

The intention here is that both planning and implementation involve the ongoing integration of these columns in the daily work of teachers and students. In addition to the three main columns of learning, the core program of study also includes, for all twelve years, a group of auxiliary subjects, such as physical education and care of the body, manual arts for some of the school years, and an introduction to the 'world of work, occupations, and careers' for the last two of the twelve years.

Paideia advocates point to the direct and publicly recognisable relationships among the broad functions of schooling, the pedagogies brought strategically and self-consciously into play, and the curricular contents. The point here is the reliance of the program on

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[5] from Adler, 1982, op. cit. p. 22.

conscious public articulation of structural and content features aimed at addressing each of the functions of schools, again formally stated, consistently endorsed and reinforced, and continually oriented to in planning, teaching, and assessment, rather than on a general, aspirational, or implicit belief in possible connections.

Curriculum frameworks are, no matter how eclectic the ideas they collect, normative position: It is entirely likely that many individuals and groups would regard one or another of Hunter's purposes as the crucial one; some would nominate additional functions such as adherence to a religious faith. A school system's failure to faithfully or comprehensively on a certain function will not have equally deleterious effects across a population; simply, some have more at stake in schools' abilities to deliver on these counts than do others. From Anyon's work in urban schools in the US she concluded:

> *The consequence for my overall analysis for the ways we conceptualize education policy is fundamental. Governments and corporate elites depend on education to deflect the pain inflicted by the economy. That cover does not work any longer for larger percentages of the population. … [So] education policy cannot remain closeted in schools, classrooms, and educational bureaucracies.[6]*

As in Hunter's rubric, the consequences of educational activities in the out-of-school world are argued here to need direct reflection in that world and vice-versa.

Features of syllabuses

How to formulate the features of high-quality syllabuses that can begin to square up to these general expectations of schooling? Following a list provided by Matters[7], it can be argued that educators and education systems over the years ahead will need to make some 'bottom-line' commitments to the development of syllabuses that are:

- *focused and uncluttered* (conceptual organisations of knowledge, skill and disposition, rather than topical collections);

- *fluid and responsive* (with a clear and widely understood set of strategies for adaptation under certain conditions);

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[6] Anyon, J. (2005: 199). *Radical possibilities: public policy, urban education, and a new social movement*. London: Routledge.
[7] adapted from Matters, G. (2005). *Curriculum and syllabus values: Lessons from the New Basics in Queensland.* Paper presented to the Australian and New Zealand School of Government conference on 'Schooling in the 21st century', Sydney; and see Teese, R. & Polesel, J. (2003). *Undemocratic schooling: Equity and quality in mass secondary education in Australia*. Melbourne: Melbourne University Press.

- *ancient and modern* (acknowledging the ongoing growth and reconfigurations of knowledge);

- *trans-disciplinary and disciplinary* (as one mode of accessing and simulating real-world application);

- *rigorous in assessment* (as a resolution of a potential tension between equity and excellence);

- *'valid in the real world'* (providing recognizably 'thick simulations' that project the learner into both further educational/training and civic, vocational and domestic life);

- *comparable* (applied in recognisable adaptations across provision sites);

- *accountable* (making comprehensible and compelling sense to governments, system authorities, parents, students, and the community at large as part of the social compact of educational governing bodies and their constituents, in the most general sense, the society at large); and

- *successfully applicable across the entire system* of schools intended to be served.

Each of these 'desirable characteristics' of school syllabuses warrants extensive discussion in its own right, but there seems general agreement on a list something like this, at least in the generic form set out above. A notable feature of this list is the interplay between a variety of characteristics that have traditionally represented the polar ends of debate in education: focused but fluid, traditional but contemporary, discipline-based but inter-disciplinary, responsive but valid in 'the' real world, and so on. Syllabus documents and curriculum guidelines are decorated with references to 'the real world' (and variations such as 'the world of work', and so on). If there were indeed one such 'world' that could be known and brought to bear on syllabus design, then the job of syllabus selection would be straightforward. The usual caution provided here relates to the rapidity of change in 'the (various) real world(s)', but the primary justification for diversity in syllabus offerings is the qualitatively different worlds in which graduates of a society's schools will come to live and work. Reversion to a 'pure syllabus core that is a preparation for living in 'the world' is not only a form of 'lost nostalgia' – for a time and place that never was – it is also a culturally, racially, and economically normative imposition on a society.

In the sections that follow, the argument is that there is one primordial interplay that is central to generative discussion about syllabus design – that between the epistemic and pragmatic work a syllabus and a suite of syllabuses needs to afford students. A central point is that contrasting the relative benefits of these polar ends, in particular the key contrasty of discipline-based and inter-disciplinary work, serves to treat the value of each as a distinct body of fixed propositional or procedural knowledge only, and that a key aspect of the value-adding that each category offers young people is in fact the instances of interplay – formal and informal – between them.

A question then arises about the visibility of such interplays and the nature of the logic and rationale that underlie and warrant the selection and sequencing of learning experiences.

The deep grammar of syllabus

Selecting and categorising material, time and space for schools entails establishing priorities, and that in turn calls for some coherent and publicly comprehensible underlying rationale. From the theoretical literature on syllabus and curriculum design it is possible to locate four general kinds of rationales: epistemological, psychological, universalist, and social. [8]

Epistemological rationales foreground the distinctive logical and content structures of particular bodies of human knowledge and understanding. Each of these bodies is taken to be the evolving result of historical developments involving distinctive kinds of concepts, proof procedures for truth and value, and relevance systems. Hirst's forms of knowledge and experience[9] are an example of an attempt to put forward curriculum structures based on the epistemological models: Hirst delineated logico-mathematical, empirical, interpersonal, moral, aesthetic, religious and philosophical forms of knowledge and experience as the bases for curriculum and syllabus design. These he took to form the top-level category system for any curriculum program.

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[8] cf Scott, D. (2003). Curriculum studies: Major themes in Education, Volume 2, Curriculum Forms. London: RoutledgeFalmer.
[9] Hirst, P.H. (1974). *Knowledge and the Curriculum.* London: Routledge & Kegan Paul.

Psychological rationales for curriculum and syllabus design attempt to make central the cognitive-psychological processes that are taken to be key to effective functioning and knowledge development (related, for example, to core curriculum elements in the Queensland model). In such models, the aim is to delineate distinctive cognitive processes that seem to operate relatively independently of one another, and that seem to have distinctive variation in the population. As an example, a recent modification of Bloom's taxonomy by Anderson and Krathwohl[10], attempts to incorporate both the kind of knowledge to be learned (Bloom's knowledge dimension) with the cognitive-psychological assumed to be used in learning, as in Table 2.

Table 2: Knowledge and process dimensions in a recent adaptation of Bloom's taxonomy

The knowledge dimension		The	Cognitive	Process	Dimension	
	remember	understand	apply	analyse	evaluate	create
Factual						
Conceptual						
Procedural						
Meta-cognitive						

Note that the actual content of the tasks – their epistemological coherence and continuity, and their potential real-world value – are not the driving motivation for curriculum, assessment or pedagogy in this approach; in fact they do not figure in the planning template.

Third, some theoreticians have argued that all cultures employ particular sub-systems, and that the responsibility of curriculum is to use them as the generative organisational categories for the educational experience of the young. As an example, Lawton's forms of knowledge[11] included sub-systems such as: social-political, economic, communicational, rational, technological, moral, aesthetic, and developmental. Lawton takes these to be

[10] Anderson, L.W. & Krathwohl, D.R. (eds. 2001). *A Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives.* New York: Longman.
[11] Lawton, D. (1989) *Education, Culture and the National Curriculum,* London: Hodder and Stoughton.

universal sub-systems, that is, inflected across all cultures, and that the task therefore is to develop in young individuals an understanding of the sub-systems particular to their own societies along with those that apply in other major social formations.

Finally and perhaps more familiar are rationales that are based upon some analysis of the particular social configurations and demands in which the school system operates and with which most students will probably live. It is this general class of rationale that forms the basis for debate concerning the relative significance of academic versus vocational educational programs, and of the real-world value of particular academic subjects, such as the classical languages, advanced mathematics, and so on, which can be seen not to have immediate individual utility. Calls for schools to offer experiences that enhance students' abilities to 'do-physics-like-a-physicist', 'do-history-like-a-historian' and so on, are a variant on the same theme, elevating the goal from the pragmatic task to the conceptual metiers of the practitioner[12].

Categorising knowledge and activity: The epistemic work of the syllabus

Here the view is that the goals of a syllabus and curriculum need to be described in terms of *knowledge, understanding, skills* and *dispositions*, and further that these are most productively ordered into evolving clusters conventionally termed 'disciplines' for the purpose of what can be termed 'epistemic' work. Also, knowledge, understanding, skills and dispositions are developed in use, in settings of use or simulations of use – a dimension often referred to in educational debates with labels such as *project work*, *interdisciplinary work*, *problem- or inquiry-based work*, as so on – the purpose of which can be called here 'pragmatic' work.

Disciplines are made up at their core of a productive and changing tension brought on by the combination of epistemic and pragmatic work that they need to do. This has been termed the "dual mandate" of disciplinarity:

> *On the one hand, the production of knowledge … requires secure principles of determination, from which inferences and rules of evidence may be drawn.* [the epistemic] *…On the other hand, the initiation and performance of effective social actions … requires a*

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[12] But only a certain kind of practitioner; 'doing-physics-like-an-electrician' is not called for so frequently, a significant point in light of the relationship between 'academic' and 'vocational' programs, as discussed below.

> *minimal degree of unconditioned agency, without which the changes wrought could not be directed to a designated end.* [the pragmatic][13]

This "dual mandate" of disciplinarity allows the practitioner to carry

> *a sense of practical regimen into an economy of conceptual enterprise[14]*

Formal schooling necessarily calls for the organisation of, and thus for working categories of time, people, and activities. A key question for this discussion concerns general features of the design/s for such organisation. An initial step in such a discussion is to establish core vocabularies – of time, people and activities – that are sufficiently grounded in known experience that they can capture the significant points of debates in the area, but not so pre-specified that they limit scope for speculation about future developments. This section introduces some of the key ideas and terms that will frame much of the discussion to follow.

We can take the term 'discipline' to refer to a tradition of inquiry that provides a coherent suite of answers (what the answers are, how definite they are, and how shared they are) to questions such as:

- What counts as evidence?

- What counts as reliability?

- What counts as fact and opinion, and what is the relative significance of each in proof of truth and value?

- What do the 'right answers' look like and what are the 'right' ways of finding them?

- Is the main goal documentation, explanation or interpretation?

- What does the appropriate relationship between expert/teacher and novice/student look like?

Disciplines constantly grow and change in their contents, interests and organizational and institutional formations:

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[13] Anderson, A. & Valente, J. (2002). *Disciplinarity at the* fin de siecle. Princeton: Princeton University Press, pp 4ff
[14] ibid p. 4

> *Academic disciplines are not abstract entities, nor do they possess universal or static essences. They are born and evolve, emerge and vanish, splinter off and join together, reject and absorb each other. They change in content and denomination. They are spaces of power, of contested power, spaces that cluster actors and interests, actions and strategies[15].*

The various 'actors and interests, actions and strategies' that make up disciplines of inquiry are products of distinct social histories, given their form and the lines of their boundaries through the growth of distinctive institutional formations.[16] Becher has referred to these as "academic tribes and territories". The most obvious manifestation of this is the school or university department, but the particularity of the proposition is that these institutional 'tribal' formations are the historically enduring organisational entities, around which the bodies of knowledge, understanding, skill and dispositions cluster rather than the other way around.

Disciplines are taken to be at different moments in their evolution, as reflected in the dimensions along which various philosophers and education and knowledge have characterised them, for example, ranging from:

- *compact* (where problems and methods are well-defined and widely agreed-upon) to *diffuse,[17]* and

- being at a *theoretical* stage (with high levels of agreement on basic theoretical tenets enabling clear sense of progress) to being at a *natural-history* stage.[18]

The compactness and stage of a discipline's development relate directly to the degree of precision and professional / practitioner agreement around the key resources offered by a discipline. Each discipline represents a particular resolution of, on the one hand, rules for determining truth and value (an orientation to the integrity and logic of the knowledge in its own terms) and, on the other, the agency of the human inquirer (an orientation to the inquiry as practical and inventive work in the world).

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[15] Viñao, A. (2001) History of education and cultural history: Possibilities, problems, questions. In T.S., Popkewitz, B.M., Franklin & M.A. Pereyra (Eds.) *Cultural History and Education: Critical essays on knowledge and schooling*. New York: Routledge Falmer, p. 428*ff.*

[16] Becher, T. (1989). *Academic tribes and territories: Intellectual enquiry and the cultures of disciplines.* Milton Keynes: Open University Press.

[17] Schwab, J. (1978). Education and the structure of the disciplines. In I. Westbury & N. Wilkof (Eds.), *Science, curriculum and liberal education.* Chicago: University of Chicago Press, and see Toulmin, S. (1972). *Human understanding.* Cambridge, MA: Harvard University Press.

[18] Hempel C. (1965). *Aspects of scientific explanation and other essays in the philosophy of science.* New York: Collier-MacMillan.

In describing the relationships among disciplines, it is useful to draw on Bernstein's seminal analysis. Bernstein nominated a continuum of types of curriculum with, at one end, curriculum characterized by the *collection* of bodies of knowledge, understandings, skills, and dispositions, and, the other end, curriculum characterized by the *integration* of various combinations of these. One of Bernstein's interests was in the strength of the boundaries between the contents of curriculum, which he characterizes on two axes[19].: The first, termed *classification*, refers to the relationships between the contents of the curriculum, that is, the degree of differentiation: "classification refers to the degree of boundary maintenance between contents" The second axis Bernstein termed *framing*, thought of as the kind of context in which knowledge is transmitted and received, that is, the boundary between what may and may not be transmitted within the terms of the pedagogical relationship: "the degree of control the teacher and pupil possess over the selection, organization, pacing and timing of knowledge transmitted and received in the pedagogical relationship".

Bernstein noted that strong classification and framing in schools – that is, strong boundary maintenance between curricular content and strong distinctions in the relative authority and agency of teachers and pupils – generally afford predictability in time, space and purpose in educational institutions[20]. At the same time, however, such a combination can also establish the bases of rigid social stratification through schooling, limiting participants' exercise of experimentation and agency.

One way in which disciplines both manifest their distinctive epistemological workings and acculturate beginning practitioners is through their use of language. In discussing differences in reading and writing, for instance, Macdonald[21] has outlined four ways disciplines use language differently as illustrated in Table 3:

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[19] Bernstein, B. (1975). *Class, codes and control. Volume 3: Towards a theory of educational transmissions.* London: Routledge & Kegan Paul, p. 88 - 89.

[20] ibid pp 106-107

[21] MacDonald, S.P. (1994). *Professional academic writing in the Humanities and Social Sciences.* Carbondale, Ill.: SIUP.

Table 3: Functions and dimensions of disciplinary difference

FUNCTIONS	DIMENSIONS
Identification of "central puzzle"	Diffuse vs. compact
Criteria for knowledge production	Implicit vs. explicit
Cognitive functions	Interpretive vs. explanatory
Socio-cultural functions	Advocacy vs. knowledge production

MacDonald demonstrated how qualitative differences among disciplines on these functions were associated with distinct features of language use. So novices need to acquire not just the cognitive and epistemological metiers of a discipline but also the lexical, grammatical and generic registers that characterise each one's distinctive 'cut' on the understanding and documentation of experience. To illustrate the distinctiveness of discipline-based syllabuses currently in play, we can consider a sample from the Queensland senior suite in operation at the time of writing. Unlike the new Queensland 1-10 syllabuses, which are all outcome-based documents, the Queensland senior syllabuses tend not to relate or refer to each other in their statements of organisation or rationale. Their logics and lexicons are subject-specific with few apparent similarities in the characterisation of knowledge or learning. As a suite they represent a collection code. Cursory comparison of four of theses senior syllabuses illustrates the point:

1. *English*: The language framework underpinning the syllabus is the interaction between discourse, genre, register, and textual features. The work is organized around five principles of language use: continuity from phase to phase; an increasing complexity to challenge language learners; an acceptably broad range of materials; the increasing independence of the learner; and accommodating to cultural, social and individual differences.

2. *French*: The material is organized around students' demonstration of skills in listening, speaking, reading, and writing. A prescriptive set of tasks, with no evident rationale for the sequencing or selection of materials.

3. *Mathematics* A: The work here is organized around four key ideas: application, technology, initiative, and complexity. The program is prescriptive in its layout of

what students need to learn, and framing considerations are organized through the following structure: topic, time allocated, focus, subject matter, suggested learning experiences.

4. *Biological Science*: The material here is not necessarily organized around key skills, ideas, or framing strategies but is rather outlined under the following objectives: to develop attitudes and values; to recall; to apply in simple situations; to collect and organize data; to make simple judgments; to process and generate information; to communicate information in various contexts; to devise and design simple and/or single step investigations; to use complex reasoning in challenging situations; and to operate safely and proficiently.

There are, however, some features that appear common to these syllabuses' descriptions. For instance, all mention the significance of English language and literacy. Mathematics and French even have special sections called 'language education' and 'English language education'.

So there are general pointers alerting practitioners to the need for enhancing access to disciplinary knowledge through enhanced language and literacy capabilities, but in most significant respects the rationales, logics and lexicons of the syllabuses remain incommensurate, for instance, on:

- the bases for materials selection;

- the tightness of sequencing; and

- the relative emphasis on product and process.

Preparing for life's projects: The pragmatic work of the syllabus

The syllabus areas mentioned above also have in common statements about the need to connect learning with the social, cultural, and economic elements of the surrounding community and "the world" outside the classroom:

> *Science has world-wide impacts – economic; environmental; ethical; political; social and technological … social awareness within the scientific community; and scientific literacy in*

> *the general community; are essential for human survival and economic development (Biological science syllabus: 1).*
>
> *Mathematics is an integral part of general education. It can enhance understanding of our world and the quality of our participation in a rapidly changing society (Maths A syllabus: 1).*
>
> *Learning a second language widens horizons and leads ultimately to the capacity to look out from the new language and culture and; in effect; to develop a soundly based world view (French Syllabus: 1). and*
>
> *Proficiency in English for all Australians enables them to share in and contribute to current and future local; national and global communities and cultures (English Syllabus: 1).*

Nation states such as Australia face a rate of change in their economic, social, and technological conditions that is probably unique in their histories. Many regard the efficacy of the efforts of such countries to retain or improve their trading positions, in particular in tertiary and quaternary industry sectors, to rely on the enhancement and modernization of their education systems. As frequent media and professional debates attest, these conditions taken together put special pressure of the capacities of school systems and teachers, and on the contents of senior syllabuses. Intensifying debate is a strong public sense of the distinctiveness of these conditions. The eminent modern historian Eric Hobsbawm[22] put it succinctly in the preface to his encyclopedic treatment of the 20th century:

> *... by the 1990s … [globalization] had already transformed … important aspects of private life, mainly by the unimaginable acceleration of communication and transport. Perhaps the most striking characteristic of the end of the twentieth century is the tension between this accelerating process of globalization and the inability of both public institutions and the collective behaviour of human beings to come to terms with it.*

Hobsbawm's is a point about the contrast between what individuals can and do do in their domestic lives and what is possible collectively and institutionally. The 'tension' is thus partly a growing gulf between, on the one hand, the practices and understandings shaping contemporary private lives and the organisation of public institutions, such as health, education, law, business, workplaces, recreation sites, and so on, on the other.

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[22] Hobsbawm, E. (1994). *The age of extremes: The short twentieth century, 1914-1991*. London: Michael Joseph, p.15.

This tension is evident in ongoing ambiguities in the status of vocational education in the senior high school program (see, e.g., Group Training Australia[23]). In Young's[24] discussion of the these ambiguities he suggested that the degree of specialization currently found in many vocational programs presents difficulties under rapidly changing labour-market conditions. He argued for a shift away from current subject and vocational specializations toward new forms of specialization not based on high-classification subject divisions. These new formations he concluded should be evident in the curriculum precisely because they are evident in the rapidly-evolving occupational structures of the society. This can be effected not so much by closer attention to the current work conditions but rather through the development of "new connective skills and understanding and the ability to innovate and to apply and use learning in different contexts".

Young cited two contrasting European efforts in this regard: the 'French solution', to make the main academic track more diverse and less exclusive, and the German dual system, in which attempts are made to enhance the status and content of vocational programs. The key concern for both is the optimal relationship and relative pathway-status of the epistemic and pragmatic work that needs to be accomplished by contemporary educational experience. This in turn revolves around some conception of contemporary workplaces, and how they have changed since extended schooling became widespread after World War 1. Oman,[25] the Head of the Research Centre of the Development Unit in the OECD has been concerned with the ways in which workplaces are changing. His claims turn on the observation that organised labour and business over the course of the first half of the 20th century were guided by a set of principles summarised under the heading of 'Taylorism', consisting of the following key ideas:

- thinking and planning need to be organisationally separated from doing, that is, initiatives and policy from execution and dissemination;

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[23] Turner, D (2005). *School to work: The Group Training Australia Project.* Paper presented to the Australian and New Zealand School of Government conference on 'Schooling in the 21st century', Sydney.

[24] Young, M. (1993). A curriculum for the 21st century? Towards a new basis for overcoming academic/vocational divisions. British Journal of Educational Studies, 41, 203-222, p. 210.

[25] Oman, C. (1999). Globalization, regionalization and inequality. In A. Hurrell & N. Woods (eds). *Inequality, Globalization and World Politics.* Oxford: Oxford University Press, p. 51

- the more specialisation the better; and

- an unshakeable belief in The Best Practice.

Oman describes the current moment as 'Post-Taylorist' in that the successful organisations now

- work toward the integration of thinking and performance;

- operate on principles of networking rather than hierarchy;

- increasingly define job responsibilities broadly, focusing on collaboration and teamwork; and

- emphasise continuous improvement and innovation of practice as fundamental across all levels of the organisation.

The new, successful organisations are flexible,

> *more successfully exploiting the human intelligence, creativity, flexibility, and knowledge based on experience of their workers. Compared to Taylorist organizations, they are learning organizations … much greater sensitivity to change, and the potential for change.*

This in turn speaks directly to Young's argument concerning the optimal degree of early job-specification evident in much senior secondary vocational programming.

Choices about the source of expertise and planning

The last three decades have seen dramatic moves in school reform and strikingly little change in most classrooms. The reform of policy announcements appears to have become a more attainable performance indicator that the reform of pedagogy[26]. Butler has argued, concerning education in the UK, that until the mid 1980s what was taught in school was largely in the teachers' control, with little uniformity between, or even within, sites. In the mid 1980s in the UK, the Thatcher government changed this through centralizing curriculum programs. However a lack of sufficient data regarding what worked in schools meant that this entailed a move away from teachers' judgments, but not toward a deeper level of professional knowledge or more informed and consistent practice. Throughout school systems, school inspections and national testing allowed for a deeper understanding of best practice, laying a foundation in the late 1990s for

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[26] Suggesting that the current policy epidemic may not mutate across institutional levels.

'informed prescription'. Proposed reforms are now moving away from this again in the UK, retaining a place for deep knowledge and understanding of the school system alongside evidence about what works in classrooms. This state Barber claims to be 'informed professional judgment' (Figure 1 is from Barber[27]).

Figure 1: Sources and nature of professional knowledge in syllabus

	Knowledge poor	
1980s Uninformed prescription	←	1970s Uninformed professional judgement
National Prescription ↓		**Professional Judgement**
1990s informed prescription	→	2000s informed professional judgement
	Knowledge Rich	
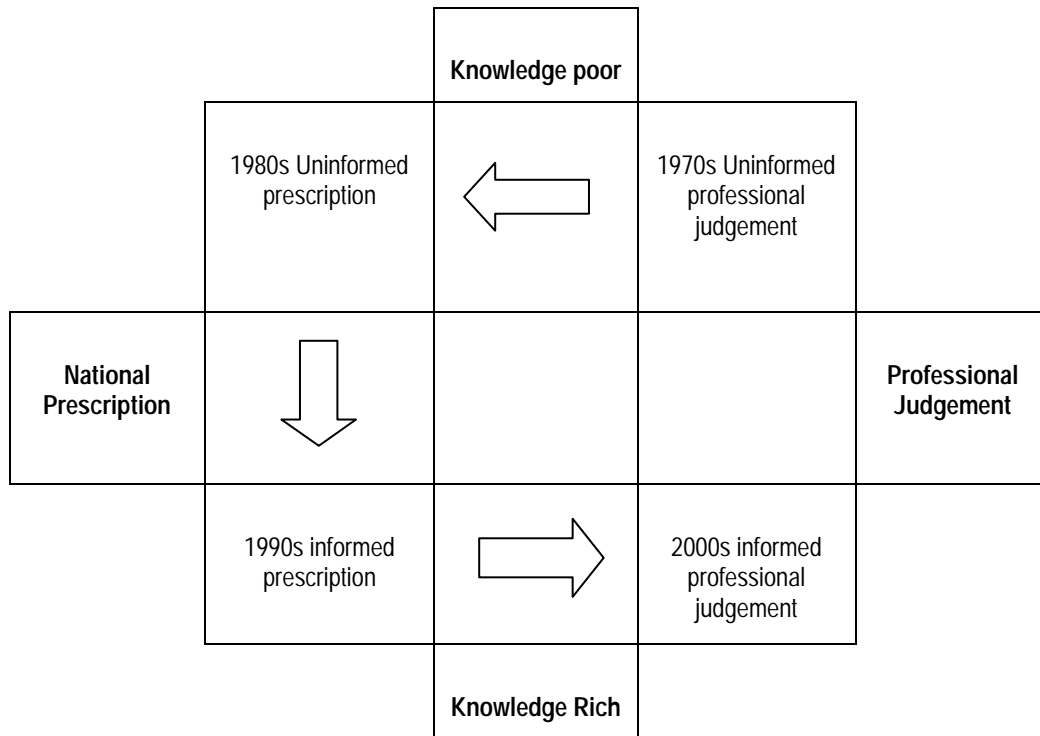
Queensland education has typically organised senior syllabuses around school-based assessment coupled with the availability of professional development for teachers (including access to publications, research and collaboration between colleagues). It is arguable that this means that what happens in senior classroom work is informed by both professional judgment and rich knowledge regarding best-practice, suggesting that Queensland education can be located in the lower right corner of Barber's scheme.

But an additional consideration here with respect to the issue of knowledge and syllabus planning arises in a discussion of senior schooling in Queensland provided by Smith[28].

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[27] Barber; M. (2002). *The next stage for large scale reform in England: from good to great*. Paper presented at Technology Colleges Trust Vision 2020, Second International Online Conference, October.

[28] Smith, R. (1999). *Reinventing Years 10-12 in state schools: A model of multiple learning pathways for new times*. Report to the Strategic Policy Branch, Education Queensland, # EDUC-26!, December, p. iii.

He argued, with respect to how well students are informed about the ways in which subject areas may articulate into meaningful and vocationally practicable sequences, that

> *… students and those advising them are more than likely operating by experience, intuition, prejudice or tradition rather than by reliable, cumulative data. Those most at risk from the possibility of uninformed advice and decisions are bound to possess less cultural capital. The potential personal, economic and social costs of such a situation at the system level are considerable.*

This raises the serious issue of role of students' choice with respect to combinations of courses. Under pre-digital material learning and teaching conditions, governance by timetable has probably prevented many more permutations and combinations of sequences of studies than it has permitted. In the current conditions reconsidering senior school syllabuses and the significant impact that choice and sequence have on their efficacy in students' later lives, formal input from informed students' judgments concerning preferred sequences now seems to be a significant available source of knowledge about valued sequences of teaching and learning activities.

Conclusions

A key consideration for Smith in his review of senior schooling was the need for a transition from 'product' and 'service' orientations to syllabus provision to what he termed a 'student-centred orientation' that focuses on the coherence and future-relevance of the student's journey through the latter years of formal schooling. Such an orientation hinges on some plausible analysis of the settings in which citizen-workers will need to exercise competence and agency in the years that face them, that is, a futures analysis that can inform an understanding of the knowledge, skills and dispositions that need to be transferred into the settings that may lie in wait for students. This is because educational policies and practices are built on the presumption that performance will be transferred – that learners will be able to apply what has been learned in the simulated context of school to new, real-world problems, domains of knowledge, and tasks.

This apparently self-evident presumption has in fact had a patchy history in the educational research literature over the last thirty years or so[29]. A promising approach to this issue has been outlined by Bransford and colleagues[30]. In summarising the many studies that have failed to show clear instances of transfer, they showed that those that *do* show such a positive transfer and application employ new tasks that are only trivially different from the original learning contents and setting – 'direct applications' – settings similar to the learning setting and, more significantly, known-in-advance to be so. Smith's point about the senior school syllabus amounts to a challenge to develop coherent and testable propositions about the portability of certain suites of knowledge, skill and disposition in vocational, cultural, civic and domestic environments that are increasingly, if not unknowable, then at least complex.

Bransford and Schwartz proposed an alternative to the 'direct applications' approach, an alternative they called 'preparation for future learning':

> *Here the focus shifts to assessments of people's abilities to learn in knowledge-rich environments ... they can modify their environments by changing them physically, by seeking resources (including other people), by marshalling support for new ideas, and so forth. Rather than simply viewing transfer as the mapping of old understandings and practices onto a given situation, this perspective emphasizes that people can actively change the given situation into something that is more compatible with their current state and goals. (68, 82)*

Bransford and Schwartz argued that currently very few learning environments and even fewer assessment settings in formal school settings evince apply such a 'preparation focus'. Their position argues that 'preparation for future learning' moves the focus toward an understanding that learning recontextualises a field of activity by guiding the learner toward new ways of observing, questioning and interpreting[31]. An implication that arises from this perspective, in particular its emphasis on allowing learners to interact purposefully with new, knowledge-rich environments, draws attention to the importance of the relationship between traditional learning and extended, project-style work. The key

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[29] see, e.g., Detterman, D.K. & Sternberg R.J. (Eds., 1993) *Transfer on trial: Intelligence, cognition, and instruction*. Norwood NJ: Ablex.

[30] Bransford, J.D. & Schwartz, D.L. (1999) Rethinking transfer: A simple proposal with multiple implications. In A. Iran-Nejad & P. D. Pearson (Eds.) *Review of Research in Education, Volume 24*, Washington, DC: American Educational Research Association, (see esp. pp 68, 82 & 94).

[31] and see Bransford, J.D., Brown, A.L. & Cocking, R.R. (2000) *How people learn: Brain, mind, experience and school*. Washington, DC: National Academy Press.

proposition is that such work permits access to, management of, and synthesis of new and more readily transferable processes and domains of knowledge:

> *The activities that prepare people for static tests may be different from those that best prepare them for future learning. [Often] the assumption is that real transfer involves only the direct application of previous learning; we believe that this assumption has unduly limited the field's perspective of what it means to use one's previous learning in a new situation effectively. Unassisted, direct applications of knowledge are important, but they are only part of the picture.*

It was remarked earlier that the rate of change in the economic and social conditions facing contemporary nation states' efforts to retain or improve their trading positions through the enhancement of education puts special pressure of the capacities of their school systems, curriculum designers, and teachers. This is often expressed in terms of the rapid growth of knowledge and the acceleration of knowledge-obsolescence,. The analysis outlined above has consequences for the professionalization of educators in light of the shifting configurations of knowledge – including the topics, procedures, logics and dispositions of inquiry. The burden of mass schooling at this moment in the history of knowledge and communication calls on educators and researchers to appreciate, capitalize on, and build into their work an understanding of the play between the epistemic and pragmatic work of learning, as that work continues to evolve into emergent forms of practice.

This argument is about the co-ordination of intellectual, dispositional and material methods for accumulating and evaluating knowledge, skills and dispositions, purposeful orchestrations of propositional, procedural, and moral resources – the "study of learning, and the admiration of virtue" of Milton's *Tractate*. One goal for syllabus design is to allow each discipline the space and time to display its distinctive way of resolving the ongoing dialectic of, on the one hand, human agency and, on the other, material, biological, social and economic determinism – volition and coercion, "regimen" and "enterprise" – in people's daily lives. Moreover, for teachers and students, a further goal in globalized times is to come to see and know the social and material consequences of not only disciplinary knowledge in action in epistemic and pragmatic work, but also of a *knowledge of disciplinarity* and the particular moral and conceptual orders put in place by its use as an organization device.

A critical issue here is that some school subjects do not have any discernible relationship to discipline/s; they may call upon some notion of inter- or multi-disciplinarity, but the criteria by which instances of good, bad and indifferent applications of these features are unclear, nor is there any justification for the real-world applicability of such subjects beyond immediate 'face-validity'. A lack of any apparent connection to a tradition of topic, inquiry, and epistemology means that durable pragmatic value simply cannot be estimated either way. This is a paradox embedded in these discussions: A focus on using 'just-in-time' disciplinary knowledge in authentic, pragmatic, inter- or multi-disciplinary work entails an even more sophisticated grasp of disciplinary knowledge (and of disciplinarity as a pragmatic, recruit-able resource) than does "straight-ahead" high-classified disciplinary teaching and learning. This applies to both teachers and learners. The paradox becomes an irony when inquiry- or project-based inter- or multi-disciplinary programs are often put in place for academically weaker students, perhaps because of the more apparent real-world applicability of such program, as a way of minimising the (again, apparently) harder option of direct discipline engagement.

CODA

Short answers to long questions

What are the theoretical underpinnings for the approach to syllabus design in the current suite of syllabuses in Queensland?

Macro-theoretically, the syllabuses represent a mixture of epistemological, psychological, universalist, and social justifications. There are some overt references to a social-utilitarian orientation in most syllabus documents, but the ways in which curricular activities, including assessment activities, simulate genuine out-of-school tasks and ecologies. At a more meso-theoretical level, there seems little explicit connection between epistemological, psychological, universalist, and social considerations, and any futures-oriented analysis of the conditions – economic, cultural, technological, civil, domestic – that may face students[32].

Who benefits from how learning is currently organised and who misses out?

There are three ways of answering this. The first, and the more apparent, is to collect the demographics on school achievement in current Queensland data sets, and to identify those demographic categories that statistically discriminate performance. This will produce a familiar picture, well documented for many years, concerning the major categories (socio-economic status, race, geographical location, first language, and so on), along with some interactions among these that may be more short-lived and locally produced. Teese[33] and his colleagues have documented such trends on Victorian data and combined it with an analysis of subject selection. One predictable conclusion is that students in low SES and Indigenous Australian communities urgently need better and different schooling, and better connections between schooling, community, and work. Engineering different syllabus offerings or sequences, or building more refined standardised assessments will not of themselves bring off these changes.

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[32] see, e.g., Milojević I. (2005). *Educational Futures: Dominant and Contesting Visions.* London and New York: Routledge; OECD, *Schooling for Tomorrow Project,* retrieved January 6, 2005 from http://www.oecd.org/document/34/0,2340,en_2649_34521_35413922_1_1_1_1,00.html,.

[33] Teese op cit

The second way of answering the question, also developed in Teese's work, is to appreciate that syllabus formations maintain demographic differentiations in ways that do not, at this point in this society's history, de-legitimise schooling. In that regard, school's outcomes are compatible with, and in turn reinforce the logic of class stratification in Australian society more generally; in that regard, current syllabus formations help sustain the stability of class relations in a society and thus 'benefit' everybody (including school teachers, education bureaucrats, and teacher educators). It is important in this regard, however, to appreciate that the organisation of school syllabuses cannot simply be taken to be the cause of the maintenance of substantial and increasing pay and conditions differentials between employment sectors and levels. The patterns of students' choices may be caused by such differentials, as may well be the advice given to students and parents about appropriate choices for students from different backgrounds or academic performance levels.

Finally, at a micro-operational level, current arrangements are familiar and apparently manageable as bases for activity in classrooms, interactions with stakeholders and the development of high and low stakes assessment tasks. In that regard, the current arrangements 'benefit' teachers, school leaders, and central office policy makers. The challenges presented by the OECD future of schooling scenarios[34], for example, may present educators with such profound challenges that conservative reactions can make the *status quo* look not only sustainable, but almost comfortable: *As far as I can see schools will be around like this for a long time yet*.[35] There is simply no direct way of gauging the predictive value of this view compared to, say, the OECD futures scenarios.

Does this organisation result in students' learning achievements that match the expectations and requirements of the full range of end-users, that is, higher education, training and employers?

This is an empirical question whose answer needs regular updating. There are occasional media outbreaks concerning the shortfall in skills, vocational preparation, literacy,

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[34] OECD (2004). *Teaching, learning, and schools for the future*, at www.oecd.org/documentprint/0,2744 (retrieved January 6, 2006).
[35] Moe, T. (2005). *Changing schools: lessons from the American experience*. Paper presented at the 'Schooling for the 21st Century: Unlocking Human Potential' conference, Sydney.

patriotism, and all the rest, but it is not clear that any reliable or widespread views are canvassed in such accounts.

Are there different approaches to packaging learning experiences to serve the boarder range of end-users, new and emerging knowledge and future learning and employment pathways for young people?

Again, this is an empirical question that can only be solved by ongoing research programs that track the short, medium and, and long-term effects of different syllabus configurations on the pathways of young Australians. What is notable, however, is the ongoing debate and difficulty facing many school systems in Australia and elsewhere concerning the relative value of a comparatively high-classified key-learning-area syllabus organization versus, or perhaps along with, an inquiry-based, problem-based, or project work organization. These debates and difficulties have been recently highlighted in Queensland with the development of the New Basics curriculum and the divisions it sparked in the educational and broader communities. These difficulties seem to be related to concerns over the internal contents of a discipline versus project-based approaches, each taken in isolation. That is, strong differences of opinion surround the relative merits of discipline- versus project-based work, as stand-alone syllabus packages.

What is less often theorized or even imagined are research and development programs that explore and encourage the possible interplays between discipline and project work syllabus configurations. Current debates are strikingly Newtonian in their flavour, considering each package of a syllabus and the effects that will somehow instil in learners, such that as they visit a series of separated rooms and acquire the contents of those rooms, the package, taken together, will provide a set of operable and portable knowledges, skills, and dispositions, in turn affording an algorithm-like prediction of linear vocational pathways. Of course, as schooling is experienced, it is the ways in which these interact and mutually inform one another in day-to-day teaching and learning experiences that provide students with portable resources. That these 'interactional' resources are often ignored in highly classified syllabus programs does not alter the fact that the experiences themselves offer a collective of resources as students move between the rooms of syllabus, collecting, analysing and synthesising and, in Bransford and Schwartz's terms, building their 'preparation for future learning', rather than hoping for a

lifetime of 'direct applications'. This more Einsteinian conception of how students experience the configuration of syllabus subjects draws attention, not so much to the relative merits of any given module within that experience, but to the poverty of most educators' training and understandings of how is that various disciplines can inform, reconfigure, and reshape one another into emergent applications that become even more powerful and generative over time.

Nobel Laureate James Heckman[36] has summarised the research on the economic consequences of human capital and skills formation. From his encyclopedic review of this body of research, two of his key messages for educators are: i) focus on non-cognitive as well as cognitive capabilities:

> *Current policies regarding education and job training are based in fundamental misconceptions about the way socially useful skills embodied in persons are produced. … they exclude the critical importance of social skills, social adaptability and motivation … caus(ing) a serious bias in the evaluation of many human capital interventions.* (2001: 2)

and ii) maintain early gains, otherwise early educational investments will be dissipated and yield close-to-zero returns for the system, the society, and the individual:

> *Complementarity (synergy) of investment reinforces self-productivity … this empirically established complementarity also suggests that early investments must be followed up by later investments to be effective.* (2005: 3-4)

The massive investments made by societies in senior years of schooling must at least be able to demonstrate explicit and significant complementarity. Senior years are where students, and thus society, can capitalise or fail to capitalise on 10 years of schooling and thus a mature learner (whether enthusiastically, compliantly, or resistant-ly mature), to now respecify that comparatively generic capital toward further work that enhances both trainability and educability.

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[36] Heckman, J.J. (2005). *Lessons from the technology of skills formation*. National Bureau of Economic Research Working Paper #1142, Feb; and see Heckman, J.J. (2001). *Invest in the very young*. Working Paper, Harris Graduate School of Public Policy Studies, at www.HarrisSchool.uchicago.edu (retrieved June 10, 2005).

Options and consequences

Option 1: If the fundamental philosophy of the senior years is to be made coherent and explicit, and if it is to continue to be driven largely by a 'social' justification for the contents and functions of school experiences, then it is clear that current formulations of the demands that will be placed on citizen-workers in Australia in the coming years are inadequate. A position will need to be developed, based on a futures-driven analysis of changing labour market, cultural, civil and domestic conditions[37]. In tight market and employment conditions, there will be pressure to interpret 'vocational education' as 'job training', fitting capabilities as closely as possible to known job conditions. This can run directly against projected needs for more flexibility in rapidly changing vocational, civil, and domestic conditions, and against cognitivists' call for 'learning for preparation'. It displaces the senior schools' responsibilities onto other re-educational and re-training facilities or institutions.

This would mean that an analysis of the sustainable and productive effects on local labour markets of globalisation would be one of the key drivers of schools' suites of offerings in the senior years. As an instance, Oman[38] has outlined some of the key strategies by which governments should aim to enhance the productivity features of their communities in ways that both capitalise over the long term on globalisation processes and at the same time strengthen rather than weaken social cohesion. His list included the need to *facilitate the diffusion and of selection of know-how, both technological and organisational* partly by promoting *the development of human capital, and focusing public investment in human skills development on strengthening broadly-based problem-solving skills, (i.e., basic numeracy and literacy skills at the primary and secondary levels, and develop social and inter-personal communication skills — 'trainability').*

The post-Taylorist organisations that Oman has shown to be the most successful adaptors to globalised economic and labour conditions rely, according to his analysis, on the trainability and problem-solving abilities of workers at all levels of the operation. It is

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[37] see, for a now dated but important formulation, Australian Council of Deans of Education (2001). *New learning: A charter for Australian education.* Canberra: ACDE.

[38] *op. cit.* 1999: p 51.

important to recognise that this is a qualitatively different general expectation – a new way of interpreting Hunter's purpose for schooling of "skilling" a populace – from the expectation that was in place when schooling spread by legal mandate in OECD-style countries in the first half of the 20th century. It will therefore require an effort of public legitimation and a serious revaluing of syllabus elements currently under the heading of 'vocational'. These will need to be specifically aimed at educability, trainability and problem-solving abilities among all students, and ongoing investment in the human and technological resources needed to offer programs that are defensible – in terms of their epistemic and pragmatic value – in light of projected future conditions. Thus a renewed and credible 'social' compact around the 'social' justification for education in the senior years may be accomplished.

Option 2: The argument so far seems headed to a reliance on psychological justifications for the senior years' syllabuses. Such terms as 'core' or 'generic' skills or processes seem to offer not only a valuable but also a flexible and adaptable suite of capabilities. The durability of essentially psychological / cognitive taxonomies, competences, processes, 'common curriculum elements', and the rest, attests to the escape such formulations seem to give from the problem of content, a problem that blossoms when a discipline-based curricular tradition meets a fast-moving and diverse culture.

However, such formulations (such as Bloom's Taxonomy and the adaptations of it cited earlier) were devised as planning grids to be set against existing curriculum domains. The notion that 'evaluation' or 'application' somehow look the same in the conduct of Mathematics as they do in the conduct of History was never part of the intent. Applying a psychological frame as the base justification would render essentially incoherent the cumulative sequences of learning that constitute the epistemic work of syllabuses, by failing to offer learners an appreciation of the variety of epistemological traditions, of the

> *... particular linguistic, textual and interactional formats that, on some evident and interpretable counts, vary across disciplinary formations, thus providing different ways of cutting beneath the surfaces of experience.*[39]

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[39] Freebody, P. & Muspratt, S. (in press/2006). Beyond generic knowledge in pedagogy and disciplinarity: The case of Science textbooks. *Pedagogies: An international journal.*

Such an approach would also, in the end, have effectively nothing to say about the potentially productive connections between this epistemic work and the syllabuses' responsibilities to the enterprise of pragmatic activity, and would arguably therefore diminish rather than enhance the application of knowledge to new settings. The question of content abides.

Option 3: This line of discussion, in turn, seems to be approaching an epistemological justification, by which the traditional bodies of knowledge are taken to provide a 'general education' in the senior years, retaining the epistemic integrity of the disciplines and suggesting their potentially generative pragmatic value. This may be argued to have both direct epistemic value, in that it offers young people access to (what educators take to be) the significant intellectual, scientific, cultural, and artistic accomplishments of their society, and indirect pragmatic value, in that this access is assumed to be provide the platform for vocational, civil, and domestic action and learning. Note that this approach would also seem to satisfy Heckman's calls for complementarity in that it would appear to maximise continuity of the roughly discipline-outcomes-based nature of current Years 1-10 key learning areas.

In this case, a different kind of public re-education effort would be called for, but more importantly, the school system would, if the pragmatic value of any given syllabus remained implicit or aspirational, be effectively transferring direct preparation for work to other bodies. If these bodies reflect employers' interests, then the range of training that could reasonably be expected in those settings would be restricted to the immediate needs in the work sites as the employing bodies imagine them. Workplace adult literacy programs illustrate this, and their, at best, chequered history[40] indicates, among other things, the cross-purposes to which management and clientele regard the main value and outcomes of such efforts.

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[40] see, e.g., Gowen, S.G. (1992). *The politics of workplace literacy.* NY: Teachers' College Press; Wickert, R. (2001). 'A hiatus of considerable proportions': Policy interventions in adult literacy and competence in Australia. In P. Freebody, S. Muspratt, & B. Dwyer, (Eds.) *Difference, silence, and textual practice: Studies in critical literacy.* New Jersey: Hampton Press. (pp 337-358).

Close

In this discussion I have deployed a number of the rubrics, polarities, and contrasts that educators have inherited to describe, construct, and evaluate syllabuses. What is clear is that these for the most part are necessary but not sufficient to the task of validating the packages and sequences that should make up senior school years' syllabuses. They are necessary because they provide a vocabulary by which the complexity that always attends questions to do with syllabus can be appreciated, but they are insufficient to the extent that they posit polar choices the very constriction of which we now see as running hard up against our understandings of current economic and cultural conditions – 'new times'. The old ideas may retain value, but the choices their use tries to force us into does not.

We should note that there is a certain blinkered 'present-itis' associated with some forms of new-times rhetoric, as if this is the first generation of teachers and learners to face diversity, uncertainty, the fast movement of knowledge, and the dangers of dissociating learning from action:

> *As formal teaching and training grow in extent, there is the danger of creating an undesirable split between the experience gained in more direct associations and what is acquired in school. This danger was never greater than at the present time, on account of the rapid growth in the last few centuries of knowledge and technical modes of skill.[41]* (Dewey, 1916)

But even if it is largely the urgency of our appreciation that these concerns lie at the heart of educational questions that is in fact 'new', it nonetheless presses us to consider that the inherited polarities themselves exist and continue to function productively only in dynamic symbiosis, continuously shaping, informing, trading off, and enriching one another – polarities such as

- epistemic and pragmatic;
- disciplinary and inter-/trans-/multi-disciplinary;
- learning and application; and
- academic and vocational.

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[41] Dewey, John (1916) Democracy and Education. Summary, Chapter 1: "Education as a necessity of life." http://www.ilt.columbia.edu/publications/Projects/digitexts/dewey/d_e/chapter01.html (retrieved January 28, 2006).

If the enduring educational value lies in both understanding and institutionally reflecting the interplays among these contrasts, rather than opting for one or the other of them, then the key demand in the senior years is not to treat one of the pair-parts as reflecting the privileged form of school education – and the other part as not-quite-proper or serious. Appreciating that we have rarely theorised these contrasts in any way close to the ways in which students 'live amidst' their material and discursive manifestations in and out of school has deep implications for the reshaping of syllabuses and the professional education of teachers and educational policy-makers, as well as for the conduct of research on these activities.