

Evaluation of the Years 1 to 10
Technology Curriculum
Development Project
Report 1

Prepared for the Queensland School Curriculum Council by



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Executive Summary

This report is concerned with the trial version of the Draft Years 1 to 10 Syllabus in Technology for Queensland Schools. It forms part of the external evaluation of the Years 1 to 10 Technology Curriculum Development Project. The purpose of the curriculum development project is to design, develop and disseminate a Years 1 to 10 syllabus, sourcebooks and initial in-service materials in Technology for use in Queensland schools.

The evaluation reported here occurred during the trial phase of the curriculum development process, and was focused on the following questions:

- To what extent does the trial version of the draft syllabus reflect current and emerging views of education in Technology?
- To what extent does the trial version of the draft syllabus match the needs of all students, teachers and school administrators as expressed in the range of classroom and school contexts in the trial schools?
- What were the responses of the trial teachers to the August conference and what are the implications for the initial in-service package?
- What improvements can be made to the intent and content of the trial version of the draft syllabus?

Two approaches were used: An external review and a set of interviews with personnel in the trial schools. The external review drew upon the opinions of five reviewers. The interviews drew upon the experiences of teachers and administrators in the 19 trial schools.

We concluded that:

1. The draft syllabus reflects current and emerging views about technology education to a high degree.
2. The draft syllabus has the potential to equip students to cope very well with a technological society.
3. The direction taken by the draft syllabus has high support among the trial teachers.
4. The trial version of the Technology syllabus provides a sound base for further development of the curriculum in the new key learning area.
5. Familiarity with the syllabus leads to acceptance by teachers of the new KLA.
6. The syllabus can meet the needs of students and teachers, but cannot be expected to stand alone as a resource for planning and teaching Technology. Supporting documents that form an integrated set with the syllabus will be essential. Adequate teacher preparation and support will be crucial at implementation.
7. The four strands (Technology Processes, Information, Materials and Systems) provide an effective way to organise the syllabus.
8. The seven aspects of appropriateness are a valuable component of the syllabus.
9. The pilot schools may need specific guidance on how to apply assessment methods that are compatible with the draft syllabus but at variance with the schools' established assessment and reporting practices.
10. The syllabus requires work to simplify the language and layout to make it more readily accessible for teachers.
11. The level statements need revision for improved clarity.
12. The syllabus needs to indicate clearly that the level statements will be supported by other documents and in-service education activities to assist in the process of developing an understanding of the levels.
13. Levels four to six may be set too high.

14. At the end of the trial phase, the terms "technology" and "technological literacy" were still difficult terms for most of the trial teachers. A level of confusion still existed despite considerable attention to these terms in both the draft syllabus and the trial teachers' conference.
15. In broad terms, the initial in-service package will need to be designed to avoid reliance on theoretical discussion and definition.
16. Initial in-service will need to deal with inclusivity in a way that adequately addresses the issues without disaffecting teachers and provides practical techniques to implement the curriculum in an inclusive manner.

The following directions for improvement of the draft syllabus are proposed:

1. Continue to focus on establishing and maintaining a consistent terminology throughout.
2. Discuss links between Technology, science and industry.
3. Clarify and emphasise that the syllabus is not expected to stand alone as the basis for planning and teaching in schools.
4. Present the syllabus as a component of an integrated set of documents that define and support a curriculum in the Technology key learning area.
5. Develop a perception of continuity with previous curriculum content and practice.
6. Clarify the terms "technology" and "technological literacy" early and effectively in the syllabus in a straightforward, declarative manner by briefly and directly stating what the technology key learning area includes, working outwards from known learning areas or subjects, and stating the characteristics (technological literacy) students are expected to develop.
7. Continue to simplify the wording and develop formats that assist the reader to make sense of the document.

1. Introduction

1.1 Purpose of the Evaluation

The purpose of the external evaluation of the Years 1 to 10 Technology Curriculum Development Project is to provide advice on:

- The appropriateness of the Years 1 to 10 Technology syllabus, sourcebook and initial in-service materials in meeting the needs of students, teachers and school administrators
- The effectiveness of the Years 1 to 10 Technology syllabus, sourcebook and initial in-service materials in schools
- The efficiency of use of the Years 1 to 10 Technology syllabus, sourcebook and initial in-service materials.

Report One (the present report) is concerned with the draft syllabus as used in the trial phase of the development project.

1.2 The Years 1 to 10 Technology Curriculum Development Project

The purpose of the Years 1 to 10 Technology Curriculum Development Project is to design, develop and disseminate a Years 1 to 10 syllabus, sourcebooks and initial in-service materials in Technology for use in Queensland schools.

The Project commenced in January 1998 and is expected to be completed by July 2001, when a complete set of curriculum materials will be available for implementation in schools.

The evaluation focuses mainly on the trial and pilot of the draft-in-development curriculum materials in schools nominated by Education Queensland, the Queensland Catholic Education Commission and the Association of Independent Schools of Queensland Inc.

1.3 Evaluation Focus

In fulfilling the purposes of this phase of the evaluation, the following focus questions were addressed:

- To what extent does the trial version of the draft syllabus reflect current and emerging views of education in Technology?
- To what extent does the trial version of the draft syllabus match the needs of all students, teachers and school administrators as expressed in the range of classroom and school contexts in the trial schools?
- What were the responses of the trial teachers to the August conference and what are the implications for the initial in-service package?
- What improvements can be made to the intent and content of the trial version of the draft syllabus?

1.4 Evaluation Approach

Two approaches were used in this phase of the evaluation: An external review and a set of interviews with personnel in the trial schools.

For the external review, five members of the evaluation team prepared critiques of the draft syllabus drawing on their respective areas of expertise, experience and interest. These critiques were synthesised to form the review shown in Appendix 4.

The interviews were conducted in each of the trial schools. Each interview followed a set sequence of questions. In each school, at least one person connected with the trial was interviewed. Most interviewees were trial teachers, but some interviewees were school administrators and one was a parent representative. In some schools, more than one person was interviewed. In these cases, some of the interviews were conducted individually and others as a group. A total of 36 people took part in 31 interviews and 34 separate ratings were recorded on respective items.

Interviewees received the questions in advance of the interview, allowing time for discussion with their colleagues in the trial schools. For most of the questions, interviewees were asked to rate an aspect of the draft syllabus. The teachers were asked to rate "the extent to which..." using a five point scale:

Very Low	Low	Moderate	High	Very High
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Summaries of all interview responses (without identification of the interviewees) were supplied to the curriculum development Project Team.

The results are presented below for each of the five focus questions. The data are summarised in four Appendices:

- Appendix 1 contains a list of the interview questions
- Appendix 2 contains a chart of the ratings made by the interviewees in the trial schools
- Appendix 3 contains summaries of the comments made by the interviewees in the trial schools
- Appendix 4 contains the text of the external review

2. The Draft Syllabus and Current Views of Education in Technology

To what extent does the trial version of the draft syllabus reflect current and emerging views of education in Technology?

2.1 External Review

The reviewers found that the Project Design Brief represents a comprehensive reflection of current and emerging views of education and educators locally, nationally and internationally. Indeed they believed that the brief had built upon such views to the extent that it had set the benchmark for developments elsewhere in the world. They found further the draft syllabus to reflect the intent of the Project Design Brief, representing a seamless and faithful translation.

The reviewers found that highly relevant work undertaken by professional bodies with respect to the development, promotion and conceptual base of technology education, had been taken into consideration in the Project Design Brief. Two key issues considered were firstly, confusion among educators about terminology in technology education and secondly, the place of information technology. The reviewers believed the project team had clearly addressed the first issue as indicated by their development of a glossary and evidence of striving for consistency in use of terms. The second issue was seen as a matter of balance. While expecting tensions to continue, the reviewers supported the definition of the domain of technology in the syllabus.

An issue identified as requiring more attention was the linkage that Technology as a key learning area has with science and industry. In the world of work, in high-tech companies and major research laboratories, science and technology are intertwined.

Including a subsection in the syllabus Rationale titled *Links with Science and Industry* would be of value. The links with science should also be discussed in the section on cross key learning area links.

The review called for further clarification in the developing curriculum of the relationship between the knower and knowledge and consequent implications for social justice and inclusivity. Technological literacy is expressed within a context and a culture, but in which contexts and in whose culture? These issues had not been ignored in the draft syllabus, but tangible expressions of positions on the issues were needed to a greater extent in the outcomes. Eventually the issues should show up in the learning-teaching activities that appear in schools' programs and classrooms. Therefore evaluation in the pilot phase of the project will need to include a focus on these issues.

Reviewers were concerned about how well Technology would find its place in the curriculum. Different people may expect Technology to be a new key learning area in its own right, or an extension of the manual arts area, or just computer education with a different name. If teachers see Technology as an incursion into the crowded curriculum or an addition to workload, they will anticipate problems with time allocation and resources, creating unnecessary anxiety and stress. Some teachers have negative associations with technology related to their personal experience with computers.

One reviewer commented on the handling of issues relevant to the Aboriginal communities and Torres Strait Islander communities. There is a need to be careful to avoid stereotyping of Indigenous peoples' traditional and current uses of technology, their attitudes to technology and their adaptation to technological change. Mentioning general principles in the draft syllabus in no way provides any assurance that these will apply to the curriculum that is implemented in schools. The syllabus and associated documents will need to give specific guidance on addressing such issues in planning and teaching.

The reviewers agreed that the core content and level statements reflect the desired learnings for a course of technology study even though they will need to be interpreted because of their generality. The Elaborations were seen as essential to allow teachers to interpret the content and levels. The review team believe that if all students were proficient in all the areas covered by the syllabus, the next generation of young people would be very well equipped to deal with any technological experience offered to them. They would cope well with a very technological society.

2.2 Interviews

Most of the trial teachers we interviewed were supportive of the general direction of the syllabus. Ratings of the extent to which the draft syllabus represents the basis for a good curriculum in Technology were mostly high:

Very High: 3	High: 22	Moderate: 9	Low: 0	Very Low: 0
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Some of the interviewees supported the approach taken in the draft syllabus or said that it was in line with what they were doing in their schools:

- *On the right track.*
- *A few parts give me some concern but for the most part it represents a very good range of outcomes.*
- *It is headed in the right direction. We basically do these kinds of things at our school in our industrial tech and design department.*

Some complained about jargon or terminology:

- *I had problems with the jargon in it and it was too repetitive. I like it right there and in plain English.*
- *Some of the terminology is hard to fathom at times. For example terms related to systems can be hard for primary teachers.*
- *Philosophically sound. Well structured. Well written, BUT not for classroom technicians.*

However one teacher found it:

- *Easy to understand. Not too overwhelming.*

One teacher was concerned that the curriculum is not sufficiently forward looking:

- *It is a good curriculum because it is a starting-point for where people are at in terms of the national statements. To balance that, it misses the boat about futures education and the knowledge economy. It will be interesting to see what happens because there is a risk of it being a 1980s curriculum instead of a 2010 curriculum. I do acknowledge the audience we are dealing with and there is a fine line to tread.*

One liked the consistency in format with other Council syllabuses:

- *We found this syllabus to be in line with the others that are coming out and that is good.*

2.3 Summary and Conclusions

The external review indicates that, overall, the Project Design Brief comprehensively reflects current and emerging views of education and educators locally, nationally and internationally to the point of setting the benchmark for developments elsewhere in the world. Highly relevant work undertaken by professional bodies with respect to the development, promotion and conceptual base of technology education has been taken into consideration. The reviewers agreed that the draft syllabus represents a seamless and faithful translation of the intent of the Project Design Brief.

The external review team believed that if all students were proficient in all the areas covered by the syllabus, the next generation of young people would be very well equipped to cope with a technological society.

The interviews indicate high support among the trial teachers for the direction taken by the draft syllabus, as long as care is taken to maintain a forward-looking stance.

We conclude that:

1. The draft syllabus reflects current and emerging views about technology education to a high degree.
2. The draft syllabus has the potential to equip students to cope very well with a technological society.
3. The direction taken by the draft syllabus has high support among the trial teachers.

3. The Draft Syllabus and the Needs of Students and Schools

To what extent does the trial version of the draft syllabus match the needs of all students, teachers and school administrators as expressed in the range of classroom and school contexts in the trial schools?

3.1 External Review

The review team generally considered that the needs of both students and teachers would be well covered by the draft syllabus, but recognised that the syllabus would not stand alone as the only document or resource for teachers. Adequate in-service education for teachers would be vital.

The reviewers welcomed the way that the draft syllabus actively prompts teachers to consider inclusivity issues and expected that the document would stimulate teachers to address these issues in their classroom practice.

A caveat in the review was the recognition that each school will need to develop effective internal programs of work based upon their particular needs, related to their physical and resource environment and designed to fill the needs of the students in the local area. Therefore, the potential of the draft syllabus will not be realised without adequate support and preparation for schools and teachers at the start.

3.2 Interviews

Thirteen interview questions were used to gauge the extent to which the trial version of the syllabus matched the needs of schools and their students. We consider the responses to each question separately.

The extent to which the draft syllabus makes sense to teachers.

Ratings on this item were mostly moderate or high:

Very High: 2	High: 12	Moderate: 16	Low: 4	Very Low: 0
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Most comments here indicated that the syllabus does make sense to teachers once they become familiar with its format and language, but that the meaning does not come through on a single reading:

- *The language is difficult and daunting for some - we need to decode it - talking with other teachers was helpful.*
- *We were lucky enough to have someone sit down with us and explain things. It would be hard to make sense of it without that.*
- *You need to know which parts are common with or similar to other syllabuses.*
- *When I first read it I thought I didn't understand, but now that I have done some units I find it OK.*
- *It will depend a lot on the in-service.*
- *It is a new area for the primary school and that makes difficulty that doesn't exist for other KLAs.*
- *You have to read it and read it carefully. People who come in cold won't understand it and won't want to change. If they come in with an open mind it will be OK.*
- *If teachers are familiar with the outcomes concepts and the other documents from QSCC it makes sense.*

The extent to which the draft syllabus is something that schools will be able to work with.

Ratings on this item were mostly moderate or high:

Very High: 2	High: 18	Moderate: 13	Low: 1	Very Low: 0
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Some of the trial teachers found the syllabus hard to work with:

- *It is heavy. There is too much there. Knowing staff there is often a difficulty and a fear. By too much I mean too many outcomes.*
- *It is difficult and tedious going back and forward with the levels and strands. It has to be made more user-friendly.*

A few said support would be needed at first:

- *It looks too complex, but I can't see how to make it less complex. With the support of the project team it is workable. If it was just given to the schools we don't think they would be able to work with it.*

A majority of the comments were positive:

- *It is user friendly. The fact that all the KLAs are taking the same format is really a good thing and helpful to us as teachers.*
- *I can't see any problems with it. They should be able to work with it.*
- *It is good if you have had experience working with science or the other syllabuses. You have to familiarise yourself with the document and see the links with the other syllabuses.*
- *It is something we can work with. We were able to get along pretty well with it.*
- *Similar layout to science and HPE is helpful.*

The extent to which the Rationale effectively communicates the notion of technology as a key learning area.

Ratings on this item were mostly high:

Very High: 5	High: 16	Moderate: 10	Low: 1	Very Low: 0
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Two interviewees declined to give a rating.

Comments on this issue were mixed. Some commented positively:

- *When I read it this morning I found that it does communicate the notion of technology as a KLA.*
- *It communicates for me the notion of technology education as being not just computers and it brings out the concept of "Design-Make-Appraise". It allows us to look at the KLA as a whole.*
- *It is quite straightforward without too much terminology to come to terms with – user-friendly.*
- *Absolutely.*
- *Fine-tuned through revisions. Now reflects the way this school views the KLA.*
- *Yes, to me, BUT I don't know how much for other teachers across curricula.*
- *It's as good as any I've seen.*

Others reported difficulties in understanding the Rationale:

- *I found the rationale difficult to understand.*
- *After reading it I was still unsure of what it was talking about. It is something completely new for primary schools. We have been doing it in a way but not consciously or in depth.*
- *There is a confusion we had at the start about what technology actually is. We now see it as something broad and very much to do with problem solving, but the syllabus does not bring this out well. You have to wade through a lot of words to get to the idea. For teachers who are coming to grips with what technology is, it's hard. Once you have worked with and get to know it, you can then see what it means more easily.*
- *It is a bit too wordy and not easy to understand. It is not user-friendly in the way it is set out. Once you understand it you can read it and it makes sense. Most teachers will not read it.*

The extent to which the four strands provide an effective way to organise the curriculum.

The ratings were mostly high or very high:

Very High: 11	High: 19	Moderate: 3	Low: 1	Very Low: 0
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Most found that the four strands were effective:

- *They are very effective. They will ensure that you won't concentrate on just one strand. They help you understand how broad technology is.*
- *This is effective. No matter what the material you always do the processes. The processes fit over the top of the other strands. You can't do the processes by themselves either.*
- *We have been using these for the last three or four years looking at processes, info and systems.*
- *These are fairly good. It is logical and makes you look at what you are doing in all the strands. It broadens your planning.*
- *I like the strands and they do give fairly detailed information on what to expect of students.*
- *I really like this.*
- *Helps me to keep focused.*
- *Really clarifies areas and outcomes.*
- *This allowed us to look at our curriculum and organise it more effectively.*

Some suggested problems with the organisation or ways to improve it:

- *What is good is that these capture the essence and take the audience through what technology is about. But it does crowd it and narrow it unnecessarily.*
- *I think there should be different, clearer names for the strands to communicate their meaning better.*
- *They are good strands but there is a lot of confusion about the information strand because people are relating this to information technology only. There is a similar problem with processes which people are thinking is skills with computers and nothing else.*
- *In some ways in dividing into four strands some schools may teach the strands separately from each other. The idea of integration between strands needs to be made more apparent.*
- *Takes time to separate each strand in my mind.*

The extent to which the Level Statements clarify the levels for teachers.

Ratings on this item were mostly moderate or high:

Very High: 4	High: 12	Moderate: 12	Low: 4	Very Low: 1
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One interviewee declined to rate this item.

Comments on how well the levels statements clarify the levels were mixed. The concept of levels itself created discussion.

- *We find it hard to come to terms with the new concept as opposed to Year levels. The explanation is OK but transporting that into the reality of marking is the problem.*
- *We are not sure what they lead to or how they will affect reporting of achievement.*
- *We have been dealing with outcomes for some years and it has not been a problem for us.*

A few comments related more closely to the way the levels were stated or set out, indicating that more than a single reading is necessary to understand the levels:

- *Some of the levels were hard to be able to clarify the exact specifics. You had to read on and it made some of the teachers unsure. You have to read the whole document, not just the level statements in isolation to be able to grasp them.*
- *Once you read it, it does explain, but it takes time to go through it.*
- *It would be good to have a chart you could put up so the kids could see what they are working towards. They should make sense to the children.*
- *At times require sifting to get real meaning.*

The extent to which the Level Statements show a progression in sophistication and complexity.

Ratings on this item were mostly high:

Very High: 7	High: 18	Moderate: 6	Low: 1	Very Low: 0.
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Two interviewees declined to rate this item.

One comment related to the need for cohesion in the syllabus:

- *There is a progression evident within each strand and substrand, but technology is not about doing a substrand at a time and that cohesion is lost. It has not yet started to approach the problem of cohesion.*

Some secondary teachers found the upper levels to be set too high:

- *Level 6 is very difficult for some Year 10 students to achieve.*
- *We had some problems with level 6: it was too hard.*
- *Difficult from Level 4 on.*

Most agreed that the level statements displayed suitable progression:

- *Well thought out sequence.*
- *Once I've decoded the level and am comfortable with bulk class level, progression becomes evident.*
- *They do show a progression, but how we put that into practice is our problem.*

The extent to which the Core Learning Outcomes accommodate the range of students in your school.

Ratings on this item were mostly high:

Very High: 6	High: 21	Moderate: 5	Low: 1	Very Low: 0
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One interviewee declined to give a rating.

Again, a few of the teachers reported difficulty at the top or bottom levels:

- *I have trouble between Levels 4 and 6; therefore I have trouble placing my students at a level.*
- *Outcomes in level 6 are a bit high for our students.*
- *Need more outcomes designed for Special Needs children.*

Most agreed that the outcomes could accommodate the range of students in their schools:

- *What I have used so far seems to suit my students.*
- *It was pretty good because kids who are gifted in the area can move ahead. You can go as low as you like with the kids that need adjustment. The only difficulty is picking the level they are at. The rest is straightforward.*
- *We have a range of students doing our current trial unit and they accommodate that range.*
- *They could apply anywhere.*

The extent to which the Core Learning Outcomes provide a guide for effective planning and teaching.

Ratings on this item were high:

Very High: 6	High: 15	Moderate: 8	Low: 3	Very Low: 0
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Two interviewees declined to give a rating.

The outcomes were generally well accepted in principle and in practice:

- *We did a chart for the unit showing the strands and content, appropriateness and strands. This worked well. We then listed the outcomes and planned the activities. The words from the outcomes were good in setting out the plan. They gave clues on how to set out units and helped us to keep consistent across the subject areas.*
- *We have used them in one unit and I could slot them in fairly well. They helped us to be able to plan, especially in primary, for particular levels of achievement. We could work out what kinds of things we needed to do with students. The outcomes allowed us to modify some of our existing units to fit the curriculum.*

Some indicated how the starting-point for them was the learning activity, with reference back to outcomes:

- *We've done a few design briefs, but we start with a situation or problem. We follow a design folio. We look at the outcomes and try to see if the students are working in the direction of the outcomes. We try to guide them in those directions.*
- *I plan and teach first, then check the outcomes. When I was planning I found I was matching activities with the outcomes. We would not always be able to do that if we had to be sure of covering all the outcomes over time.*
- *The outcomes were a guide but I had problems working out which outcomes matched which activities. Often I found I did not really understand outcomes.*

A few emphasised that the outcomes will not stand alone but will need supporting documents or in-service education:

- *Teachers will need professional development to learn how to plan using outcomes. It is new to most of us.*
- *Teachers who are used to planning from sourcebooks will not be used to the thinking required to plan from outcomes.*
- *There will be problems at the start. Explanation of a practical kind and support will be needed. It needs to be supported by other documents. You couldn't just use the syllabus outcomes alone and design learning experiences. You need workable modules.*

One teacher had trouble with some of the wording:

- *Sometimes the wording of the outcomes was a bit difficult to come to terms with especially when there were a few "ands". The terminology was too difficult at times. Overall though they were very good.*

The extent to which the Assessment Section helps teachers to assess students' achievement in Technology.

Ratings on this item were mostly moderate:

Very High: 0	High: 8	Moderate: 14	Low: 1	Very Low: 4
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Seven interviewees declined to give a rating. Many said it was too soon to be able to comment. They had not focused on assessment to that point:

- *Too soon to say. We will be able to comment soon. We are just coming to the last stages of our unit plans.*

Some of the trial teachers complained about incompatibility between the assessment section and the existing assessment and reporting systems in their schools.

- *I just don't know how we are going to do this. It is hard to work a new system into the present system of assessment.*
- *It is difficult to make it fit into the sophisticated reporting system used across our school. We have to report in six areas that are the same in every KLA.*

Many wanted more substance or practical detail:

- *The assessment in the modules was helpful, but in the syllabus, the section on assessment needs to be more practical.*
- *A lot of words, all the right words, but no body to it.*

The Rationale presents seven aspects of Appropriateness. How helpful are these in explaining what students should learn?

A minority of the teachers found the aspects of no help or value:

- *I found them quite superfluous and did not see how they directly related to our planning.*
- *We could not see the connection between the 7 aspects and what children could learn.*
- *Conflicts and overlaps within areas of appropriateness.*
- *Not terribly helpful.*

Most however found them helpful or valuable to varying degrees:

- *Good for checking scope of teaching. Comes alive through processes.*
- *Fine - fit my definition of Technology - eminently useable.*
- *Good - get you thinking across different areas.*
- *They do help. They help when you are preparing your design brief. It makes the rationale a lot easier to understand.*

- *These have been vital for us. They have meant that we have looked at what we should be teaching and what should be included. It allowed us to bring in aspects that we might not have covered before. Many topics lend themselves to coverage under these aspects and they allow kids to explore these things. It has helped us to explain to kids what we expect them to be learning about.*
- *These cover everything. They are great. All aspects of learning and life are there.*

What do you understand by "Technology"?

Responses to this and the next two questions give indications of how well the draft syllabus, with the support of the project team through the trial, communicates the basic concepts of the key learning area to teachers.

Some of the teachers worried that the term technology is used too narrowly in general use to mean computer applications or information technology:

- *I used to think it was just computers but I am now aware that it is far more than that.*
- *When I started I thought it was just computers but now I see it as solving a problem or providing for a need of some kind. Identifying the need also.*
- *It's NOT JUST COMPUTERS.*

Some defined technology in terms of processes or problem solving:

- *The way in which we design, make, appraise things we can use.*
- *I see that it is about solving problems, coming up with solutions for products to meet the needs of humans.*
- *Whatever you use at your time to achieve what you have to do. It is the solving of the problem with what you have at hand.*
- *Any process or technique or materials or system that will improve efficiency and/or the quality of life.*
- *A way for kids to explore with a purpose, to solve problems, to cooperate and have fun.*

Some talked in terms of products or the design and making of products:

- *Design and make a product or system that is easy and safe to use and is a benefit to whoever uses it.*
- *Developing products that meet people's needs.*
- *The knowledge and practical use of modern day products.*

One comprehensive and considered definition was:

- *It is about learning about yourself, taking risks and in so doing understanding for yourself the difference between data or information and wisdom. Associated with that is the appropriateness of technology which adds another level going beyond yourself to social justice and society. The difference with technology is that it is about teachers, kids and the community all learning together. That is constantly changing.*

What do you understand by the term "Technological Literacy"?

This was clearly a very problematic concept for the trial teachers. Most were very hazy about the notion. Many talked about language or terminology in the context of technology:

- *I hate the term. It will cause a lot of discussion because I am not sure what people will understand by it. I think it is being able to use the language associated with technology, be comfortable with it and use it effectively.*
- *The ability to communicate effectively and the ability to use the associated jargon. Understanding jargon and acronyms.*

- *The language which we use in our problem solving including specific technological or technical terms.*
- *I find it hard to explain but I sort of know. Children will be able to discuss how they will produce something using more technical language.*
- *The language behind it and children's understanding of that. Having the right vocabulary to be able to have a discussion about it.*
- *The language needed to understand and communicate in the field of technology.*

Some talked mainly about their confusion with the concept:

- *I don't like the term at all - it doesn't click with me. I see literacy as reading and writing and can't make the connection with technology.*
- *I hate it.*
- *Don't know, don't like it, won't use it.*
- *When "They" work it out, let me know.*
- *I'm confused. I can see both sides of the argument.*
- *We are a bit stuck on this one. We are perplexed by it. We think it means being confident to articulate what you want and how you are going to go about getting it.*
- *I got confused at the conference. Still don't know.*

Some focused on the idea of competency:

- *This is being confident and competent to use the equipment available.*
- *Knowledge, skills, attitude and ability to use the terminology and understanding of technology.*
- *The ability to understand and work with technology competently.*
- *Ability to function with Technology.*
- *Having the ability to understand and put their knowledge into action.*

Some wondered about the usefulness or value of the term:

- *Discussion at Conference highlighted the fact that this term is not needed to discuss confidence and competence in Technology.*
- *Do we need this term? "Competency" is a better way of looking at it.*

A couple of thoughtful definitions were:

- *How conversant people are with Technology and what it means.*
- *A capability about your own intimate understanding of everything around you and being able to use that not only for your benefit but also the society around you.*

What will be the problems in communicating the notions of *Technology* and *Technological Literacy* to other teachers?

Creating a clear distinction between technology and "just computers" was seen as the main problem by most of the trial teachers:

- *Technology is not just computers - that is the first hurdle. It has to be seen as far more involved.*
- *So many teachers have the idea that technology means computers and don't have the broader concept. You will have to use correct terms and insist that people stick to them.*
- *Confusion with computers. Thinking that technology is computer based exclusively.*
- *A big problem is "what is technology" and getting past the idea that it is just computers.*

- *The confusion that exists already between technology and learning technology.*
- *People confuse Technology with Computers. We need to develop a broader understanding of terminology and understanding of technology.*

Some of the teachers saw a problem in Technology being seen as an addition to an already crowded curriculum:

- *Overcoming the notion that it's something "extra" to teachers.*
- *The overcrowded curriculum.*
- *A problem is that it may be seen as yet another thing to include in the curriculum.*

The notion of technological literacy itself was seen as problematic:

- *Technological literacy will provoke a lot of discussion because people just won't understand the idea to start with.*
- *Technological literacy will have to be explained much more clearly.*
- *Need to agree on meanings of terms.*
- *It's always difficult to communicate that which you cannot explain yourself.*
- *"Technological Literacy" will never catch on as it confuses the concept of Literacy.*

3.3 Summary and Conclusions

In summary, the trial version of the syllabus has found moderate to high levels of support among the trial teachers, but both teachers and reviewers stressed that the draft syllabus cannot and will not stand alone – it will require teacher preparation and support at implementation.

Interviews in the trial schools indicated that familiarity with the draft syllabus leads to acceptance of the key learning area by teachers. Many indicated that the language and layout were not easy to manage without repeated reference and careful reading.

Both the reviewers and the teachers in the trial schools believed that the syllabus would meet the needs of students and teachers well.

The trial teachers gave high ratings to the draft syllabus for its communication of the notion of Technology as a key learning area, but their responses to questions about the meanings of technology and technological literacy did not support their ratings.

The trial teachers gave high to very high ratings to the four strands as an effective way to organise the curriculum.

The seven aspects of appropriateness were very well received by most as providing a way to explain what students should learn.

The teachers' ratings indicated that the level statements clarified the levels to a moderate or high extent for most of the trial teachers, but their comments indicated that teachers have to do far more than just read the statements in order to properly comprehend the levels.

The statements did display progression in sophistication and complexity. Some of the trial teachers found that the upper levels had been set too high. This could be explained by the fact that the students in the higher year levels had not been exposed to the curriculum at the lower levels. This issue should be investigated further through the pilot phase.

The core learning outcomes were rated highly as accommodating the range of students and providing a guide to effective planning and teaching. The interview responses indicated however that most of the teachers actually worked backwards from learning activities to outcomes, not the other way around.

The assessment section of the draft syllabus drew only tepid support from the trial teachers. Many had not referred to it at the time of the interview. Many complained of problems reconciling outcome-based assessment with the established assessment and reporting practices in their schools. This difficulty can be expected to wane as school practices change along with implementation of the new syllabuses in the various key learning areas. In the meantime, the trial and pilot schools face a practical difficulty. As the pilot phase begins, the schools may need specific guidance on how to apply assessment methods that are compatible with the draft syllabus but at variance with the school's established assessment and reporting practices.

The results of the last three interview questions show that both technology and technological literacy were still difficult terms for most of the trial teachers at the end of the trial phase. A level of confusion still existed despite considerable attention to those terms in both the draft syllabus and the trial teachers' conference. The trial teachers generally were not comfortable or preferred not to be bothered with academic discussion about these terms.

The findings from the review and the interviews have implications for the draft syllabus and for the development of the initial in-service package:

In the draft syllabus, the approach to defining and explaining technology and technological literacy should change so that the reader will be able to grasp directly what the key learning area encompasses and what it is intended to achieve. Straightforward, plain language will be necessary. The direction of such changes in approach is discussed in a later section of this report (The Draft Syllabus – Possible Improvements). The team may even consider whether the term technological literacy is necessary or helpful. As a shorthand term that is in wide use it should not be ignored, but perhaps the term could be explained by operational statements about a technologically competent and confident person, or about what differences a core curriculum in technology hopes to make for students.

In the initial in-service package, the starting point should focus on broadening people's notions of technology beyond computers, then move quickly to explain what the Technology key learning area encompasses within the existing school curriculum. The next step would be to show why and how the current curriculum needs to be brought up to date with changes in society, technology and educational thinking.

We conclude that:

4. The trial version of the Technology syllabus provides a sound base for further development of the curriculum in the new key learning area.
5. Familiarity with the syllabus leads to acceptance by teachers of the new key learning area.
6. The syllabus can meet the needs of students and teachers, but cannot be expected to stand alone as a resource for planning and teaching Technology. Supporting documents that form an integrated package with the syllabus will be essential. Adequate teacher preparation and support will be crucial at implementation.
7. The four strands provide an effective way to organise the syllabus.
8. The seven aspects of appropriateness are a valuable component of the syllabus.
9. The pilot schools may need specific guidance on how to apply assessment methods that are compatible with the draft syllabus but at variance with the schools' established assessment and reporting practices.
10. The syllabus requires work to simplify the language and layout to make it more readily accessible for teachers.
11. The level statements need revision for improved clarity.

12. The syllabus needs to indicate clearly that the level statements will be supported by other documents and in-service education activities to assist in the process of developing an understanding of the levels.
13. Levels four to six may be set too high.
14. At the end of the trial phase, the terms "technology" and "technological literacy" were still difficult terms for most of the trial teachers. A level of confusion still existed despite considerable attention to these terms in both the draft syllabus and the trial teachers' conference.

4. Responses to the Trial Teachers' Conference

What were the responses of the trial teachers to the August conference and what are the implications for the initial in-service package?

The conference drew a mixed response from the teachers, well summed up by one who said:

- *Some of the stuff was really helpful; other things were a waste of time. The session on inclusive curriculum just reflected something we already do. We didn't like the technological literacy session. The ones about implementation of the syllabus and so on were really helpful. How to set up a design brief was good. The second day we were sitting and listening too long.*

The sessions on inclusive curriculum and technological literacy were not well received:

- *The session on inclusive curriculum was not necessary for experienced teachers who have been through professional development on that so many times. They have to do it differently or it has to be interwoven into the other sessions in a practical way.*

The second day was seen as "too much talking at us".

Some found difficulties with primary and secondary teachers being in the same audience when they seemed to have different concerns. One primary teacher said:

- *A lot of time was spent discussing irrelevant details such as assessment in the high school. We were prepared to express our ideas but we struck a lot of negativism at the conference especially from the secondary teachers. There seemed to be an attitude from secondary that we can't do those things, it is too hard. When we tried to say how it could be done, our suggestions were not accepted.*

The most popular session was the practical workshop on design briefs:

- *Some sessions were very helpful such as the one where we actually worked through a design brief and we put ourselves in the role as learners.*

Some said they appreciated the chance to interact with colleagues from other schools and levels:

- *The positives were the contacts with other schools and talking to those people.*

Some said they liked the keynote speakers:

- *The two keynote speakers were very good.*

Some found the conference was:

- *Inspiring, enthusing. Reassuring that we were on the right track.*

4.1 Summary and Conclusions

The results of the review and interviews bring out the importance of three major tasks in preparing teachers for the new key learning area:

- Inspiring acceptance, confidence and support for the new key learning area among teachers
- Supporting teachers in coming to terms with not only the driving concepts (the "big ideas") but also the practical detail
- Dealing adequately with inclusivity.

The conference had mixed success in these tasks. In general terms, the practical and the inspirational aspects were effective. Sessions on practical detail were effective for some. The sessions with high theoretical content, such as those on inclusive curriculum and technological literacy, were not well received.

The session on inclusivity seems to have missed the mark. The importance of this issue in technology is particularly high, considering the known disparities in access to technology related to factors such as gender, culture, age and family income. Through other teacher development activities, many teachers will have already been exposed to the issues in general terms and may resent non-specific reminders. They may respond much more positively to the presentation of practical ways to arrange learning and assessment in relation to particular content or outcomes.

We conclude that:

15. In broad terms, the initial in-service package will need to be designed to avoid reliance on theoretical discussion and definition.
16. Initial in-service will need to deal with inclusivity in a way that adequately addresses the issues without disaffecting teachers and provides practical techniques to implement the curriculum in an inclusive manner.

5. The Draft Syllabus - Possible Improvements

What improvements can be made to the intent and content of the trial version of the draft syllabus?

5.1 External Review

The external review of the draft syllabus indicates that improvements may be made by:

- Continuing to focus on establishing and maintaining a consistent terminology throughout. The reviewers see inconsistent or diffuse terminology as a major threat to the success of the new curriculum.
- Discussing the links between Technology, science and industry. This may be done effectively in the *Nature of the key learning area*, the *Cross-key learning area Links* and the *Work Education* sections.
- Clarifying and emphasising that the syllabus is not expected to stand alone as the basis for planning and teaching in schools. This could be accomplished in a preface or introductory statement to the syllabus.
- Developing the concept of continuity with previous curriculum content and practice. This is necessary to avoid problems that may be created by conceptions that the new key learning area is an addition to the crowded curriculum bringing extra work and tension for teachers and schools.

5.2 Interviews

Some of the teachers spoke about the value of the elaborations and wondered if these could be included in the syllabus. Some wanted more practical assistance such as examples of teaching activities that have been tried and found to be effective.

- *Give some case studies on how other schools have solved problems and got the syllabus going.*
- *Other places have done it before, so get some case studies from there on how to get it going.*
- *More specific suggestions in the assessment section - needs pulling together.*
- *The elaborations were helpful and gave concrete examples that helped understand the outcomes.*
- *Include the elaborations in the syllabus. At least they must be there somewhere.*
- *Like to see more specific guidelines for assessment.*
- *Samples of work developed by practising teachers who have implemented this syllabus.*

Some called for simplified wording and easy-to-follow layout:

- *Simplify, make workable for classroom practitioners.*
- *Keep it simple. Lighten up with the language. Talk to real teachers about the difficulties they have in interpreting the language.*
- *A good syllabus is one that doesn't have an excess of words. This one is too long.*
- *More to-the-point sentences and less jargon.*
- *Make it more user-friendly in terms of the layout and organisation.*

The results from previous sections suggest that the terms "technology" and "technological literacy" need to be clarified early and effectively in the syllabus. Such clarification needs to be done in a straightforward, declarative manner, avoiding attempts at nice definition or academic discussion. The approach should be to state briefly and directly what technology includes, working outwards from known learning areas or subjects. Technological literacy should be approached by stating the characteristics of a technologically literate person.

5.3 Summary and Conclusions

In summary, reviewers' suggestions were to maintain consistent terminology, discuss the links between Technology, science and industry, emphasise that the syllabus is not expected to stand alone and develop the concept of continuity with previous curriculum and practice.

Teachers' suggestions seemed to focus on simplified wording and "user-friendly" layout. Many suggested including the elaborations of the outcomes and other practical detail of the kind that will be included in the sourcebook.

Teachers' understanding of the terms technology and technological literacy suggest that these terms need a different kind of treatment in the redrafted syllabus. The external review emphasises the need for consistent terminology and links with science and industry.

The initial sections of the syllabus defining technology and technological literacy need considerable revision, using straightforward, plain language. The language should relate to what teachers do in classrooms and what most people need to know and be able to do in their daily lives. We believe that nice definitions and academic discussions are not appropriate. It is a matter of explaining simply and succinctly, with an absence of specialist terminology, what technology is as a key learning area, and what being technologically literate means. In other words, rather than define "technology", explain what the technology key learning area includes and what it is expected to accomplish.

The explanation of technology should stress continuity with the previous curriculum and show why further development is essential in this area. The presentation should refer explicitly to learning activities and subjects known to teachers and take care to show that Technology is not seen as yet another add-on to the curriculum.

The presentation of the notion of technological literacy should be declarative in tone, relying on operational statements about a technologically competent and confident person, or the differences a core curriculum in technology intends for students.

Conclusions from previous sections of this report generally support these findings, especially in relation to clarity and simplicity in language and layout, and the need for the syllabus to be seen as part of an integrated set of documents.

We conclude that the results suggest the following directions for improvement of the draft syllabus:

1. Continue to focus on establishing and maintaining a consistent terminology throughout.
2. Discuss links between Technology, science and industry.
3. Clarify and emphasise that the syllabus is not expected to stand alone as the basis for planning and teaching in schools.
4. Present the syllabus as a component of an integrated set of documents that define and support a curriculum in the Technology key learning area.
5. Develop the concept of continuity with previous curriculum content and practice.
6. Clarify the terms "technology" and "technological literacy" early and effectively in the syllabus in a straightforward, declarative manner by briefly and directly stating what the technology key learning area includes, working outwards from known learning areas or subjects, and stating the characteristics (technological literacy) students are expected to develop.
7. Continue to simplify the wording and develop formats that assist the reader to make sense of the document.

Appendix 1: Interview Questions

Preamble: This survey is about the draft syllabus as used in the trial. We want the opinions of the trial teachers in your school about the syllabus.

We ask for ratings and comments. Ratings are on a five-point scale:

Very Low	Low	Moderate	High	Very High
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Part A:

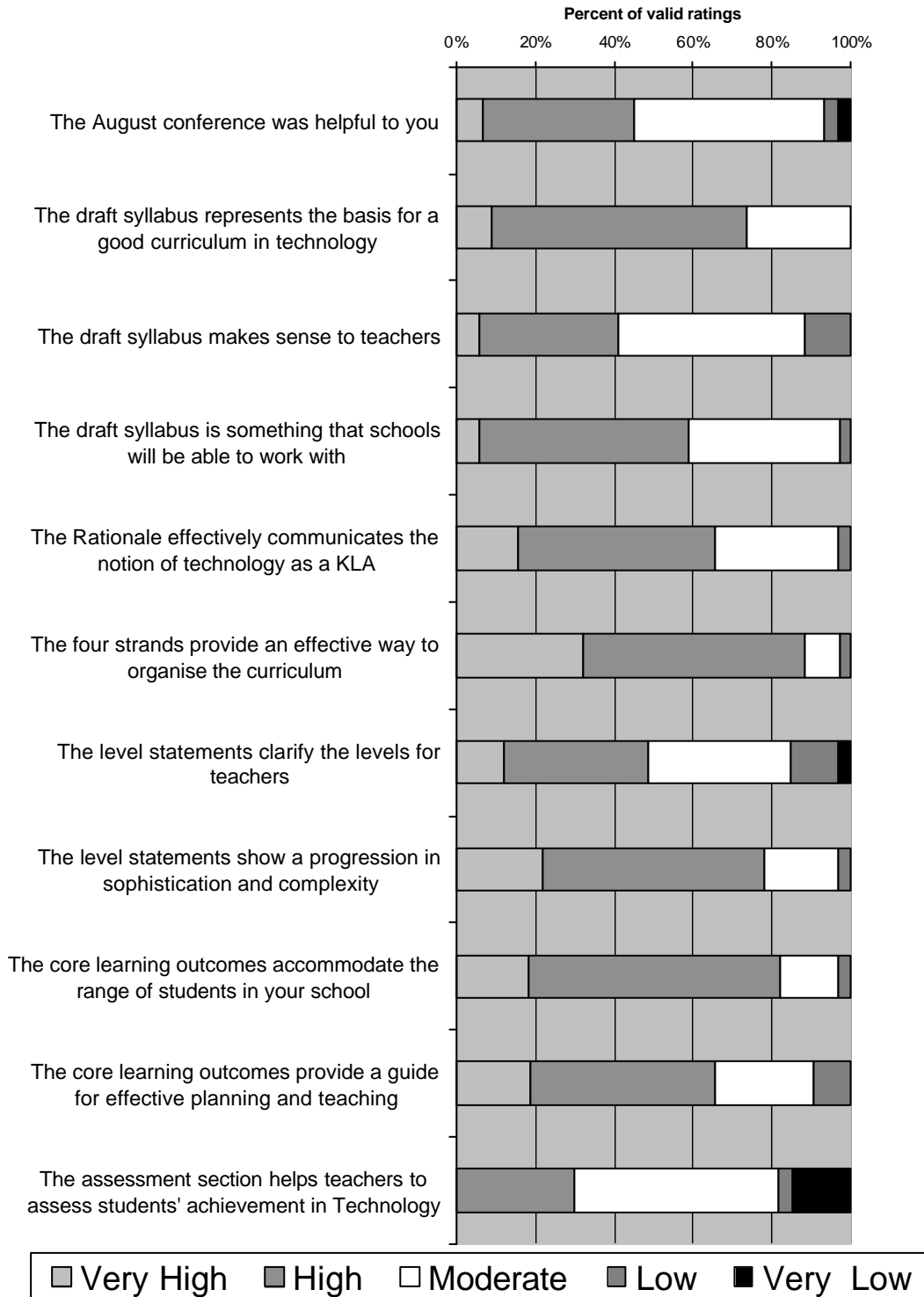
The extent to which:	Rating	Comment
1. The August conference was helpful to you		
2. The draft syllabus represents the basis for a good curriculum in Technology		
3. The draft syllabus makes sense to teachers		
4. The draft syllabus is something that schools will be able to work with		
5. The Rationale effectively communicates the notion of technology as a key learning area		
6. The four strands provide an effective way to organise the curriculum		
7. The Level Statements clarify the levels for teachers		
8. The Level Statements show a progression in sophistication and complexity		
9. The Core Learning Outcomes accommodate the range of students in your school		
10. The Core Learning Outcomes provide a guide for effective planning and teaching		
11. The Assessment section helps teachers to assess students' achievement in Technology		

Part B:

12. What do you understand by "Technology"?
13. What do you understand by the term "Technological Literacy"?
14. What will be the problems in communicating the notions of <i>Technology</i> and <i>Technological Literacy</i> to other teachers?
15. The Rationale presents seven aspects of <i>Appropriateness</i> [Aesthetic, Cultural, Economic, Environmental, Ethical, Functional, Social]. How helpful are these in explaining what students should learn?
16. What suggestions do you have for improving the draft syllabus?
17. What messages do you have for the Project Team, the Council or the Evaluator?

Appendix 2: Ratings in Interviews

The extent to which:



Appendix 3: Interview Results

The extent to which the August Conference was helpful to you.

The conference drew a mixed response from the teachers, well summed up by one who said:

- *Some of the stuff was really helpful, other things were a waste of time. The session on inclusive curriculum just reflected something we already do. We didn't like the technological literacy session. The ones about implementation of the syllabus and so on were really helpful. How to set up a design brief was good. The second day we were sitting and listening too long.*

The sessions on inclusive curriculum and technological literacy were not well received:

- *The session on inclusive curriculum was not necessary for experienced teachers who have been through professional development on that so many times. They have to do it differently or it has to be interwoven into the other sessions in a practical way.*

The second day was seen as "too much talking at us".

Some found difficulties with primary and secondary teachers being in the same audience when they seemed to have different concerns. One primary teacher said:

- *A lot of time was spent discussing irrelevant details such as assessment in the high school. We were prepared to express our ideas but we struck a lot of negativism at the conference especially from the secondary teachers. There seemed to be an attitude from secondary that we can't do those things, it is too hard. When we tried to say how it could be done, our suggestions were not accepted.*

The most popular session was the practical workshop on design briefs.

- *Some sessions were very helpful such as the one where we actually worked through a design brief and we put ourselves in the role as learners.*

Some said they appreciated the chance to interact with colleagues from other schools and levels:

- *The positives were the contacts with other schools and talking to those people.*

Some said they liked the keynote speakers:

- *The two keynote speakers were very good.*

Some found the conference was:

- *Inspiring, enthusing. Reassuring that we were on the right track.*

The extent to which the draft syllabus represents the basis for a good curriculum in Technology.

Most were supportive of the general direction of the syllabus, some saying it was in line with what they were doing in their schools:

- *On the right track.*
- *A few parts give me some concern but for the most part it represents a very good range of outcomes.*
- *It is headed in the right direction. We basically do these kinds of things at our school in our industrial tech and design department.*

Some complained about jargon or terminology:

- *I had problems with the jargon in it and it was too repetitive. I like it right there and in plain English.*
- *Some of the terminology is hard to fathom at times. For example terms related to systems can be hard for primary teachers.*
- *Philosophically sound. Well structured. Well written, BUT not for classroom technicians.*

However one teacher found it:

- *Easy to understand. Not too overwhelming.*

One teacher was concerned that the curriculum is not sufficiently forward looking:

- *It is a good curriculum because it is a starting-point for where people are at in terms of the national statements. To balance that, it misses the boat about futures education and the knowledge economy. It will be interesting to see what happens because there is a risk of it being a 1980s curriculum instead of a 2010 curriculum. I do acknowledge the audience we are dealing with and there is a fine line to tread.*

One liked the consistency in format with other Council syllabuses:

- *We found this syllabus to be in line with the others that are coming out and that is good.*

The extent to which the draft syllabus makes sense to teachers.

Most comments here indicated that the syllabus does make sense to teachers once they become familiar with its format and language:

- *The language is difficult and daunting for some - we need to decode it - talking with other teachers was helpful.*
- *We were lucky enough to have someone sit down with us and explain things. It would be hard to make sense of it without that.*
- *You need to know which parts are common with or similar to other syllabuses.*
- *When I first read it I thought I didn't understand, but now that I have done some units I find it OK.*
- *It will depend a lot on the in-service.*
- *It is a new area for the primary school and that makes difficulty that doesn't exist for other KLAs.*
- *You have to read it and read it carefully. People who come in cold won't understand it and won't want to change. If they come in with an open mind it will be OK.*
- *If teachers are familiar with the outcomes concepts and the other documents from QSCC it makes sense.*

The extent to which the draft syllabus is something that schools will be able to work with.

A few of the trial teachers found the syllabus hard to work with:

- *It is heavy. There is too much there. Knowing staff there is often a difficulty and a fear. By too much I mean too many outcomes.*
- *It is difficult and tedious going back and forward with the levels and strands. It has to be made more user-friendly.*

A few said support would be needed at first:

- *It looks too complex, but I can't see how to make it less complex. With the support of the project team it is workable. If it was just given to the schools we don't think they would be able to work with it.*

A majority of the comments were positive:

- *It is user friendly. The fact that all the KLAs are taking the same format is really a good thing and helpful to us as teachers.*
- *I can't see any problems with it. They should be able to work with it.*
- *It is good if you have had experience working with science or the other syllabuses. You have to familiarise yourself with the document and see the links with the other syllabuses.*
- *It is something we can work with. We were able to get along pretty well with it.*
- *Similar layout to science and HPE is helpful.*
- *Allows cross-curricula references and is easy to plan from.*

The extent to which the Rationale effectively communicates the notion of technology as a key learning area.

Comments on this issue were mixed. Some commented positively:

- *When I read it this morning I found that it does communicate the notion of technology as a KLA.*
- *It communicates for me the notion of technology education as being not just computers and it brings out the concept of "Design-Make-Appraise". It allows us to look at the KLA as a whole.*
- *It is quite straightforward without too much terminology to come to terms with - user friendly.*
- *Absolutely.*
- *Fine-tuned through revisions. Now reflects the way this school views the KLA.*
- *Yes, to me, BUT I don't know how much for other teachers across curricula.*
- *It's as good as any I've seen.*

Others reported difficulties in understanding the Rationale:

- *I found the rationale difficult to understand.*
- *After reading it I was still unsure of what it was talking about. It is something completely new for primary schools. We have been doing it in a way but not consciously or in depth.*
- *There is a confusion we had at the start about what technology actually is. We now see it something broad and very much to do with problem solving, but the syllabus does not bring this out well. You have to wade through a lot of words to get to the idea. For teachers who are coming to grips with what technology is, it's hard. Once you have worked with and get to know it, you can then see what it means more easily.*
- *It is a bit too wordy and not easy to understand. It is not user-friendly in the way it is set out. Once you understand it you can read it and it makes sense. Most teachers will not read it.*

The extent to which the four strands provide an effective way to organise the curriculum.

Most found that the four strands were effective:

- *They are very effective. They will ensure that you won't concentrate on just one strand. They help you understand how broad technology is.*
- *This is effective. No matter what the material you always do the processes. The processes fit over the top of the other strands. You can't do the processes by themselves either.*
- *We have been using these for the last three or four years looking at processes, info and systems.*

- *These are fairly good. It is logical and makes you look at what you are doing in all the strands. It broadens your planning.*
- *I like the strands and they do give fairly detailed information on what to expect of students.*
- *I really like this.*
- *Helps me to keep focused.*
- *Really clarifies areas and outcomes.*
- *This allowed us to look at our curriculum and organise it more effectively.*

Some suggested problems with the organisation or ways to improve it:

- *What is good is that these capture the essence and take the audience through what technology is about. But it does crowd it and narrow it unnecessarily.*
- *I think there should be different, clearer names for the strands to communicate their meaning better.*
- *They are good strands but there is a lot of confusion about the information strand because people are relating this to information technology only. There is a similar problem with processes which people are thinking is skills with computers and nothing else.*
- *In some ways in dividing into four strands some schools may teach the strands separately from each other. The idea of integration between strands needs to be made more apparent.*
- *Takes time to separate each strand in my mind.*

The extent to which the Level Statements clarify the levels for teachers.

Comments on how well the levels statements clarify the levels were mixed. The concept of levels itself created discussion:

- *We find it hard to come to terms with the new concept as opposed to Year levels. The explanation is OK but transporting that into the reality of marking is the problem.*
- *We are not sure what they lead to or how they will affect reporting of achievement.*
- *We have been dealing with outcomes for some years and it has not been a problem for us.*

A few comments related more closely to the way the levels were stated or set out, indicating that more than a single reading is necessary to understand the levels:

- *Some of the levels were hard to be able to clarify the exact specifics. You had to read on and it made some of the teachers unsure. You have to read the whole document, not just the level statements in isolation to be able to grasp them.*
- *Once you read it, it does explain, but it takes time to go through it.*
- *It would be good to have a chart you could put up so the kids could see what they are working towards. They should make sense to the children.*
- *At times require sifting to get real meaning.*

The extent to which the Level Statements show a progression in sophistication and complexity.

One thoughtful comment related to the need for cohesion in the syllabus:

- *There is a progression evident within each strand and substrand, but technology is not about doing a substrand at a time and that cohesion is lost. It has not yet started to approach the problem of cohesion.*

Some secondary teachers found level 6 to be set too high:

- *Level 6 is very difficult for some Year 10 students to achieve.*
- *We had some problems with level 6, it was too hard.*
- *Difficult from Level 4 on.*

Most agreed that the level statements displayed suitable progression:

- *Well thought out sequence.*
- *Once I've decoded the level and am comfortable with bulk class level, progression becomes evident.*
- *They do show a progression, but how we put that into practice is our problem.*

The extent to which the Core Learning Outcomes accommodate the range of students in your school.

A few of the teachers reported difficulty at the top or bottom levels:

- *I have trouble between Levels 4 and 6, therefore I have trouble placing my students at a level.*
- *Outcomes in level 6 are a bit high for our students.*
- *Need more outcomes designed for Special Needs children.*

Most agreed that the outcomes could accommodate the range of students in their schools:

- *What I have used so far seems to suit my students.*
- *It was pretty good because kids who are gifted in the area can move ahead. You can go as low as you like with the kids that need adjustment. The only difficulty is picking the level they are at. The rest is straightforward.*
- *We have a range of students doing our current trial unit and they accommodate that range.*
- *They could apply anywhere.*

The extent to which the Core Learning Outcomes provide a guide for effective planning and teaching.

The outcomes were generally well accepted in principle and in practice:

- *We did a chart for the unit showing the strands and content, appropriateness and strands. This worked well. We then listed the outcomes and planned the activities. The words from the outcomes were good in setting out the plan. They gave clues on how to set out units and helped us to keep consistent across the subject areas.*
- *We have used them in one unit and I could slot them in fairly well. They helped us to be able to plan, especially in primary, for particular levels of achievement. We could work out what kinds of things we needed to do with students. The outcomes allowed us to modify some of our existing units to fit the curriculum.*

Some indicated how the starting-point for them was the learning activity, with reference back to outcomes:

- *We've done a few design briefs, but we start with a situation or problem. We follow a design folio. We look at the outcomes and try to see if the students are working in the direction of the outcomes. We try to guide them in those directions.*
- *I plan and teach first, then check the outcomes. When I was planning I found I was matching activities with the outcomes. We would not always be able to do that if we had to be sure of covering all the outcomes over time.*

- *The outcomes were a guide but I had problems working out which outcomes matched which activities. Often I found I did not really understand outcomes.*

A few emphasised that the outcomes will not stand alone but will need supporting documents or in-service education:

- *Teachers will need professional development to learn how to plan using outcomes. It is new to most of us.*
- *Teachers who are used to planning from sourcebooks will not be used to the thinking required to plan from outcomes.*
- *There will be problems at the start. Explanation of a practical kind and support will be needed. It needs to be supported by other documents. You couldn't just use the syllabus outcomes alone and design learning experiences. You need workable modules.*

One teacher had trouble with some of the wording:

- *Sometimes the wording of the outcomes was a bit difficult to come to terms with especially when there were a few "ands". The terminology was too difficult at times. Overall though they were very good.*

The extent to which the Assessment section helps teachers to assess students' achievement in Technology.

Some of the trial teachers found incompatibility between the assessment section and the existing assessment and reporting systems in their schools:

- *I just don't know how we are going to do this. It is hard to work a new system into the present system of assessment.*
- *It is difficult to make it fit into the sophisticated reporting system used across our school. We have to report in six areas that are the same in every KLA.*

Many said it was too soon to be able to comment. They had not focused on assessment to that point:

- *Too soon to say. We will be able to comment soon. We are just coming to the last stages of our unit plans.*

Many wanted more substance or practical detail:

- *The assessment in the modules was helpful, but in the syllabus, the section on assessment needs to be more practical.*
- *A lot of words, all the right words, but no body to it.*

What do you understand by "Technology"?

Some of the teachers worried that the term might be used too narrowly to mean just computers, or information technology:

- *I used to think it was just computers but I am now aware that it is far more than that.*
- *When I started I thought it was just computers but now I see it as solving a problem or providing for a need of some kind. Identifying the need also.*
- *It's NOT JUST COMPUTERS.*

Some defined technology in terms of processes or problem solving:

- *The way in which we design, make, appraise things we can use.*
- *I see that it is about solving problems, coming up with solutions for products to meet the needs of humans.*
- *Whatever you use at your time to achieve what you have to do. It is the solving of the problem with what you have at hand.*

- *Any process or technique or materials or system that will improve efficiency and/or the quality of life.*
- *A way for kids to explore with a purpose, to solve problems, to cooperate and have fun.*

Some talked in terms of products or the design and making of products:

- *Design and make a product or system which is easy and safe to use and is a benefit to whoever uses it.*
- *Developing products that meet people's needs.*
- *The knowledge and practical use of modern day products.*

One comprehensive and considered definition was:

- *It is about learning about yourself, taking risks and in so doing understanding for yourself the difference between data or information and wisdom. Associated with that is the appropriateness of technology which adds another level going beyond yourself to social justice and society. The difference with technology is that it is about teachers, kids and the community all learning together. That is constantly changing.*

What do you understand by the term "Technological Literacy"?

This was clearly a very problematical concept for the trial teachers. Most were very hazy about the notion. Many talked about language or terminology in the context of technology:

- *I hate the term. It will cause a lot of discussion because I am not sure what people will understand by it. I think it is being able to use the language associated with technology, be comfortable with it and use it effectively.*
- *The ability to communicate effectively and the ability to use the associated jargon. Understanding jargon and acronyms.*
- *The language which we use in our problem solving including specific technological or technical terms.*
- *I find it hard to explain but I sort of know. Children will be able to discuss how they will produce something using more technical language.*
- *The language behind it and children's understanding of that. Having the right vocabulary to be able to have a discussion about it.*
- *The language needed to understand and communicate in the field of technology.*

Some talked mainly about their confusion with the concept:

- *I don't like the term at all - it doesn't click with me. I see literacy as reading and writing and can't make the connection with technology.*
- *I hate it.*
- *Don't know, don't like it, won't use it.*
- *When "They" work it out, let me know.*
- *I'm confused. I can see both sides of the argument.*
- *We are a bit stuck on this one. We are perplexed by it. We think it means being confident to articulate what you want and how you are going to go about getting it.*
- *I got confused at the conference. Still don't know.*

Some focused on the idea of competency:

- *This is being confident and competent to use the equipment available.*
- *Knowledge, skills, attitude and ability to use the terminology and understanding of technology.*
- *The ability to understand and work with technology competently.*
- *Ability to function with Technology.*
- *Having the ability to understand and put their knowledge into action.*

Some wondered about the usefulness or value of the term:

- *Discussion at Conference highlighted the fact that this term is not needed to discuss confidence and competence in Technology.*
- *Do we need this term? "Competency" is a better way of looking at it.*

A couple of thoughtful definitions were:

- *How conversant people are with Technology and what it means.*
- *A capability about your own intimate understanding of everything around you and being able to use that not only for your benefit but also the society around you.*

What will be the problems in communicating the notions of technology and technological literacy to other teachers?

Creating a clear distinction between technology and "just computers" was seen as the main problem by most of the trial teachers:

- *Technology is not just computers - that is the first hurdle. It has to be seen as far more involved.*
- *So many teachers have the idea that technology means computers and don't have the broader concept. You will have to use correct terms and insist that people stick to them.*
- *Confusion with computers. Thinking that technology is computer based exclusively.*
- *A big problem is "what is technology" and getting past the idea that it is just computers.*
- *The confusion that exists already between technology and learning technology.*
- *People confuse Technology with Computers. We need to develop a broader understanding of terminology and understanding of technology.*

Some of the teachers saw a problem in technology being seen as an addition to an already crowded curriculum:

- *Overcoming the notion that it's something "extra" to teachers.*
- *The overcrowded curriculum.*
- *A problem is that it may be seen as yet another thing to include in the curriculum.*

The notion of technological literacy itself was seen as problematic:

- *Technological literacy will provoke a lot of discussion because people just won't understand the idea to start with.*
- *Technological literacy will have to be explained much more clearly.*
- *Need to agree on meanings of terms.*
- *It's always difficult to communicate that which you cannot explain yourself.*
- *"Technological Literacy" will never catch on as it confuses the concept of Literacy.*

The Rationale presents seven aspects of Appropriateness. How helpful are these in explaining what students should learn?

A minority of the teachers found the aspects of no help or value:

- *I found them quite superfluous and did not see how they directly related to our planning.*
- *We could not see the connection between the 7 aspects and what children could learn.*
- *Conflicts and overlaps within areas of appropriateness.*
- *Not terribly helpful.*

Most however found them helpful or valuable to varying degrees:

- *Good for checking scope of teaching. Comes alive through processes.*
- *Fine - fit my definition of Technology - eminently useable.*
- *Good - Get you thinking across different areas.*
- *They do help. They help when you are preparing your design brief. It makes the rationale a lot easier to understand.*
- *These have been vital for us. They have meant that we have looked at what we should be teaching and what should be included. It allowed us to bring in aspects that we might not have covered before. Many topics lend themselves to coverage under these aspects and they allow kids to explore these things. It has helped us to explain to kids what we expect them to be learning about.*
- *These cover everything. They are great. All aspects of learning and life are there.*

What suggestions do you have for improving the draft syllabus?

Some of the teachers spoke about the value of the elaborations and wondered if these could be included in the syllabus. Some wanted more practical assistance such as examples of teaching activities that have been tried and found to be effective:

- *Give some case studies on how other schools have solved problems and got the syllabus going.*
- *Other places have done it before, so get some case studies from there on how to get it going.*
- *More specific suggestions in the assessment section - needs pulling together.*
- *The elaborations were helpful and gave concrete examples that helped understand the outcomes.*
- *Include the elaborations in the syllabus. At least they must be there somewhere.*
- *Like to see more specific guidelines for assessment.*
- *Samples of work developed by practising teachers who have implemented this syllabus.*

Some called for simplified wording and easy-to-follow layout:

- *Simplify, make workable for classroom practitioners.*
- *Keep it simple. Lighten up with the language. Talk to real teachers about the difficulties they have in interpreting the language.*
- *A good syllabus is one that doesn't have an excess of words. This one is too long.*
- *More to-the-point sentences and less jargon.*
- *Make it more user-friendly in terms of the layout and organisation.*

What messages do you have for the Project Team, the QSCC or the Evaluator?

Many expressed support for, or appreciation of, the work done by the project team:

- *The project team has been very helpful and supportive.*
- *Keep moving forward. It has been a very difficult task for the project team and we have to acknowledge that it has been hard to write to such a diverse audience. Don't get bogged down and remember it is a joint effort and you are learners the same as everyone else.*
- *Happy with the work of the Project Officers.*
- *Keep the personal support going.*
- *Have a Project Officer based in the North, for easier access and classroom support.*

- *More visits from Project Team.*
- *All teachers appreciated visits from the Project Officer. Very supportive and helpful.*
- *Excellent support from Project Officer.*
- *Project officer is very easy to work with and talk to.*

Some expressed, in various ways, support for the project as a whole and what it was trying to achieve:

- *About time Technology got a Guernsey.*
- *It is a great endeavour.*
- *This gives us a much more creative and successful way to do things that we have done before. It is less restrictive and the kids are much more responsive.*

There were calls to maintain or improve communication with and among trial teachers:

- *Share our ideas, have a Group Work Conference. Even regionally if not State Wide*
- *Establish a website, share units there.*
- *Listen to practitioners and act accordingly.*
- *Make sure we are all kept in touch and up to date with what is going on. Otherwise we will get behind.*
- *Make sure team is getting a lot of input during the writing of the documents from primary teachers. There must be a good balance between primary and secondary people in the drafting of the documents. We feel sometimes that secondary school considerations have more than the right share of influence in the final versions of documents. How much of the feedback the team gets is really taken on board in the writing?*
- *We need a lot more sharing sessions with other schools to see what they are doing and work with them in the classroom. We need help with organising this, for example information on what is happening in other places. Some practical suggestions and tips would be a big help, for example what are good sizes for a group? Maybe the project team could set up a process and mechanism for the trial schools to share with each other, ask and answer questions of a practical kind and so on - making design brief more workable in a practical sense. A newsletter would be one way to do it. A website may be possible. The emphasis should be on what teachers are doing, what problems they are having and how they are overcoming them. How are they implementing the design brief?*

Some of the teachers expressed their satisfaction at being part of the curriculum development project:

- *I have really enjoyed it and the children are enjoying the activities. Once I knew where I was going I was fine.*
- *I'm pretty happy.*
- *We're keen to be a Pilot school.*
- *Appreciate being involved in this trial.*
- *Enjoying being part of this project.*

Appendix 4: External Review

Review of the Council Draft Technology Syllabus and Elaborations

Dr James S. Fisher Review Team Leader

December 1999

This review is the synthesis of separate critiques by members of the evaluation team. Each reviewer was asked to answer five questions. The synthesised review is presented under these questions, with an overall conclusion at the end.

To what extent does the Project Design Brief reflect current and emerging views of education and educators in Technology?

The reviewers found that the project design brief represents a comprehensive reflection of current and emerging views of education and educators, locally, nationally and internationally. Indeed they believed that the brief had built upon such views to the extent that it had set the benchmark for developments elsewhere in the world.

Individual reviewers' comments were:

- *The Technology Project Design Brief clearly refers to technology as a new key learning area in Queensland schools and indicates that there has been no previous technology syllabus document. The proposed description of technology in the design brief further clarifies this position. However, considerable work is needed to deal with the tension that exists around the relative significance of areas such as computing, information technology, and learning technology.*
- *The Project Design Brief reflects current and emerging views of education and educators in Technology to a large extent, and reflects the Australian Statements and Profiles in the eight key learning areas.*
- *This project brief further advances the whole concept of technology education to a level beyond what is already in place elsewhere in the world. This displaces educational thinking behind the UK National Curriculum Technology development, considered by many to be the leader in this field, as well as technology education curriculum developments in the Netherlands and the USA.*
- *This project design brief reflects very positively upon current and emerging views of education and educators nationally and internationally.*
- *In my opinion there is little or no area that has not been broached. The scope of the document is such that it covers all avenues while still allowing for variation.*

The reviewers found it evident that highly relevant work undertaken by professional bodies, with respect to the development, promotion and conceptual base of technology education, has been taken into consideration. This includes entities such as ACET in Australia, The International Society for Technology Education in the USA, and in Europe, the European Society for Technology Education (EGBT) and the PATT foundation.

An important current issue discussed by the reviewers is the confusion being created and perpetuated among educators about terminology in technology education. One reviewer cited Ian Webb¹ who argues that the confusion about terms is having a negative impact on the understanding of technology education. He strongly

¹ Webb, Ian. *Technology Terminology*, QUICK, 1999, 71, pp. 18-19, also <http://www.ash.org.au/teacher/tefa/>

advocates positive action by government and education community groups to clarify the use of terms to advance the understanding and implementation of technology education. The reviewers believe that the project team is clearly addressing this issue as indicated by their development of a glossary and evidence of striving for consistency in use of terms.

Another issue raised in the review is the place of information technology. The reviewers support the Design Brief in including information technology but not as the main focus of the key learning area. Such emphasis is fully in line with developments elsewhere in the world. It is interesting to note that in the UK (and echoed elsewhere), although it is held under the Technology component of the National or State curriculum, information technology is considered to be deliverable through and by every subject area. A differing point of view has been expressed by the current ACCE President² who argues that the Design Brief diminishes the significance of computer based learning and computer studies to the extent that attempts to ensure that technology does not mean computers has "swung too far". Williams talks of frustration and disappointment for members working in the Syllabus Advisory Committee "that there is not enough attention to information and communications problems in their own right, where building physical products is not an outcome". Further, she argues that the definition of materials omits data as a material. Of course it is a matter of balance, and the tensions can be expected to continue, but the reviewers support the Project Design Brief's definition of the domain of technology.

One reviewer would have preferred the Design Brief to address more positively the very strong linkage that Technology as a key learning area has with science and industry. Centres of educational excellence elsewhere in the world have recognised this linkage. In the UK alone there are some 40 Science and Technology Regional Organisation Centres in schools, colleges and universities operating under the auspices of the Standing Conference on school Science and Technology. In the world of work, in high-tech companies and major research laboratories, science and technology are intertwined.

Another issue is the relationship between the knower and knowledge and the implications for social justice and inclusivity. Interestingly, the glossary provides definitions for information but does not define knowledge. One reviewer wondered about the strength or potential impact of statements in the draft syllabus about inclusive curriculum. Technological literacy, for example, is expressed within a context and a culture. The question to be raised is in which contexts and in whose culture? We are not saying here that such issues have been ignored, but recognising that they are highly complex and difficult to deal with in brief documents. Consequently, the expression of positions on the issues must be developed in the outcomes to some extent, and more strongly in the learning-teaching activities that appear in schools' programs and classrooms. Therefore evaluation in the pilot phase of the project will need to include a focus on these issues.

Will the draft syllabus meet the needs of all students and teachers?

The review team generally considered that the needs of both students and teachers would be well covered by the draft syllabus. There was recognition however that the syllabus would not stand alone as the only document or resource for teachers, and the provision of adequate in-service education for teachers at implementation was seen as vital.

² Williams, *QUICK*, 1999, pp. 16-17

Individual reviewers' comments were:

- *I consider that the needs of both students and teachers will be covered by this draft syllabus.*
- *The draft syllabus is deliberately small and general. Many teachers will require the elaborations to operationalise the syllabus.*
- *The syllabus expands on notions expressed in the Design Brief. It will now be up to teachers, with much professional development, to make it work.*
- *I think that all students' needs are covered well and truly in this document.*

The reviewers welcomed the way that the draft syllabus actively prompts teachers to consider inclusivity issues and believe that the document will stimulate pilot teachers to address these issues in their classroom practice.

A caveat of the review is the recognition that each school will need to develop effective internal programs of work based upon their particular needs, related to their physical and resource environment and designed to fill the needs of the students in the local area. Consequently, while the draft syllabus has the potential to meet teachers' and students' needs, this potential will require adequate support and preparation for schools and teachers at implementation in order to be realised.

In summary, the reviewers believe that if implemented in the spirit intended, the draft syllabus can be expected to meet the needs of all teachers and students, with the necessary qualification that adequate in-service and support are provided to teachers at implementation.

Does the Syllabus reflect the intent of the project design brief? Is it a faithful translation of the design brief?

The reviewers found that the draft syllabus does reflect the intent of the project design brief, judging it to be a seamless and faithful translation.

Individual reviewers' comments were:

- *I consider that this fully reflects the intent of the project design brief. It is also a very accurate and effective translation of the design brief.*
- *The syllabus does reflect the intent of the project design brief. The translation seems seamless.*
- *The syllabus expands upon notions expressed in the design brief. As it is written, it is a faithful translation of the design brief.*
- *The intent of the brief has been well and truly covered by this document.*

The reviewers observed that cross-curricular priorities such as Literacy, Numeracy, Lifeskills and a Futures Perspective all receive due consideration in the syllabus, as called for in the Design Brief. The section on Outcomes was seen to spell out the thrust of an outcomes-based curriculum, which was a feature of the Design Brief and which teachers will need to adapt classroom behaviour to achieve.

Reviewers were concerned about how well Technology would find its place in the curriculum. Different people may expect Technology to be a new key learning area in its own right, or an extension of the manual arts area, or just computer education with a different name. If teachers see Technology as an incursion into the crowded curriculum or an addition to workload, they will anticipate problems with time allocation and resources, creating unnecessary anxiety and stress. Some teachers have negative associations with technology, because of a perceived lack of expertise

and understanding associated with computers. They will need to be assured that teachers who are not computer literate will be as capable of teaching Technology as those who are “computer nerds.” Teachers worried about a new key learning area may need to be reassured that the draft syllabus does not have to stand alone but can infiltrate or be taught in conjunction with the other key learning areas or existing subjects in schools. For many, a change in teaching approach will be required. For a few, this change in teacher classroom behaviour may be very difficult to effect.

Do the Core Content and Level Statements reflect the desired learnings from a course of study in technology?

Main Finding

The reviewers agreed that the core content and level statements reflect the desired learnings for a course of technology study even though they will need to be interpreted because of their generality. The Elaborations were seen as essential to allow teachers to interpret the content and levels. The review team believe that if all students were proficient in all the areas covered by the syllabus, the next generation of young people would be very well equipped to deal with any technological experience offered to them. They would cope well with a very technological society.

Individual reviewers' comments were:

- *From my perspective, the core content and level statements reflect the desired learnings to a large extent. However, they might appear vague to some teachers who might have difficulty in 'unpacking' them.*
- *I believe that the Core Content and Level Statements reflect the desired learnings from a course of study in technology, but will need much interpretation at the local level to achieve this.*
- *The core content and level statements do reflect the desired learnings to a great extent. However teachers and educators will need the elaborations to put them into perspective and to make sense of them.*
- *I feel that this format has an advantage in being able to track students' work or achievement. This will especially be true over a duration of time spanning years of education.*

The approach of organising outcomes in levels was seen as being neat and easy to chart over years of study, but the Elaborations were seen as valuable and essential:

- *The level statements are certainly general and many of the core content statements seem to highlight processes rather than content.*
- *The core content needs to be well supported by the elaborations to ensure that teachers will be able to implement these elements effectively and efficiently.*
- *Core content and the levels need the Elaborations to make any sense. Some teachers would rather just work from the elaborations and not bother with all the reading involved in the syllabus. Trial teachers and others using the syllabus will be able to devise extra elaborations which will help subsequent users interpret more clearly the intent of the Syllabus.*

One reviewer acknowledged the appropriate emphasis in the Elaborations document on the three types of knowledge (knowing about, knowing how, and knowing when, where and why). The reviewer believed that caution is needed in applying the learner-centred approach as outlined in the syllabus which views "learning as the active construction of meaning, and teaching as the act of guiding and facilitating

learning". Didactic approaches should be seen as valid components of "guiding and facilitating" in order to ensure learning of core content and the three types of knowledge.

Another issue raised is the care that will be needed in school and classroom programs to ensure a balance between the knowledge base and real-life current and future practice in the world of work in industry and commerce.

Other issues raised by the reviewers included:

- *The professional development of technology teachers must focus on the core content and desired learning outcomes.*
- *The progression of the Level Statements needs further refinement. The language could be a little clearer, for example what does "increasing skill" mean?*
- *Teachers can be expected to have difficulty recognising levels in students' performance and will require constructive discussion with other teachers about their students and what they know or can do.*

Do you have any comments on the Rationale, Outcomes and Assessment sections?

The review team found that the rationale is fine, the outcomes are easily followed and the assessment element is excellent.

Individual reviewers' comments were:

- *I believe that the rationale is fine. The unavoidable general nature of the outcomes statements will provide teachers with some ambiguity, which will need to be overcome by teachers 'unpacking' these. Assessment principles and techniques provided are superior to some models currently in play in secondary schools.*
- *The Rationale reads very well. Teachers have commented on the clarity of the diagram and they haven't even seen it in colour! The reading of the Outcomes section is easy. I would have to implement it with a group of students to be able to make a rational comment.*
- *The rationale is fine and can easily be followed. Teachers, educationalists and students will feel very comfortable with this. Much thought has gone into the outcomes, which are not too prescriptive. This I believe is a great strength. I consider that the Assessment element is excellent. It is certainly well in line with, if not superior to, international developments in this area.*

Some reviewers commented on the particular strength in the syllabus provided by the seven aspects of appropriateness. These considerations embrace responsible aspects for human behaviour, innovation and interaction.

Some commented on the need for an effective and open system for the reporting of achievement. This must be expected to enhance the standing of the key learning area.

One reviewer wants to encourage the project team to continue to aim for flexibility and adaptability in the statement of outcomes because the rate of change in technology in all sectors of industry, commerce and society is very rapid and the direction extremely hard to predict.

Other Issues

One reviewer commented at length about the handling of issues relevant to the Aboriginal communities and Torres Strait Islander communities. There is a need to be careful to avoid stereotyping of attitudes to technology and adaptation to technological change. Mentioning general principles in the draft syllabus in no way provides any assurance that these will apply to the curriculum that is implemented in schools. Some key points were:

- *In a school setting assumptions could be made [that] few Indigenous students in some settings are utilising technology.*
- *In reference to technology and local areas, I would like to see incorporated how for example, Aboriginal peoples relating to the local area used technology in the past. If specifics are not known then broader Indigenous Australian historical texts could be used. I do not see this as specific or that Aboriginal content should be marginalised to only history, Aboriginal studies, etc.*
- *From here learners could look at how Aboriginal peoples are now using technology. They may get a shock. We need to somehow recognise how Aboriginal peoples on many levels have adapted to integrate the new technologies into their lives.*
- *We cannot continue to perpetuate the biased view of the world and history through our education system as it speaks to learners about the Western World and its superiority of knowledge.*

Overall conclusion:

The overall conclusion reached by the review team is that the draft syllabus and the elaborations are very positive and impressive, indeed a benchmark of excellence, and provide a firm base upon which to build. Specifically, the reviewers found that:

- The project brief most definitely reflects current and emerging views about education in the field of technology.
- The draft syllabus represents a good reflection of the intent of the Project Design Brief.
- The needs of both students and teachers will be covered by the syllabus; provided adequate preparation and support are provided to teachers on implementation.
- The core content and level statements reflect the desired learnings from a course of technology study.
- The rationale is satisfactory, the outcomes are easily followed and the assessment element is excellent.
- The syllabus may need to give specific guidance on ways to address stereotyping of Indigenous peoples' uses, attitudes and responses to technology and technological change.