External Perspective on the Queensland Studies Authority Syllabuses for Years 11 and 12:

A commissioned report to the Queensland Studies Authority for the Years 11 and 12 Syllabus Review

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This report was commissioned by the Queensland Studies Authority as a contribution to the review of Years 11 and 12 syllabuses being conducted in 2005 and 2006. It offers an external expert's perspective on the existing syllabuses as a set of documents that provide the basis for enactment of curriculum and assessment of student achievement in schools.

The perspective offered here is from someone who has recently directed a major study of the relationship between senior high school studies and university studies in the USA. The Standards for Success (s4s) project was directed at answering two questions: What must students know and be able to do in order to succeed in entry-level university courses? How can universities make better use of state high school assessments in their application decisions? The Standards for Success project developed comprehensive statements of Knowledge and Skills for University Success in six disciplinary areas: English, mathematics, natural sciences, social sciences, second languages and the arts. It also analysed high school assessments from more than twenty states to determine the challenge level of those assessments in relation to the Knowledge and Skills for University Success. A complete description of this project and its findings is located at http://www.s4s.org.

The findings of the Standards for Success project are not explicitly present in this analysis of the Queensland syllabuses. Those findings apply to the context of the USA, which differs in some respects from the Australian context. However, there are general issues which all senior secondary school syllabuses face everywhere. The Queensland syllabuses have been analysed within their own context but with an understanding of those general issues.

This analysis is a 'desk audit' of the Queensland syllabuses. It therefore assesses the content and quality of the syllabuses as documents that specify requirements for the curriculum to be delivered by schools. It does not and could not assess the quality of their implementation by schools. Whether they are adequate documents for supporting their implementations by schools is not the focus of this analysis. Rather, the focus is on the characteristics of the learning that the syllabuses define and how well the syllabuses map the domain of knowledge and skills that senior secondary school students might be offered as the completion of the secondary school stage of their education and a foundation for embarking on their post-school pathways.

The analysis was restricted to the suite of Authority subject syllabuses. This was a pragmatic decision given the size and scope of this set of syllabuses. Also, these syllabuses are clearly those that have been designed with university preparation in mind, that is, with an orientation towards providing students with intellectual support for embarking successfully on university studies. All of these syllabuses provide models for intellectual enquiry and offer substantial cognitive challenge. It was possible, therefore, to recognise similarities with the curriculum examined for the Standards for Success project.

Accordingly, this analysis does not encompass the Authority-registered syllabuses. These syllabuses clearly define a different set of materials with both different characteristics and different intent. It does not seem that these subjects have been designed with the demands of university studies in mind. That is, they lack the

intellectual scope and rigour of the Authority subjects. Whether some senior secondary students should be offered such restricted subjects – a second tier of less demanding studies – is an interesting question but not one which is explicitly addressed in this report.

The approach taken in this report has been to adopt the framework of questions-of-interest provided by the QSA Syllabus Review team. The report is therefore a commentary on these questions informed by a thorough reading of the complete set of Authority subject syllabuses. The questions were:

1. What should young people know and be able to do at the end of 12 years of schooling?
    a. What's essential for work? Higher education? Training?
    b. What's essential for effective community engagement and active citizenship?
    c. Is there a set of generic or essential skills?
2. Does the suite of Authority subjects provide students with an opportunity to gain a broad and balanced education in the senior phase of learning that is relevant to living and working in a knowledge economy and that optimises post-school options?
    a. Who is best served by the current suite of subjects?
    b. Who is not served by the current suite of subjects?
    c. To what extent does the suite of subjects cater to the diverswity of students in the senior phase of learning?
    d. Does the suite of subjects allow study programs that prepare students for future post-school destinations? How adequately does the suite of syllabuses prepare young people for the transition to the next phase?
    e. How can the suite of subjects offered by the QSA enable the fullest possible access to students to study programs that meet their learning needs and that enable them to progress to post-school options?
3. What form should future syllabuses take to allow schools and other learning providers to maximise opportunities in light of new legislation and the Queensland Certificate of Education?
    a. What is the purpose of a syllabus?
    b. What should a syllabus say about
        i. curriculum (subjects, disciplines, areas of learning)?
        ii. assessment (a discipline or a way of doing in the world, for example, rich tasks)?
        iii. reporting?
    c. How well does the way the QSA packages learning experiences into discipline-based syllabuses lead to learning outcomes appropriate to changing social, economic and technological conditions?
    d. Are there alternative ways to package learning experiences that result in learning outcomes that serve a broader range of end-users?
    e. Whom do syllabuses serve?
    f. Do all syllabuses have to be the same or are alternative syllabus designs desirable for some subjects and some areas of knowledge?
    g. Should all syllabuses be two-year courses of study?
    h. How can the artificial barriers in related subject areas be broken down?

    i. Are there rules that make it difficult to deliver the syllabuses and how can these be framed to support the delivery of syllabuses?
    j. What form should future syllabuses take?
    k. What are the principles that should guide the future direction of the development/accreditation of QSA syllabuses?
    l. What role can/should higher education play in the design, development and evaluation of syllabuses?
    m. What role can/should industry play in the design, development and evaluation of syllabuses?
    n. What role can/should training sectors play in the design, development and evaluation of syllabuses?
4. How do we build coherence in the curriculum?
    a. How do we ensure coherence P-12?
    b. What about Year 10?
    c. How do we ensure that students' learning from the suite of syllabuses is coherent and enables them to progress to post-school options?
5. What are the practical implications of changes to the way knowledge is packaged?
    a. What are the issues for schools – such as timetabling and delivery methods?
    b. What are the issues for initial teacher training?
    c. What are the issues for professional development?
    d. How will the changes impact on the tertiary entrance procedures?
6. How can the suite of syllabuses be continuously evaluated and updated to meet the changing needs of school systems, schools, students, and the dynamic demands of the knowledge economy?

Finally, some comments are offered on ways in which some subject areas might be looked at more critically.

1. What should young people know and be able to do at the end of 12 years schooling?

1A. What's essential for work? higher education? training?

The process that has existed to develop syllabuses has not necessarily addressed this issue of "essentiality," although it is certainly clear on the distinction between "core" and "elective" content. The issue of essentiality becomes increasingly important as the competition for space in the high school curriculum increases. The two main schools of thought on this are as follows.

One school of thought contends that schools should adapt their offerings to the needs and motivations of students. Another believes that children should be directed to learn key knowledge and skills they need for success in life beyond high school, including life-long learning, citizenship, career, and avocations. While these two schools of thought are not necessarily entirely mutually exclusive, they do suggest two fundamentally different philosophical views on schooling and the organization of schooling.

Determining where the QSA falls along this continuum is a critically important first step to answering the question of essentiality. The implicit role of the QSA, based on how it explains its role, is to create frameworks within which schools and teachers select the most appropriate learning activities for students. The QSA then defines how these varied learnings are measured against common criteria using common standards for assessment.

This approach walks a fine line between prescribing what should be known and outlining general objectives and goals and allowing educators to fill in the details. The question to ask is whether the balance point is set where it should be or whether any adjustment needs to be made. Many of the issues raised in this paper cause reflection on this fundamental question. Although it is not my intent to provide any sort of definitive answer, I will reflect on this balance from time to time and on how the QSA syllabuses as currently structured operationalize the roles of teachers and students relative to the QSA's conceptions of what should be learned and assessed.

The discussion begins with a fundamental question: how does the QSA determine *a priori* what is necessary for success in post-high school endeavours and how is this information integrated into the syllabus development process? This question is not simply asking what processes and procedures are in place. It is asking how the QSA develops its frame of reference for the content of the high school curriculum. All curriculum exists to address needs. If the implicit assumptions of what the syllabuses are designed to do were made explicit, what would they be? Do they serve primarily one purpose or multiple purposes? If they serve one purpose, how well are they achieving that purpose, as determined by outcome measures of student success relative to the end the syllabuses are designed to serve? If they are to serve multiple purposes, how is content apportioned among the multiple purposes, how are high standards maintained for all purposes, and how are instruction and assessment adapted to those multiple purposes? And, finally, what is lost in terms of opportunity cost by pursuing the chosen purpose or purposes?

The "answer" to this question, it seems to me, is at once simple and complex. The QSA should always operate all syllabus development from within a comprehensive framework of desired knowledge and skill outcomes so that each and every syllabus

references the larger framework to ascertain what of importance is being included in the syllabus and how well the entire program of instruction addresses the constellation of desired outcomes. Such an arrangement acknowledges the interconnected nature of knowledge and the increasing migration of disciplinary boundaries. This approach can allow instruction to focus on fundamental "truths," enduring questions, emerging insights and issues, and key skills that permit students to succeed in any academic field or educational undertaking. The framework creates a space within which talented educators must engage students in challenging content and provocative interactions with a range of disciplinary knowledge.

The syllabuses themselves reflect an organizational scheme based on traditional technologies and that reflects the limitations of traditional technologies. Learning is encapsulated in a course and not expected to connect across course boundaries. This "building block" approach to learning assumes that each unit of learning stands relatively separate from the others (with a few notable exceptions where prerequisite learning is critical). The whole is not any greater than the sum of the parts. In fact, the whole is strictly computed to be the sum of the parts.

An alternative organizing scheme retains the syllabuses and their focus on enduring or foundational disciplinary knowledge, but employs sophisticated databases to gather information on what students have learned, what they need to learn better, and where their interests lie. Such a system would take much better advantage of the incredible power of classroom-based assessment and the ability of teachers to adapt curriculum to the needs of students. To avoid randomness and disconnectedness, the QSA would develop a universal matrix of knowledge and skills all students are expected to master along with extensions for those who master this "core." The syllabuses would all be inventoried against this matrix so that schools, teachers, students, parents, and postsecondary institutions could have a better idea what knowledge and skill mastery resulted from different pathways through the syllabuses.

Within any syllabus, teachers would be expected to teach designated core material and would be free to extend beyond the core so long as they could identify where in the larger constellation what they were teaching was located. Their students would accumulate individual marks of achievement for each knowledge or skill area for which they were able to demonstrate acceptable levels of performance. All of this would be recorded into a centralized database. This would allow teachers to print out at any given moment a profile of what their class collectively knew and didn't know and what they had studied and presumably mastered previously. This tool would permit teachers to adapt instruction in a sophisticated fashion to the needs of students while still remaining true to the QSA-specified knowledge domain.

As an intermediate step along the road to this potential system, the current set of syllabuses needs to be reviewed and reorganized at least at the level of determining what is being taught collectively. One simple way to accomplish this is to determine which course of study the most students in the state take, then analyse the content of that course of study. In other words, what is the normative knowledge and skill that a student develops? The next question would be: what is the range of knowledge and skill that students to which students are exposed? What is the least amount of a core set of knowledge that a student could be exposed to, and what is the greatest amount? This helps set the parameters of the curriculum and to identify the degree of variance present in the student population upon completion of a certificate.

One very basic recommendation would be to install a core set of studies that paralleled the current normative course of study. Such a requirement would help ensure all students had mastered key content and that schools could be expected to offer high quality instruction in a set of courses. Furthermore, it would be feasible to allow some adaptation of assessment criteria in selected courses to accommodate a wider range of learners. This idea will be discussed in more detail later. The general principle is that more students could be expected to meet high standards of performance while being able to demonstrate that they have done so via differing modes of assessment.

This approach raises the question of whether every student must be prepared to excel in all subjects. This generalization versus specialization dilemma is not fundamentally resolvable. Some students benefit more from being require to generalise, others from the opportunity to specialize. The more fundamental issue is what can schools do well? High schools are not resourced or staffed to provide specialized programs of instruction for all students. At best, a high school can offer a few specializations. Although some or even many students may benefit from these specializations within that school, this is not to say that these students would not have benefited from other specializations. Generalization may not meet the needs of all students, but such an approach at least allows for greater quality control and for the creation of more opportunities for more students. Given the degree of uncertainty regarding which skills are most important for the future, it seems sensible to equip as many students as possible with as many foundational skills as possible.

This approach argues for a very strong core education in a number of broad areas. The literacy and numeracy requirements as outlined on p. 13 of the QCE guidebook list five options for meeting the literacy and numeracy requirements. One alternative would be to reduce the number of options so that all students participated in something equivalent to Mathematics A (although some students might be prepared to skip over this and begin in Mathematics B). The curriculum for this subject, as outlined in the syllabus, is superb in its coverage of a wide range of mathematical topics and their application to daily life. The core topics as outlined beginning on p. 12 of the syllabus represent what can best be described as quantitative literacy (as opposed to maths alone). It's difficult to imaging a student who does not need to know and master the content in this list. Many of the topics lend themselves to very application-oriented modes of assessment that can be made to engage a wide range of students.

While the flexibility provided for students to meet core literacy and numeracy requirements is laudable, an alternative might be to utilize the flexibility only after students have attempted a required core or when a compelling case can be made to exempt a student from the core requirement. At the least, all students could be enrolled by default into something like Maths A and have to opt out actively rather than simply avoid the course altogether by never enrolling in it.

As the course became more central to the core, its nature might change as well. The content and challenge level should remain the same, but different extensions within the course might be developed so that some students could accelerate through the curriculum and others could explore particular areas in greater depth. More application-oriented assignments and content could be introduced, and, perhaps most important, more connections could be developed consciously between mathematics and other subject areas. Many of these links exist currently or potentially in the Maths

A syllabus, but these potentialities would have to be exploited and developed further to make this course relevant and meaningful to the widest range of students possible.

A similar recommendation might be offered for English. The English senior syllabus seems a reasonable departure point for a course into which all students are enrolled by default. The syllabus seems to provide wide discretion to teachers to adapt to student needs and interests. Given this flexibility, it is unclear how much students interact with informational texts and how much instruction they receive in strategic reading techniques. English classes at the high school level tend to over-emphasize literature and under-emphasize instruction in reading. Although the QSA does a good job of separating English from Literature in the syllabuses, the focus of the English syllabus remains at issue somewhat. If it is clear that the English course is the primary laboratory for the development of literacy broadly conceived and not the study of literature, it is possible to utilize this course as means to equip students to succeed in other courses as well as to be literate citizens.

The key challenge facing most students is how to comprehend texts in a wide range of academic settings and elsewhere. The set of skills necessary to accomplish this task should be at the heart of the English course of study. The Literature extension does have some of these techniques in it, but not many that are designed to improve comprehension across a range of texts. Strategic reading skills necessary to decode texts, including textbooks, technical papers, manuals, reports, and journals should be developed systematically. Similarly, the English course should have a strong emphasis on developing research skills. Although research should be occurring in numerous courses, the English class might be the place where researching skills are honed and refined. If schools adopted common research projects for all seniors, for example, the English class could be a place where students receive help on a research project that might be “housed” in science or social studies.

Extending the default core notion to science, the Multi-Strand Science syllabus offers another excellent framework for all students to engage in the development of scientific literacy. It is difficult to envision students who do not need the habits of mind that this course sets out to develop. Here as well, the provision of some differentiation in assignments and assessment tasks would be one strategy, albeit complex, for engaging more students in a challenging, appropriate curriculum that would help prepare them for participation in an increasingly global economy and society. The Multi-Strand Science syllabus should be updated on a shorter timeline than others, every two to three years, given the dynamic nature of scientific discovery. This would also allow the course to be more topical in nature and more connected to current issues in science, which would be a great way to organize it.

These three courses constitute a reasonable “default core” that as many students as possible would take. Some students would advance beyond these based on previous achievements, and some would be exempted based on carefully defined criteria that did not include teacher judgment. VET would be entirely separate from, and not a replacement for, these core courses. Ideally, VET courses would build upon and apply further some of the concepts from the default core so that students further saw the connections between academic knowledge and its application in the world beyond schools.

Beyond the notion of a default core, the current QCE framework of preparatory, enrichment, and advanced courses is entirely appropriate and very thoughtful. Retaining the requirement of a minimum number of Authority-registered courses is

important. The nature of what constitutes an Authority course is also a critical consideration. At the very least an Authority course should be clearly connected to success in tertiary education, particularly university study. This point is taken up later as well, but the primary implication is that tertiary education is involved collaboratively in the design of the syllabus and that the tertiary system is willing to make reasonable accommodations in its own courses and teaching methods to ensure good articulation with the Authority subject in question. All talk of "intellectual rigor" is groundless without some connection to a tangible reference point, such as tertiary education. An Authority subject needs to be able to rise to a higher level of proof that it indeed deserves to be taught throughout the state.

This implies that the development process for Authority subjects needs to be informed by data from a variety of sources and should not consist largely of the opinions of those on the development committee, however well qualified they may be. Authority subjects should be compared to international standards of quality and coverage, which are then adapted to the Australian setting by work groups. These state-endorsed subjects must be the best examples of what Australian schools need to do to enable those receiving the QCE to be ready to compete and prosper in a global society.

One additional point to ponder is the issue of "essentiality." This issue has at least two dimensions: what should students learn, and how well should they learn it? I have suggested that some sort of default core be established to address the "what" question. The "how well" question is closely related. In sum, certain things are more important than others. In general, these are knowledge and skills that are somehow foundational to understanding a discipline and proceeding through it successfully. Students find it very difficult indeed to identify what is more or less important from the steady stream of information and assignments that comes their way.

To address the "how well" question, it is useful to which fields of study have identifiable knowledge and skills that are more important than others. Math, science, and second languages come to mind immediately as subject areas where certain principles and skills underlie all advanced studies. A similar claim could probably be made about English in the sense of foundational skills in writing, in particular. If it were possible to reach agreement about which topics, principles, rules, laws, techniques, concepts, and vocabulary were essential, the syllabuses could be designed to help ensure students know these are important and that teachers are sure to provide adequate emphasis on these, including practice and review necessary to achieve the very high levels of mastery known as executive functioning or automaticity in these areas.

1B. What's essential for effective community engagement and active citizenship?

The syllabuses as generally constructed do not make demands on students to engage in the community actively or explicitly as a component of their education. By contrast, programmes such as the International Baccalaureate do have specific requirements for community involvement accompanying coursework. From an organizational perspective, can the goals of community engagement and citizenship skills be developed in courses or through syllabuses or must they be an additional, supplementary requirement?

Three primary options exist. One is to build explicit expectations into syllabuses at a general level. It seems this can be done without much difficulty, given that much of what appears in the syllabuses appears to be suggestive in nature. The second is to build requirements into the syllabuses that a certain number of hours be devoted to community-based activities via assignments. This is perhaps slightly more problematic but still achievable. The third is to build requirements into the assessment system. Given the general philosophy of maximum flexibility, this seems unlikely and perhaps most problematic, although this approach would do the most to ensure some level of community involvement takes place.

A fourth option is to make community engagement a separate requirement, similar to the way the IB is structured. This option is the most powerful and the most complex and demanding. Managing student involvement in the community on this scale requires considerable planning and effort. Furthermore, the community may not be ready for an influx of young people, all bent on meeting requirements for volunteer hours.

My own view is that, as students mature, they should be expected to be increasingly involved in their community. It may be possible to draw upon all four of the options presented above in combination to create a stronger connection between school and community. Most students are actively engaged in exploring their role in the community and society anyway, whether the school expects it of them or not, so it seems that in the end, this may be a reasonably low-risk proposition.

1C. Is there a set of generic or essential skills?

This question is closely related to the issue of essentiality raised earlier. In fact, it appears that there may be a set of skills that are minimal social survival skills. These are not low-level skills such as being able to read a bus timetable or balance a bank account. Instead, these are complex constellations of cognitive, social, life, and personal skills and attributes. Examples include analytic and critical thinking, problem solving, and research skills, goal setting, self-monitoring, time management, human relations or "people" skills, and related social coping strategies.

For the purposes of this paper, I am commenting only on essential academic skills. At the core is probably understanding of written material, the ability to generate written material, and understanding of foundational mathematic principles and concepts, what might more properly be thought of as numeric literacy. A key question to ask is the degree to which these essential skills are developed directly through the assessment requirements of the syllabuses.

It is essential to identify a generic core set of skills that apply in academic environments and the workplace, and are necessary to exercise citizenship

responsibilities. These should best be thought of as readiness skills. They prepare someone to do something else. They are foundational in nature. The syllabuses often refer to attributes that meet these criteria, but there does not appear to be a formal, integrated list of these core skills nor a mechanism to ensure they are developed across all syllabuses.

The syllabuses reflect very well traditional conceptions of knowledge and its organization. Where they may be lacking to a certain degree is their omission of new and emerging 21st century skills. An example of such a skill that is largely overlooked currently in syllabuses is *entrepreneurship*. This is the ability broadly to take initiative to create new ways of doing business, both outside of and within traditional corporate and organizational structures. Entrepreneurs are among the largest contributors to new job creation and will be critical for the future of most post-industrial information age economies.

The current mindset of the QSA seems to be to point students toward university or a specific area of employment. A third choice would be to help students learn how to become more entrepreneurial. Students with an entrepreneurial bent would much more capable of:

- developing their own business plans
- creatively identifying potential new goods and services
- working through networks and with cutting-edge technology solutions to create virtual organizations while only possessing limited resources
- determining high value-added services and solutions that have either niche or broad-based appeal.

The Business Organisation and Management syllabus does mention “enterprise education” and also does address some of the related skills of entrepreneurship. In what ways could some of the elements of this syllabus be infused into many other syllabuses so that more students had exposure to thinking like an entrepreneur and engaging in assessment tasks that required entrepreneurial skills and spirit?

The problem is that entrepreneurship is currently associated with business instruction, as the syllabus indicates. This is unfortunate. All students, and particularly those students who desire to pursue a university education, should be much more aware of how they can apply their learnings to entrepreneurial ventures. A great deal of evidence exists to suggest that these students will be as likely or even more likely to engage in entrepreneurship as those who are being directed down the more vocational path. Equipping all students to succeed in an increasingly entrepreneurial environment is both necessary for students and essential for the nation.

It is worth noting that the sole point of education should not be instrumentalism. A well-rounded education helps contribute to personal empowerment and life enhancement. There should always be room within a secondary education for some degree of exploration and self-expression. The issue is how to provide a proper framework within which these activities can occur and students can develop as complete human beings without having to sacrifice fundamental academic preparation to achieve these more expansive goals.

2. Does the suite of Authority subjects provide students with an opportunity to gain a broad and balanced education in the senior phase of learning that is relevant to living and working in a knowledge economy and optimise post-school options?

This question is largely addressed in other sections throughout this paper.

2A. Who is best served by the current suite of subjects?

There is no doubt that the current suite covers a wide range of topics and interests. This can be construed as a strength or a weakness. The subject areas studied are, with a few notable exceptions, the most traditional of school subjects. This should not be a surprise, given the limited capacity of school to offer subjects for which teachers have not been thoroughly prepared and the inherent conservatism of schools as institutions. Nevertheless, the QSA may be in the position to float a wider range of "experimental" syllabuses than the one observed in the current group (Science 21). One way to go about this would be to work in partnership with schools to identify new and innovative configurations and structures of courses that could be studied or even to sponsor the creation of such experiments along a wider range of traditional syllabuses.

At the very least, the syllabus development teams should be required to generate a list of topics for possible experimental development. This list might then be circulated to schools, some of which may undertake some structured development work that could help inform the syllabus committee the next time it met or in the interim between formal syllabus redesign processes. Clearly, there are costs for this, but an approach that sought to exploit the flexibility and ability of schools to experiment in limited ways with new courses, in this case on behalf of the QSA, could yield worthwhile results that could help create an atmosphere of experimentation and innovation that extended beyond the syllabus development process.

2B. Who is not served by the current suite of subjects?

Answering this question is important to understanding what changes should be made in syllabus topics, content, and design. There does not appear to be a strong R&D component in the syllabus design process that is focused on answering this question and the following two questions. As a result, syllabuses may be developed and modified based on the impressions of those on the development committees. While these individuals clearly possess high levels of knowledge and credibility, relying entirely on impressions rather than systematic, longitudinal data means that mistakes can be repeated or that, at the least, the development process is not systematically informed by data that enables progressive improvements each iteration. If the focus is on the content and the developers, the effects on a wide range of students is largely absent from the development process.

This point of view is not necessarily in conflict with the ideas presented previously about a default core and identified essential content. The issue is how well schools are able to adapt to local circumstances. If they have resources or assistance, they are more likely to make such adaptations successfully. If they do not, they may simply lower expectations somewhat based on their assumptions of what students can do. Although the externally moderated assessment scheme helps control this tendency, it is a difficult one to counter. The degree to which the adaptation process can be supported even through centralized sharing of ideas online is the degree to which each

school can have appropriately adapted material that is at the same high level of challenge throughout the state.

One of the strengths of the QSA syllabuses is their emphasis on processes as a means to achieve deep understandings and applications of worthwhile content. This goal is most difficult to achieve with students from lower economic classes for a wide variety of reasons. Special efforts need to be made to ensure that schools serving these schools do not simply direct more students into employment preparation programs at the expense of engaging the students in complex thinking and challenging material. While the syllabuses alone cannot accomplish this goal, it is worthwhile to consider how the QSA can foster greater equity of participation in the Authority courses instead of the numerous alternatives available to students and, by extension, to schools.

2C. To what extent does the suite of subjects cater to the diversity of students in the senior phase of learning?

The word "diversity" has a multitude of meanings. The real issue is the degree to which the suite of subjects can address all potential student interests. The answer, of course, is that it can't. The challenge is to develop a range of subjects that provide students access to a wide variety of career pathways, rather than a choice between academic preparation and vocational/job training. All subjects should have both intellectual challenge and worldly relevance. Syllabuses should pay more attention to the rationale presented to students for why they are expected to learn the material in the syllabus. Differentiating some assignments and even some assessment tasks is one way to address this issue head-on.

2D. Does the suite of subjects allow study programs that prepare students for future post-school destinations? How adequately does the suite of syllabuses prepare young people for transition to the next phase?

Clearly, the intention to prepare students for future post-high school destinations is a paramount consideration that comes through in all the syllabuses. The largely unanswered question is how adequately this suite achieves its goals. It seems that few formal mechanisms exist to evaluate the effectiveness of the syllabuses, either through longitudinal studies, predictive validity studies, or even more qualitative methods, such as interviews and surveys. It would seem that a research and evaluation component that focused primarily on the effects on student learning and performance in post-school environments is a needed dimension to the syllabus development process.

In the short term, the most fruitful method of answering this question may be to convene a committee to conduct an overall content analysis of the syllabuses. This goes back to a point made previously regarding content coverage. Any such committee would have to be staffed by a cross-section of the "clients" of the QCE and not dominated by secondary school educators. The final report of such a committee should be relatively general in nature, identifying the areas of strength and potential improvement in the syllabus development process along with some specific areas where syllabuses should be developed or revised.

2E. How can the suite of subjects offered by the QSA enable the fullest possible access by students to study programs that meet their learning needs and that will enable them to progress to post-school options?

The main issue here may be keeping options open. As much as possible this means avoiding tracking. However, some tracking may now occur, even though the boundaries are fuzzy rather than hard-edged. Not all selections of subjects necessarily lead to university. Many students try to keep their options open (make themselves eligible for university selection) at the expense of a greater restriction on their choice of subjects than might be desirable for them. This is where the notion of a default core may be helpful by enabling students to achieve university readiness efficiently and still have some room for experimentation that is not a form of tracking.

On the other hand, that sometimes depends on what options are offered by the school. At least, Authority-registered subjects and VET Certificates do not contribute to OPs. Authority-registered subjects are 'second tier' subjects catering to less academically inclined students. A question to be asked is whether this division of subjects is desirable and what the alternatives might be. Conversely, it might be asked whether there should be more than two layers/types of subjects and what might be the defining characteristics of each. As a general rule of thumb, the more formal the distinctions between different educational pathways, the more they come to represent different economic classes. As well intentioned as the VET Certificate process is, it does require students to make what amounts to a life choice at age 16, and the stakes of this choice are growing ever higher as the gap between those with formal education and those without continues to increase, not necessarily in terms of earnings, but in terms of the ability to adapt to changes in the economy and society brought about by global forces.

3. What form should future syllabuses take to allow schools and other learning providers to maximise opportunities in light of new legislation and the Queensland Certificate of Education?

3A. What is the purpose of a syllabus?

Part of the issue is viewing everything from the perspective of the syllabus. As a structural element, the syllabus makes sense, but it is a means to an end, not an end in itself. It's easy for the process to drive the purpose, rather than vice-versa, and the tremendous institutional inertia around syllabuses tend to make them the focal point for the system.

An alternative is to think more in terms of career pathways that students keep in mind as they take subjects. The syllabuses can be cross-referenced against different pathways, creating groupings for students interested in particular areas. This can be done without sacrificing the current model that utilizes syllabus-based assessment to rank students. This would simply give students more insight into how what they are studying connects with career pathways.

From this perspective, the purpose of a syllabus is to create a connected set of learning experiences that help students prepare for some future state. This is a highly instrumental definition, but is consistent with the current educational model under which schools operate. While syllabuses can certainly appeal to the intrinsic love of learning and should seek to develop those attributes in students, the syllabuses should

more explicitly help students make connections between what they are learning and broad career pathways.

Currently, the academically-oriented syllabuses tend to make few direct connections with career pathways, while the more practical ones tend to aim toward an occupation. How can syllabuses be constructed so that each syllabus appeals to a wider range of students who then respond differently to content through assessment pieces that are more or less application oriented?

One way to accomplish this is to view career pathways as having both a horizontal and vertical component, horizontal in terms of the courses taken over time, vertical in terms of the sophistication within a career that different levels of study represent. It may be possible, for example, to think in terms of pre-medical studies extending from emergency medical technician and therapist through to nurse and doctor. Students do not need to choose which level they will finally pursue, but all can explore various aspects of the career pathway while still learning enough about the human body to enable them to continue their studies in this area.

3B. What should a syllabus say about:

- *curriculum (subjects, disciplines, areas of learning)?*
- *assessment (a discipline or a way of doing in the world, for example, rich tasks)?*
- *reporting?*

The current format and elements of the syllabuses do an excellent job of capturing the information that is necessary for successful course planning, instruction, and assessment. Some brief observations follow with the caveat that some, much, or all of what is discussed here may already be occurring.

If the QSA does not already collect model curriculum and assessment units and post them centrally on a website, it should begin to do so. Although there is probably no need for the QSA to specify educational practices in greater detail, the Authority can and should serve as a "best practices" clearinghouse among high schools in the state. When teachers or schools come up with innovative or creative solutions to teaching a unit, that information should be shared broadly in a format that other teachers can readily adapt to their own classrooms. The ubiquity of high-speed Internet and the ability of nearly all educators to download relatively large, complex files allows the Authority to post far more examples and complete units.

This is the missing link between the general guidance contained in the syllabus and the detailed lessons that teachers must generate to translate the generalities into activities in which students can engage. So many of the goals and objectives of the syllabuses are so ambitious and complex, it seems that teachers might need help learning how to handle the more challenging aspects of the syllabuses, in particular. Without such assistance, teachers may be inclined simply to teach content mastery and ignore the higher-order thinking skills that are featured prominently in the syllabuses but that require greater skill to incorporate into lessons.

Syllabuses may best be thought of as *development-oriented*, not *mastery-oriented*. Although there may be notable exceptions to this generalization, the espoused model for syllabuses seems to be based on utilizing core content to develop greater capacity in areas delineated by the General Objectives. The fact that the assessment system

allows considerable leeway for teachers to develop their own emphases (within the structure of the syllabus-designated core) and that the assessments do not attempt to test all student knowledge but to develop holistic judgments about students means that students will emerge with differing constellations of knowledge and skill. This is consistent with constructivist notions (and probably reflective of what happens in non-constructivist classrooms to a significant degree anyway), but it has implications for alignment between the syllabuses and what comes next. This issue of how and against what standards to align is an important one that will be taken up later.

If this characterization of the syllabuses is accurate, it suggests that overall performance in a subject is probably not useful for reaching any judgment about how a student will make the transition to another subject or learning experience in this area after high school. As is explored later, the fact that the assessment process yields detailed, fine-grained information about student knowledge, skills, and interests, is largely lost in the final analysis and apparently not communicated onward when students leave high school. The issue here is not to conduct moderation at the level of separate dimensions within a subject. Instead, the point is that none of the wonderfully rich information on student learning makes it out of the moderation process and follows the student on to the next level of education, whatever that may be.

3C. How well does the way the QSA packages learning experiences into discipline-based syllabuses lead to learning outcomes appropriate to changing social, economic and technological conditions?

The QSA packages learning experiences into discipline-based syllabuses at a high degree of expertise and quality. As mentioned earlier, though, the processes by which the syllabuses are updated to address changing conditions are unclear. For the most part, it seems that the adaptation process is left to the individual teacher, who must determine how to apply the content and processes in the syllabus within a social, economic, and technological context. In particular, there is little evidence that the syllabuses draw upon technology in any sort of cutting-edge manner. This may be because the QSA cannot assume that all schools have access to such technology. However, the message of the syllabuses seems to be that technology is not central to learning.

Although the question being asked here is not how well the syllabuses connect their content to current issues in society, the question is a worthwhile one to ask in any event in part because connecting with social issues does not seem to be a strong suit of the syllabuses. The sciences, in particular, seem to pay little attention to issues of science and society. Biology has scant mention of issues surrounding cloning, stem cells, society's responsibility to individuals in areas such as Africa who are suffering from AIDs and other afflictions, and a range of issues that would all easily lead to the teaching of considerable science content. Individual teachers may make decisions to do so, but there is little evidence in the assessment pieces that this is an expectation. It is worth noting that in research I have conducted on what universities expect from entering students in the sciences, faculty have consistently identified the ability to connect scientific research and knowledge to social contexts and conditions as a key desirable skill. Infusing such understandings into curriculum is clearly a joint responsibility between high school and universities, but high schools can reasonably be expected to spur students to make more of these connections and to understand that

science has a social component to it along with its laws, principles, concepts, and content.

3D. Are there alternative ways to package learning experiences that result in learning outcomes that serve a broader range of end-users?

One idea is to build all syllabuses with greater attention to the range of assessment pieces. One option would be to have university and non-university assessment pieces. Although this would increase complexity considerably (and it may turn out that no students want to engage in the non-uni assessments), such a model could create options for students who would not otherwise have taken a subject. For example, the biology syllabus contains a strong emphasis on theory-into-practice and fieldwork. However, the syllabus's Key Ideas do not necessary reflect this emphasis. What would a biology course look like that had a strong applied component that students who were interested in technical positions in labs could pursue, while students interested in preparing for university might have different assessment pieces that were somewhat more traditionally reflective of the Key Ideas listed in the syllabus? Could this be integrated into one syllabus?

Clearly, these ideas are potentially complex and volatile, and considerable care would have to be taken that students were not closing off options inadvertently or being asked to make life choices at age 16. However, the general principle that more students might somehow be exposed to more challenging content, even if they did not wish to pursue university studies, is the one that is worth pursuing. The operational details are indeed daunting.

3E. Whom do syllabuses serve?

It's really a good question to ask. Do they serve teachers? I assume they are the intended audience. I found myself wondering what of them students actually see. Although the syllabuses clearly are not written in a form that is accessible to students, much of what is in the syllabus is really important for students to understand. Even the brief descriptions of the subjects were quite helpful identifying the overall goals and content to be covered in the subject. Students often do not have the larger view of what they are learning; to them, it is a series of daily tasks and activities. How could the bid-picture perspective contained in the syllabuses be communicated to students? To parents? Similarly, it may not be obvious to students that they are expected to be mastering many of the General Objectives. Is this information explicitly put before students and explained to them so that they are more aware about what they are supposed to be doing? The exit criteria do attempt to capture the range of General Objectives. Do students make this connection? I assume so, but I don't know what materials students see to help them make that connection. Enabling students to grasp the larger picture, to comprehend what they are being taught and what they are supposed to be learning, is even more important when attempting to develop more cognitively complex skills. If students can be made more aware beforehand and during the course that this is the goal, along with identification of key core content, they can seek to participate more actively and consciously in achieving these desired outcomes.

3F. Do all syllabuses have to be the same or are alternative syllabus designs desirable for some subjects and some areas of knowledge?

This is an intriguing question. One strength of the syllabuses is their general similarity in overall structure and expected content. This creates the ability for teachers to talk with one another and, conceivably, for schools to plan their entire program of study in a coherent, integrated fashion designed to address the General Objectives. It may be worthwhile to determine whether teachers and schools use syllabuses in this fashion, and, if not, whether a broader set of supplementary documents might help them use a pared-down syllabus as a central focal point for organization and discussion.

3G. Should all syllabuses be two-year courses of study?

I think it limits the potential for student acceleration if all subjects take two years to complete fully. I know there are some programs for early university participation. How could the syllabuses facilitate student participation in such programs? Might there be ways to allow students to complete a subject in less than two years, and then continue on to university-level studies? The analog in the USA is the Advanced Placement program. Would there be any advantage to introducing some selected university-level studies into the final semester of high school? This is a model we are working on through a federal research grant at our centre in Oregon to see if this will enhance successful transition from high school to university.

More generally, this raises the question of whether parts of a syllabus can be made interchangeable with alternatives (including university studies). This would be easier with some current syllabuses than others – perhaps easier where there are relatively self-contained 'units'. Syllabuses generally assume, however, that the subject forms a connected whole. The exit standards apply only at the end of the course, and there is a single result for the course as a whole. Within this model, any replacement of parts of the subject with university studies would need to allow for the results on those studies to be re-absorbed into the subject, that is, be included in the student's folio with the folio being judged as a whole against the exit standards. It is a bit difficult to see this working. Alternatively, there would need to be some way of judging achievement for only part of a subject. However, currently, there is no mechanism for this.

The more fundamental issue is the connection between years 8 to 10 and years 11 and 12. The goal should be to utilize the five years of secondary school to present a curriculum that seeks to develop the intellectual maturity of students and that possesses a modicum of intellectual coherence itself.

3H. How can the artificial barriers in related subject areas be broken down?

If the QSA were able to identify *subject clusters* that were intended to have relationships among all subjects in the cluster, it may be possible to include linking elements among the subjects in the cluster. This is an intermediate way of addressing the coherence question. Might several sciences and maths be clustered to emphasize engineering, for example? The assessment tasks, in particular, could be designed to assume students could bring to bear knowledge and skills from more than one subject in preparing an assessment piece.

3I. Are there rules that make it difficult to deliver the syllabuses and how can these be framed to support the delivery of syllabuses?

My knowledge of the specifics of the system as it currently operates is insufficient to allow me to respond to this question intelligently.

3J. What form should future syllabuses take?

At the very least, it might be interesting if all syllabuses included at least one piloting element at all times that was designed to explore a future direction. This is not unlike tests that contain items that are being evaluated for future use but do not figure in the score a student receives on the test. If syllabuses always contained one or more experimental units that teachers were expected to attempt, and if these units changed every couple of years, it would be possible to glean much more information to help inform the redesign processes as well as to signal when it was time to develop an entirely new syllabus subject. Similarly, the assessment system could introduce new elements and requirements periodically to discern how best to improve assessment practice over time.

3K. What are the principles that should guide the future direction of the development /accreditation of QSA syllabuses?

Key principles may include the following:

- Do the syllabuses reflect Australia's core unifying values, the attributes that make this one nation composed of many diverse peoples?
- Do the syllabuses reflect key national priorities for the future?
- Do the syllabuses organize knowledge in ways that enable students to be prepared to succeed in Australian society as it exists in the context of an increasingly globalised world community?
- Do the syllabuses reflect the generic skills needed to succeed in the variety of tertiary education options that most students choose to pursue?
- Do the syllabuses reflect the key knowledge and skills specific to university success and how do we know these are key?
- Do the syllabuses reflect the key generic work readiness skills that all students who intend to enter the workforce at some point should have mastered?
- In what ways are the syllabuses consistent with student interests, research on how young people learn, and identified effective teaching practices?
- Are the General Objectives selected for each syllabus appropriate, assessable, and connected as appropriate across syllabuses?
- Are there any natural connections between and among syllabuses in different subject areas that should be made explicit and this connection incorporated into the syllabus design?

3L. What role can/should higher education play in the design, development and evaluation of syllabuses?

This is an area with tremendous undeveloped potential for the QSA. Currently, the syllabuses are developed almost exclusively by the secondary community without significant direct involvement of the university sector. In effect, this frees universities from any responsibility for the functioning of the syllabus system, which means university courses and teaching need not change to align with what is being taught in

the syllabuses and how it is being taught. But on a more fundamental level, it ensures that the connection between the syllabuses and what is actually expected in university courses of study will be indirect at best and that curriculum development at the two levels of the educational system will function in a disconnected fashion.

Given the tremendous sophistication of the syllabus system and the technical expertise and resources the QSA possesses, it seems to be entirely in the interests of the university system to take a much more active role in the construction, evaluation, and redesign of syllabuses. Such involvement might include any or all of the following:

- Participation on syllabus development teams by instructors who teach entry-level university courses. It is not always necessary or even desirable to have the most prestigious member of a faculty participate. Those who work most directly with incoming students can provide tremendous insight into the practical issues of transition and articulation that can inform the syllabus generation process.
- Provision to the QSA of data on student performance in university courses of study. Such information can play a key role in pinpointing areas of strength and weakness in syllabuses and in student interest. This point is explicated further in the final section on the process of developing syllabuses.
- Development by university faculty of specifications of key knowledge and skills necessary to succeed in entry-level courses and in specific fields of study, and to earn a baccalaureate degree in a timely fashion. It may be found that the current syllabuses already capture much of what universities believe to be essential (I would predict this to be so). But once such a process was in place, it would be easier to observe any changes that occur in university expectations. This is not easy to do under the current syllabus development model.

It is worth noting that the university system needs to participate as a partner, not a boss, with the full expectation that universities will also make changes based on the result of the syllabus development process. Developing such an agreement and the corresponding set of relationships across the system boundaries necessary to put the principle of reciprocity into practice is clearly challenging. However, it is what students expect and what they need if they are to be successful. As a result, it is quite imperative for the adults who organize the systems to come together to reach the necessary agreements.

One simple way to begin this process is to focus on student work samples and to discuss their content and how they might most appropriately be assessed. In fact, in blind scorings where work from university classrooms is interspersed with high school students' work without identifying marks on any papers, the university faculty often find it surprising how well some high school students can perform and how the overlap is much more continuous between high school and college-level performance. Such realisations can create an important starting point for substantive discussions on everything from what should be taught at each level to how assessment schemes can be made to be more continuous in terms of methods and expectations across the two levels of education.

3M. What role can/should industry play in the design, development and evaluation of syllabuses?

This is perhaps a more sensitive question, in part because there is no such thing as "industry." While it is perhaps more clear who should be at the table when one discusses involvement by universities, it is less clear who should represent the work world. What types of employers should be there? Those who hire students directly out of high school? Those who hire college grads who need strong foundations in high school? Those who hire workers who need little technical skill but good work habits? Those who provide training to their employees?

It does not make sense for high schools to prepare students for entry-level jobs that can be attained directly from high school without further training. Such jobs now require very low skill levels and have very poor career prospects. If we remove this component of industry from the picture, we are left with employers who basically want workers who have acquired additional education or, at the least, are capable of doing so.

What these employers can contribute are descriptions of what I would label as "generic work readiness skills." The list of these skills is more or less settled, and they are well represented in many (but by no means all) syllabuses currently. The question is how well these skills can be developed in high school without real connections to the work world as one component of a subject. This implies a closer partnership with a very wide, inclusive set of employers who are willing to provide quality experiences for students to learn about generic work readiness skills, not to receive job training.

These opportunities can and should be incorporated into all syllabuses, not just those oriented toward jobs. This goes back to the notion that all syllabuses should make stronger connection to career pathways, not either university preparation or job training. Most students have only a general idea what they want to do, and even those with specific ideas may not fully grasp what is involved in their choice or its long-term implications. Creating many more opportunities for *all* students to engage in forms of work readiness would greatly strengthen the syllabuses by helping students to see the importance of what they were learning and the need to address all aspects of syllabus goals, including the General Objectives.

In short, I would propose that at least one General Objective in each syllabus address a set of generic work readiness skills to be developed by a panel of employers reflecting both current and emerging fields in the private and public sectors. General work readiness skills are those that have appeared repeatedly in study after study of what employers want across sectors of the economy, but might have best been summarized in the *SCANS Report*. Using these as a starting point, employer panels could work with syllabus developers to identify the places where these SCANS skills could be integrated appropriately into each syllabus.

3N. What role can/should training sectors play in the design, development and evaluation of syllabuses?

The goal would be to achieve the tightest integration possible between the syllabuses and the training sector so that students moved smoothly from syllabus study to training. This may require some modification of training so that it incorporates more of the academic content knowledge and principles into the training programs than previously. Students need to see the carryover between the syllabuses and the training programs and not view training as a replacement or substitute for academic learning.

To the degree to which training is seen as less demanding or challenging cognitively, it will be associated by many with lower economic classes and will likely convey only a subset of the skills necessary for a successful career in the work world. Training should not be for a job, but for a career pathway in which the student may start with a highly skill-centred job but over time take on one in which knowledge work is a component. In many cases, this can entail something as simple as moving from an employee to a supervisor. In other cases, it may mean starting one's own business or even returning for additional schooling to move to a fundamentally different role within the same line of work.

These types of changes may be jarring to many in the national training system, which focuses almost exclusively on job preparation. However, at a time when almost no job can be said to be entirely secure, training programs should be much more extensions of syllabuses that prepare students to be flexible, adaptive workers who pursue a career pathway, not just a job. Collaborative planning between the QSA and the training sector can help achieve this goal. Clearly, this recommendation has profound implications. It is presented here primarily as a concept rather than an action plan. It may take many years before there is sufficient awareness of the limitations of a job-oriented national training program that does not include as one dimension the development of core cognitive skills necessary for workers to be adaptive and flexible to take advantage of new opportunities or to be retrained if necessary.

Perhaps in the short run, VET programs need to be supplemented with more general learning programs that position and make sense of the VET certificate training programs. In other words, these programs might need to be given a broader context. This would be different from the 'embedding' notion that has recently been abandoned. There would be two side-by-side components. But there would be some difficulty in making the general support program attractive and useful.

4. How do we build coherence in the curriculum?

4A. How do we ensure coherence P-12?

This is largely a philosophical question about whether a curriculum should be structured bottom-up (P-12) or top-down (12-P). The answer largely hinges on how confident one is that the top-level learning expectations in place are the right ones. If so, then coherence and alignment should be attained through a "design down" process. If not, then foundational skills, such as reading and writing, should be taught in early grades without much attention to how they will be utilized in the upper grades.

Coherence in this context is largely a reflection of how conscious and aware students are of the large-scale educational goals and outcomes they should be pursuing. If the large-scale, unifying goals and principles can be established and broadly accepted, schools can be given reasonable latitude to construct curriculum and select instructional practices that will move students toward desired outcomes over time.

More specifically, however, is the issue of what constitutes a foundational skill that should be developed in primary school and how early should the skill be introduced and developed? For example, mathematics curricula from other countries are noteworthy for introducing many advanced mathematical concepts in the early grades where students seem to be able to grasp them relatively easily, then returning to them periodically at designated intervals to reinforce and develop them further. There is

nothing new or revolutionary about this concept. Jerome Bruner labelled this the "spiral curriculum, and claimed that most any concept could be taught at most any age, if adapted to the development levels of learners".

Another example is technology. When should students be expected to have mastered key technological skills that are foundational to success? How will these skills then be developed further in secondary school and integrated into other subject areas systematically throughout a student's education? Finally, skill and experience conducting research may be another key example of an area where student abilities can be developed continuously and the skills integrated coherently into the entire P-12 curriculum.

The difficulty of the spiral curriculum is the same issue that faces all alignment schemes — getting the system organized to implement the desired content at the desired levels, and then getting teachers to teach this content. The system works better in more centralized educational systems where, at the least, the desired content can be placed at the desired level with some certainty that it will be addressed. Systems that allow considerable teacher discretion and school-based planning of curriculum are going to be less certain about the degree of "spiralling" that is actually occurring.

Perhaps the best way to approach the coherence challenge is to focus upon a limited number of key outcomes or goals at key grade levels and assess them using school-based assessment methods. In this fashion, some reasonable accountability might be achieved without a cumbersome system of state-mandated and controlled testing. The key goals would have to incorporate the spiralling concepts where appropriate and indicate what new concepts were introduced at what level. Part of the key to success would be to keep the outcomes and goals to a manageable number so that schools could be held accountable at least in general terms for addressing them. This is necessarily a compromise, but one that is consistent with less centralized educational governance models.

4B. What about Year 10?

Year 10 poses a series of interesting challenges and dilemmas, some practical, some philosophical. The primary philosophical dilemma is whether the educational system should be designed in a fashion that some sort of defining decision about a student's future is made at or near the end of Year 10. If this is to be the case, the system is obligated to ensure that this decision is more than simply a proxy for a student's economic standing or racial or ethnic group affiliation.

If a Year 10 choice between work preparation and university preparation really means choosing one's future social class based largely on one's current social class, the educational system is not organized in sufficiently sophisticated a fashion to know with any certainty which decision individual students should make. Research I have conducted on college readiness suggests the entire process of making the decision to go to college is much more knowledge-intensive than it is assumed to be, and that misconceptions, misinformation, and lack of information are all found with greater frequency among the poor.

Schools should be organized with tertiary study as the default goal for all students. All students should be mastering the foundational skills necessary for future learning throughout one's career and lifetime. Some will clearly master them at a higher level than others, but all students who are capable of benefiting from formal education will

have been engaged in challenging, intellectually engaging pursuits throughout their education.

The problem with differentiating subjects based on student interest is that students largely choose from what is available. If courses of lesser challenge are made available, at least some students will naturally be attracted to them. We will never know how well those students could have done in a more challenging class. Expectations are the key to student performance, although instruction and content can reasonably be adapted to student interests and in ways that enhance student engagement and motivation. However, students know when they are not being challenged seriously, and they feel devalued by it, even as they may simultaneously be revelling in the lack of work expected from them.

Schools must be environments in which students cannot choose to do less than their best, in which expectations are not adapted based upon assumptions about what students are capable of doing, but are set based on what they are expected to do. Some will need more support than others in achieving the expectations, but all will share the same expectations.

Another major consideration, within the context of the current system, is whether Year 10 should be a "levelling" year where students are helped to catch up and be prepared to take fullest advantage of the intensive studies available in Years 11 and 12. Year 10 could become a time of diagnostic testing and remediation, particularly in reading, writing, and logical thinking that would enable students to select from a much broader range of Authority syllabuses. Intense, focused instruction and remediation would be available for those students who realise that the only way to achieve a university education is to improve their academic skills dramatically and in a short period of time.

Ideally, this would not be necessary if student progress were monitored regularly in each grade against a set of readiness standards designed to correlate with the skill level needed to perform successfully in Authority syllabuses. However, in a non-ideal world, some mechanism must exist to calibrate the system periodically instead of simply passing students on unprepared from one level to the next. An intensive focus at Year 10 on readiness could benefit many students. For others, this would be a time to deepen understandings and begin the sort of semi-independent studies that should come to characterise Years 11 and 12 to a more significant degree.

4C. How do we ensure that students' learning from the suite of syllabuses is coherent and enables them to progress to post-school options?

This is a linchpin question to consider. As it stands, the syllabuses clearly have been constructed via a "silo" model, where experts gather and work out what they believe students should know and do. Although it is possible to discern considerable overlap among syllabuses regarding the more complex thinking skills and tasks each would like students to master, there is little indication this occurred consciously, nor does there appear to be a mechanism to communicate to students which facets of key skills and capabilities are developed in different ways through different syllabuses. From the student perspective, each subject may seem like a self-contained unit with few connections with any other syllabus.

The Common Curriculum Elements, as currently developed and utilised, are not likely to serve this purpose. They are too restricted, having been derived from the existing syllabuses as a basis for designing the QCS test. Earlier in this paper a mechanism

was suggested by which to consider core, or essential, elements of the Authority courses. Such a method might yield results that could also be employed for the purpose of creating a framework of cross-curriculum coherence could be derived. This would create a sort of self-reinforcing loop where teachers came to understand and address essential elements and syllabuses over time and came to address them in a multi-faceted fashion across subjects.

5. What are the practical implications of changes to the way knowledge is packaged?

5A. What are the issues for schools – such as timetabling and delivery methods?

One of the most interesting issues, and it is alluded to in some syllabuses when discussing composite courses, is the use of semi-independent or independent study (referred to as "unsupervised study"). How can students be encouraged to take ever-greater ownership of their own learning and at the same time learn how to utilise adults and other sources of information as resources on a need-appropriate basis?

Development of this capability in students will do more to help them in university studies and in the work world than almost any other. Since education is largely a process of socialization and a framework within which maturation occurs, how can students be socialized into greater independence of action and maturity in taking control of their own learnings? Can syllabuses suggest the places where students can work with greater independence, under the general guidance and tutelage of a teacher?

Much of this probably already occurs around the development of assessment pieces. Can this be extended? Can the Internet be utilized more extensively as a place where learning materials are posted that students access at the time and place of their own choosing? This model is increasingly popular in universities and in job training. Helping students become accustomed to this approach to learning and the personal responsibility that accompanies it can enable smoother transitions from high school to post-high school settings.

One way to do this is to assign research projects that require unsupervised study combined with periodic consultation with teachers. Although some of this likely occurs currently, this is an area that could be increased dramatically in all Authority subjects. The ability to conduct investigations and background research is increasingly a foundational skill for successful university studies and even for success in many work environments. The assessment requirements of all syllabuses could easily be updated to require more student research conducted semi-independently. This needs to be more than one or two projects for students to develop the techniques and habits of mind essential to a quality research investigation. The International Baccalaureate does require a 4000-word extended essay in which students must practice their research skills by analysing articles and studies and collecting their own original data. This is but one assignment, however. The QSA has the capability to build such assignments into its assessment requirements so that students conduct multiple research projects before receiving the QCE.

5B. What are the issues for initial teacher training?

A specific certificate or endorsement should be required to teach syllabuses. The initial teacher training should consist of learning the syllabus in depth and also

acquiring any additional knowledge necessary to teach the syllabus with deep understanding.

One key set of skills to be developed by prospective teachers is the ability to teach the syllabus successfully to a wide range of students. This would include students from different cultural, racial, and ethnic backgrounds; different income levels, and a range of achievement levels. The more prepared prospective teachers are to take on a range of instructional challenges, the more likely they are to succeed in doing so and to come to believe that education should be inclusive, not exclusive. Such teachers do not seek to impose ever-finer distinctions among students and to sort or stream them accordingly. They take students from where they are and move them forward.

QSA should work in close partnership with institutions that prepare new teachers and in the design of courses that are intended specifically to enable new teachers to understand, teach, and assess students in Authority courses appropriately. This partnership could include shared appointments so that university faculty gain hands-on experience at the QSA regarding syllabus design and student assessment. While this approach would require some resources, elements of it are in place already.

This strategy should be conducted in concert with extensive professional development of the existing teaching force, which is addressed in the following section.

5C. What are the issues for professional development?

At the least, teachers need some time to make connections among the syllabuses. This means they need to see, in particular, how they are developing the General Objectives and if the General Objectives overlap from one course to another. Given the natural tendency to focus on content knowledge acquisition, a professional development component focused on the General Objectives would help ensure that key Authority goals are being achieved to a greater degree.

Beyond that, as mentioned earlier, teaching all teachers how to increase success for the widest range of students is a critical skill as student populations become more diverse. Without a wider array of techniques and strategies, teachers will tend to advantage students who look the most like the teachers themselves. Given the fact that the Authority courses are the gatekeepers to university, those who teach these courses must be capable of enabling students from all backgrounds to achieve university readiness and admission. If not, the Queensland society will become increasingly divided into those who were able to succeed in Authority courses, who will have one future and set of options, and those who were not able to do so, who will have a quite different future and set of options.

Two points bear quick mention. First, teachers need to understand the subjects they teach well enough to support students conducting research in the area. This implies a much more robust mastery of content knowledge and more up-to-date awareness of developments in the subject area than many teachers possess currently. The research expectation, if put into place, would trigger the need for considerable teacher knowledge development. Much of this could be facilitated via the Internet, with postings of key readings and links to key sites. However, at least some teachers would require direct training in how to conduct research in their subject area, what the current issues were that are the likely candidates for research, what a quality investigation of these issues would look like, and where the resources exist to support such investigations.

Second, pedagogy is largely unsupported at this level – as nobody's responsibility or interest. Subject associations play a large role in disseminating best practice. However, the QSA can play a more central role and provide more support by collating and disseminating exemplary programs as mentioned earlier. Additionally, the QSA could help identify "best practice" courses and arrange to videotape lessons from them and make them available on the Internet via streaming technology and other means. In this fashion, teachers could observe their peers in a cost-effective manner that would support dissemination of effective pedagogical techniques.

5D. How will the changes impact on the tertiary entrance procedures?

This is a large and complex question, one that gets to the fundamental issue of what the Australian educational system wants to value. A ranking model, as exists currently, implies that it is possible, first of all, to order performance along a continuum, and, second, that the order, once established, is the best means for making decisions about access to scare resources, in this case, to particular fields of study. It is interesting that this ranking system is coupled with an assessment system that yields highly personalized, contextual information about student performance in a wide range of academic subject areas. Were it possible to reach more general categorical judgments about student readiness for university and then require that the more detailed information about student performance in specific areas generated by the classroom-based assessments come into play, it would then be possible to make better decisions about a student's skills in a particular field of study, rather than their overall position relative to all other students.

This, of course, would require tertiary admissions to become a two-step process. Step one would be a general judgment about fitness for university study. Step two would be a closer examination of performance in key *subject clusters* to ascertain student interest and achievement in these areas. Such an approach might, at the least, help reduce the migration among fields of study that occurs during the first years of university study in a system where students must commit to a specific interest as a condition of admission.

6. How can the suite of syllabuses be continuously evaluated and updated to meet the changing needs of school systems, schools, students, and the dynamic demands of the knowledge-based economy?

The development process used to create and revise syllabuses should be data-driven. Since I am not familiar enough with the current system, these observations may be redundant with current practice. The recommended process for deriving and employing data for syllabus development and revision would include the following:

- Longitudinal information on course-taking patterns and current information on course-taking patterns. This information would be used to discern areas where student interest may be waning or where strong interest exists. This information should be broken down by geographic region and economic, social, and racial/ethnic group. The goal is to see if the suite of syllabuses is distributing opportunity equitably, but also if they are appealing to students' interests. It may be that in certain areas, such as the sciences, if student interest is decreasing, it will be critical to find ways to retain high standards and challenge levels while making the syllabuses more engaging and attractive to students.

- Performance information on students in the syllabuses. How well do students do by syllabus? What are the trends over time?
- Performance information on students relating their performance in the syllabus (or group of syllabuses) and subsequent performance in university subjects, training, or the workplace. This can also be done more broadly based simply on the profile of subjects taken and subsequent choices made and performances achieved post-high school.
- Economic analysis of the types of skills that will be needed in the Australian economy over the next 20 years. While such studies are notoriously difficult to conduct due to dramatic changes in economies in short periods of time, they can forecast to some degree the general directions an economy is heading. For example, information-processing skills (not computer skills) may be a key capability for a wide range of future careers. Where do these appear in the syllabuses? How can the development and review committees include them to a greater degree?
- Current best research on student learning in the content areas. What is known about how students learn best in the different disciplines? A great deal more is being learned about this question, and the results might profitably be referenced in the syllabus development process.
- Research on how the current generation of students learn and what motivates them. Much of this information is anecdotal, derived from teacher experience. Are today's students any different than any previous generation? If so, how? How do we know this is true or not? Inclusion of research on this topic is useful to the development and revision process as well.

Currently, much more comes out of teacher practice and experience (both local and elsewhere) plus the general research literature on teaching, learning and assessment in that subject area. A very comprehensive research program yields a certain amount of valuable information, but it may be possible to be less comprehensive and still maintain quality syllabuses. After all, history does not always tell you what to do next. Syllabus construction is and always will be to some extent a creative act. Melding the best evidence on the effects of current practices with the goals and desires for the future of education in Queensland will always be a delicate balancing act. Future syllabus construction will benefit from both sources of information and the tensions that exist between them.

7. Some comments on English and Science as examples of how syllabuses might be deconstructed more critically

7A. English

- Traditional emphasis on textual analysis
- Implicit inclusion of informational as well as literary texts in the "Resources and Required Texts" section, but not an emphasis on such key sources such as reports, research studies, complex opinion pieces or exposés.
- Implied understanding of graphical and tabular forms of information presentation. Is this in fact an emphasis and a taught skill?
- No explicit instruction in reading techniques, particularly strategies to comprehend specialized text, such as textbooks or technical documents. No reference to close reading, skimming, and other methods for comprehending different types of texts.
- Strong emphasis on increasing independence, but how is this different from how students were taught or treated in 9th and 10th grade? Is there an explicit difference? How is classroom time structured in order to maximize the development of student independence? How does independence progress over a two-year period of study?
- Pacing of material: is pacing consistent with the pacing students will encounter in university-level courses? Is pacing designed to be at a more rapid pace than 9th and 10th grade, but still slower than university? This may be an individual teacher decision, but the syllabus seems to be relatively silent on this important issue, referring only to the time allocation requirement of 55 hours per semester. This does not say much about how much time students will devote overall, including out-of-class time, or how much material will be introduced at what pace.
- The texts students are required to have access to do include expository texts, but don't really emphasize informational texts. The list of "Resources and Required Texts" touch upon a range of sources, but very little mention is made of sources such as government reports, business studies, editorials, extended pieces in magazines such as *Scientific American* or *Atlantic* or *New Yorker*, using examples from the U.S. context. When non-literary texts are included, they are often narrative texts oriented toward popular teen culture.
- What about research skills? Comparing conflicting sources or documents? Researching the origins of a document, its social significance or the social context that existed when it was created?
- The "Suggestions," while interesting, do not provide much direction as to whether any skills are any more important than any others. This may be controversial, but one of the primary critiques of English curricula has been their lack of focus, continuity, or consistency. Once again, little emphasis on reports, technical documents, or source materials.

- The “Enhancing phase” makes reference to developing key cognitive processes. How can this become more than one statement among many? Do teachers know how to do this? Many of the examples given of materials to use to do this are not particularly complex or inclined to challenge (e.g., “real texts constructed in the culture…, group compositions, peer responses, and video or audio recordings….
- The “Synthesizing phase” seems to reference writing as a key component, and the need for students to draft and re-draft work. This is crucial. Writing must be central and be developed systematically beyond independent student work. To reduce dependence on teachers, I assume that common scoring guides, exemplary papers, peer scoring conferences, and similar techniques are regularly employed.
- Computer use is mentioned almost tangentially. Is the assumption that students have mastered technology already? Are skills extended in any fashion systematically (e.g., learning how to utilize more fully the entire feature set of word processing software)?
- Among purposes of assessment, enabling student to gauge readiness for tertiary studies is not listed as a purpose.
- How are exit criteria determined? Are they appropriately aligned with the skills required for success in university courses and other post-high school pathways students will follow?
- To what degree is writing the central mode of assessment while at the same time incorporating the ability to generate tables, graphs, figures, cite relevant source information, document assertions, reconcile conflicting arguments or points of view, analyse data for relevant elements to support?
- The individual student folios seem to provide an excellent vehicle for closer alignment with university and business expectations. Are sample student folios reviewed jointly by QSA development teams and representatives from these groups?
- The exit criteria are the leverage point that should be examined the most closely. Do these fully reflect the key knowledge and skills desired?
- Many of the questions raised about a wider range of materials are addressed in principle section 8, “Quantitative Concepts & Skills.” However, this section reads as an add-on that is not really well integrated into the rest of the syllabus. These skills are important in the context of English studies. How can that point be made better?

7B. Sciences

- General observation: The syllabuses in Biology, Chemistry, and Physics are beautifully constructed documents. However, they represent disciplinary distinctions that are increasingly less relevant in the sciences. While clearly students must master the basic concepts and principles of these branches of science, the way science functions is more through interdisciplinary and cross-disciplinary combinations of the sciences, along with mathematics and occasionally even elements of the social sciences. This observation is not offered to discourage in-depth coverage and mastery of core concepts and

knowledge from these sciences, but to suggest there may be many more possible ways both to teach the material contained in the syllabuses or at the least to make more connections among them. When the fact that university enrolments in the sciences are decreasing is factored it, it becomes even more important to find ways to engage students in science in new and more imaginative ways.

- Engineering: No specific syllabus seems to address engineering, although it is one of the key career pathways for the 21st century.
- Systems thinking as a unifying concept/organizer across a wide range of syllabuses in the science and elsewhere. The Science21 syllabus, for example, purports to be oriented toward the 21st century but makes almost no mention of systems, choosing to focus on topics. However, that syllabus does attempt to address some of the issues outlined above. A real challenge is that the exit standards for this syllabus set at VHA are really what all students taking this course should be aiming to achieve. This raises an issue about whether it is more appropriate to expect uniformly high performance in some subjects rather than trying to spread students in all subjects.
- The core academic syllabuses make very little effort to show students how what they are learning connects with career pathways, whereas the less academic ones (e.g., Marine Science) connect with a specific set of occupations less than a broad career pathway (although there is clearly the intent to look at a range of occupations). What is the proper balance between explicitly academic instruction that is connected to broad career pathways versus broad career pathways as the vehicle for the introduction of reasonable amounts of academic content?

7C. History

- Similar comments could be made about other cognate collections of subjects. History, for example, is restricted to Ancient and Modern (post 1800) and basically socio-political dimensions only. What is left out can be more interesting than what is left in.