Evaluation of the Years 1 to 10 Technology Curriculum Development Project

Report 3

Prepared for the Queensland School Curriculum Council by

EdData INDEPENDENT PROFESSIONAL EVALUATION & RESEARCH

October 2000

QUEENSLAND SCHOOL CURRICULUM COUNCIL

Acknowledgments

This evaluation was designed and managed by Ted Hobbs. Patricia Connell, James Fisher, Lynne Hais and Ted Hobbs prepared the report. Patricia Connell, Lynne Hais and Ted Hobbs conducted the interviews with pilot teachers. David Anderson, Matthew Dempsey, James Fisher, Glenn Finger, Bronwyn Frederickson, Lynne Hais and Geraldine Torrisi-Steele contributed to the review of the CD-ROM. Final editing was done by Lyn Calcutt.

The cooperation of personnel in the pilot schools with data collection activity is very much appreciated.

ISBN 0 7345 2152 9

Queensland School Curriculum Council
Level 27 MLC Centre
239 George Street
Brisbane, Queensland, Australia

PO Box 317
Brisbane Albert Street, Q 4002

Reception: (07) 3237 0794
Fax: (07) 3237 1285
Email: inquiries@qscc.qld.edu.au
Website: http://www.qscc.qld.edu.au

EVAL 00014

Contents

Executive Summary

This report is concerned with the pilot phase of the Years 1 to 10 Technology KLA Curriculum Development Project. The purpose of the curriculum development project is to design, develop and disseminate a Years 1 to 10 Technology Key Learning Area syllabus, sourcebooks and initial in-service materials for use in Queensland schools.

The pilot phase extended over two school terms in year 2000. This report covers activity in the second of these terms, when 50 schools were engaged in applying the draft curriculum materials to planning, teaching and assessing. The draft materials included the draft syllabus, draft elaborations and a CD-ROM. In the final version of the curriculum documents, the elaborations will form part of the sourcebook guidelines, which will include sample modules to help teachers to interpret and implement the syllabus.

The evaluation was concerned with the appropriateness, effectiveness and efficiency of the draft materials in a range of classroom contexts. Four approaches were used: an external review of the CD-ROM, interviews with teachers in the pilot schools, interviews with school administrators in the pilot schools and a postal survey of pilot teachers.

The evaluation found that:

1. In most of the pilot schools, the pilot proceeded in a satisfactory way during Term Three 2000, with good results for schools, teachers and students. Pilot work with Technology KLA was reported across the Years 1 to 10 and across the various relevant subject areas in secondary. Finding time to devote to the pilot was a problem in many schools.
2. The draft Technology KLA curriculum materials are soundly based in terms of an appropriate direction for the development of school curriculum in Years 1 to 10.
3. There was solid support for the direction of the draft curriculum among the pilot teachers.
4. The draft curriculum materials were seen as highly workable by around half of the pilot teachers and moderately workable by most of the others. Those who had explored the CD-ROM found it useful and effective.
5. The workability of the draft curriculum materials will be rated more highly as more teaching examples are provided in the form of sample modules.
6. Assessment and reporting remain major concerns for many secondary teachers.
7. The CD-ROM is basically sound in terms of presentation and design, but needs more refinement, especially in the navigation and menu structure. Development of a companion website is recommended.
8. The draft materials go a long way towards meeting teachers' needs, but many teachers need more teaching examples and more detailed guidance with assessment.
9. The CD-ROM was seen as effective by those teachers who had explored it. The planning wizard was seen as particularly helpful.
10. There were still high levels of reluctance or lack of opportunity among teachers to access information in CD-ROM format. Unless and until these can be overcome, the CD-ROM will not be valued by the majority of teachers and cannot be successful in its aims. Only if the CD-ROM comes to be seen as something that is easy to use and has something significant to offer teachers, will they take it up.
11. Technology provides an ideal focus for primary teachers to integrate learning across other KLAs.

12. Pilot teachers generally found that implementing the draft curriculum resulted in good motivation and achievement across a wide spectrum of students' abilities and interests.
13. The draft materials need to provide concrete suggestions for teachers for addressing inclusiveness in their planning, teaching and assessment.
14. The draft curriculum is basically realistic in its demands on time, resources or teachers' training and expertise.
15. Proposals for the improvement of the draft curriculum materials are as follows:
    - The inclusion of copious practical examples of planning, teaching and assessment.
    - The development of a start-up kit, based on practical examples, designed to provide rapid understanding of the level statements and core learning outcomes and to enable teachers to begin teaching the curriculum.

The draft syllabus is basically sound in its structure and content. It was implemented successfully in most of the pilot schools with very good responses from students. This success was achieved in spite of reported difficulty in interpreting the draft materials or finding time to comprehend the levels and outcomes and how they can be achieved.

Teachers' ratings of the draft materials were generally approving but not enthusiastic. Three explanations are offered for the non-committal nature of teachers' support:

- Sample modules were not available at the pilot stage.
- The syllabus is tightly worded in order to maintain brevity.
- The majority of teachers did not explore the CD-ROM to any extent, through lack of time, incompatible hardware, limited access to computers or reluctance.

Two items that need much more attention in the draft materials are:

- Guidance for reporting of students' achievement and progress (especially for secondary teachers still working in the criterion-based assessment environment).
- Explicit direction on working towards greater inclusiveness in curriculum content, teaching and assessment.

The CD-ROM is seen as very useful by those teachers who are comfortable with the medium, if they have the time and the right hardware, and if it works. It may be hard to justify persevering with the CD-ROM format as long as the majority of teachers do not or cannot easily use it, but we believe that it is worth the effort. The CD-ROM promises a way of presenting ample amounts of up-to-date material to teachers in a format that can be accessed in the teachers' own way in their own timeframe. It provides a tool for planning that can simplify and expedite teachers' work and present plans with a professional appearance. Nonetheless, at the present stage the need to provide convenient printed materials will probably continue for some years.

We suggest that the initial in-service materials be presented in a way that will help teachers to begin quickly to understand the syllabus, especially the core learning outcomes. Sample modules, with illustrative teaching activities, should be the starting point for explaining the syllabus and its intentions to teachers. One strategy could be to develop a start-up kit in print and CD-ROM form. Teachers could use such a kit to grasp the gist of the curriculum quickly and easily, and begin teaching it in their classrooms with minimum delay. The start-up kit should also aim to encourage further exploration of the CD-ROM.

Another major component of the in-service process should be opportunities for teachers to sit down with the CD-ROM, away from their regular duties, to become familiar with the content, learn how to navigate through it, practise using the planning wizard and generally learn to appreciate the materials and advantages offered by this format.

1. Introduction

1.1 Purpose of the Evaluation

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

- The appropriateness of the Years 1 to 10 Technology KLA 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 KLA syllabus, sourcebook and initial in-service materials in schools.
- The efficiency of use of the Years 1 to 10 Technology KLA syllabus, sourcebook and initial in-service materials.

1.2 The Years 1 to 10 Technology Key Learning Area Curriculum Development Project

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

The Project commenced in January 1998 and was scheduled for completion by Term Two, 2001, with a complete set of curriculum materials to 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.

The pilot phase extended over Terms Two and Three, 2000 (3 May to 15 September). The present report covers pilot activity during the second of these terms when 50 schools were engaged in various activities to:

- implement the draft materials in classrooms;
- provide input to the refinement of the draft materials;
- contribute to the development of sample modules for teaching Technology KLA.

The pilot materials for Term Three, 2000 consisted of:

- a print document – Technology Years 1 to 10 Draft Syllabus for Pilot Schools (draft syllabus);
- a print document – Technology Years 1 to 10 Draft Core Learning Outcomes with Elaborations for Pilot Schools (draft elaborations);
- an interactive CD-ROM – The Years 1 to 10 Technology Materials-in-Development Pilot Draft.

The draft syllabus was a revised version of that used in the trial phase. The syllabus consisted essentially of a rationale, a set of core learning outcomes and a statement on assessment. The core learning outcomes were organised into four strands across six levels of increasing sophistication and complexity:

- Technology Practice
- Information
- Materials
- Systems

The draft syllabus also included sample versions of level statements at a ‘Foundation Level’ and a level ‘Beyond Level 6’.

The draft elaborations document expanded upon the core learning outcomes from the draft syllabus. The elaborations contained expansion of each of the core learning outcomes in the syllabus with examples of specific learning activities and contexts for teaching or assessment. Each outcome was split into component phrases, each phrase containing an action word. The elaborations were sets of specific learning activities and contexts for each phrase, intended as examples of how the outcomes could be addressed.

In the final version of the curriculum documents, the draft elaborations will form part of a set of sourcebook guidelines, but for the purpose of the pilot, the draft elaborations were provided as a single document without the explanation of their purpose and context. As a result, the elaborations stood alone without the benefit of being contextualised within the sourcebook guidelines.

The CD-ROM contained:

- the draft syllabus;
- explanation of various aspects of the draft syllabus;
- a guide to assessment;
- initial in-service materials;
- a guide to planning;
- links to relevant websites.

The information sections of the CD-ROM were not merely reproductions of the documents but were set up to allow the user flexible navigation through the various sections of the documents. During the pilot phase, the CD-ROM was essentially a prototype in its early stages of development. It was intended to go well beyond a mere collection of documents by providing an interactive, self-directed way for teachers to learn about the curriculum and plan for teaching. It contained a planning wizard intended to generate school and classroom plans that are tailored to users' specifications about strands, levels, content, outcomes and timing.

1.3 Evaluation Focus

This is the third report of a series of three. Report 1 was concerned with the draft syllabus as used in the trial phase of the development project. Report 2 was concerned mainly with the pilot teachers' initial experiences with, and opinions about, the syllabus-in-development and the CD-ROM.

Report 3 is concerned mainly with the CD-ROM and with pilot teachers' experiences in translating the draft materials into learning, teaching and assessment.

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

1. How well is the pilot phase of the project progressing?
2. To what extent do the draft curriculum documents reflect current and emerging views of education in Technology?
3. How effectively can teachers use the draft curriculum documents for planning, teaching and assessment?
4. To what extent do the draft curriculum materials match the needs of all teachers, students and school administrators as expressed in the range of classroom and school contexts in the pilot schools?
5. How realistic is the draft curriculum, as represented by the draft syllabus, the elaborations and the CD-ROM in the range of classroom and school contexts in the pilot schools?
6. What improvements can be made to the intent and content of the draft curriculum materials?

1.4 Evaluation Approach

1.4.1 General Approach

Four approaches were used in this phase of the evaluation:

- An external review of the CD-ROM by technology educators and IT specialists.
- A set of general interviews conducted face-to-face with pilot teachers during visits to a sample of the pilot schools.
- A set of school administrator interviews, conducted with a principal, deputy principal or head of department, in some of the schools visited.
- A survey (printed questionnaire) of all pilot teachers.

1.4.2 External Review

The external review was carried out by a group of educators who contributed responses to a set of guiding questions. The review focused on the CD-ROM and had two parts.

The first part considered the content of the CD-ROM and its appropriateness as a key learning area in a core curriculum for Years 1 to10. It was carried out by teachers and teacher educators with expertise related to technology in the school curriculum. Each reviewer presented a set of comments to the review writer who collated the material under headings representing the original set of guiding questions. The review is presented in Appendix 5.

The second part considered the design and presentation of the CD-ROM and was carried out in the form of a critique by two specialists in educational design and web design. The two critiques are presented in Appendix 6.

1.4.3 Interviews

The general interviews followed a set sequence of questions, shown in Appendix 1. Most of the questions asked the teachers to rate various aspects of the pilot process or the draft materials. All items asked for teachers' comments. Pilot teachers received a list of the interview topics in advance of the interview, allowing time for them to discuss the issues with their colleagues in the pilot schools. During visits to the pilot schools, one or more people were interviewed. In some cases, a school administrator was interviewed. In most cases, one or more of the pilot teachers were interviewed. In some schools, several interviews were held with individuals. In other schools, two or three teachers were interviewed in a group setting. In all, 28 schools were visited, 53 interviews were held and 63 teachers were interviewed.

The school administrator interviews were held during visits to schools where a suitable interviewee was conveniently available. Interviewees were usually the school principal, a deputy principal or a head of department with responsibility for Technology. Overall, 21 school administrators were interviewed.

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

1.4.4 Survey

The survey was conducted by mail using a printed questionnaire (reproduced in Appendix 2). Most of the items were designed to tap the opinions of pilot teachers on various aspects of the draft curriculum and related materials. The teachers were

asked to indicate their agreement or disagreement with a set of statements about the draft curriculum. Responses were anonymous. Background information on the survey respondents is shown in Appendix 3.

The printed questionnaire was distributed to those pilot schools that were not visited for interviews. The contact person in each pilot school was mailed sufficient questionnaires for each pilot teacher in the school. Of the 120 questionnaires sent out, 64 were returned (53%).

The results are shown in a series of charts in Appendix 4.

In order to investigate differences in the survey results, scores of 1 to 5 were assigned to the ratings from Strongly Disagree to Strongly Agree. Separate item means were calculated for teachers who indicated teaching primary levels only or secondary levels only.

One of the background items on the survey asked the teachers to indicate whether they had attended the April conference for pilot teachers. Separate item means were calculated for those who indicated attending or not attending.

The survey items related to the CD-ROM included the question, 'To what extent have you explored the CD-ROM?' Those who indicated Very Low or Low ratings on this item were excluded from the analysis of results on the other CD-ROM-related items.

Space was provided at the end of the questionnaire for 'any other comments you wish to make about the draft curriculum'. Comments were made on 25 of the returns. No clear trend emerged from the comments, which were listed and provided to the project team.

2. Progress of the Pilot Phase of the Curriculum Development Project

Focus Question 1: How well is the pilot phase of the project progressing?

In the general interviews with pilot teachers, participants were asked what messages they had for the project team, the evaluator or the Council, and what progress they were making with the pilot in their setting. Other interview questions were designed to elicit the levels of teachers' personal grasp of, and support for, the concept of Technology as a key learning area.

The interview with school administrators asked a series of questions that related to the progress of the pilot and its effects on their schools.

Two items on the survey related to the progress of the pilot.

2.1 Interviews

2.1.1 School Administrator Interviews

Administrators were asked, 'What have you heard from the teachers about the pilot?' Most indicated that teachers were enthusiastic and coping in spite of the difficulty in finding enough time for the pilot tasks:

- *The teachers are very keen and interested. The big problem is the time that the school organisation demands of teachers. Other things cut into teaching time and they don't have enough time to do justice to the pilot.*
- *It's a lot of work in their own time. We're 'muddling' a bit.*
- *They're very positive about it.*

Responses to the question, ‘How realistic has their task been?’ were mostly positive. For example:

- *Very realistic. They set their own goals.*
- *Here it has been a realistic task. You've got to have people who have credibility and are prepared to move ahead.*
- *We have given enough time to planning so it has been realistic.*
- *These fellows are relishing the task – there are no complaints from them that the task is anything but realistic. They are happy to share their learnings with their colleagues.*

A few of the administrators saw problems:

- *Not terribly realistic given the timeframe. Lots of detail required and writing it all up is a chore.*
- *Their task has not been realistic but they've made it realistic by integrating it with other KLAs.*

In answer to the question ‘How successful have they been?’ most of the administrators indicated success, although some were less enthusiastic than others:

- *They haven't completed a full unit. They have been working on particular outcomes but they don't regard it as being as successful as they want it to be.*
- *Pretty successful. It’s a learning curve for the kids – freedom is new. The kids are keen.*
- *Variable levels of success, but all achieving.*
- *Looking at the work produced, I'd say very successful, especially for the size of classes.*

In answer to the question ‘How has the school benefited?’ the administrators saw advantages in being familiar with new developments and being able to influence them. Many were pleased at the professional development of teachers that resulted from involvement in the pilot. A couple of the responses referred to benefits for students and their parents.

- *The school has benefited by the experience the teachers have had and the knowledge they have generated. It has forced us to look at our pedagogy and how we are going to work with outcomes.*
- *It has put a focus on Technology. This is important, especially in the primary school. We’re building resources and confidence.*
- *Parents have seen a lot of success from kids. Both teachers have had large culminating activities involving parents. It was good publicity for the school and the new KLA.*
- *A large number of teachers have been involved, directly and indirectly. There is increasing professional development and awareness. This has a tendency to lift standards.*

2.1.2 General Interviews

In the interviews, the teachers were asked for messages for the project team, the evaluator or the Council. A second question asked about their progress with the pilot.

2.1.2.1 Interview question: What messages do you have for the Project Team, the Evaluator or the Queensland School Curriculum Council?

Most responses to this question were quite positive although there was some critical comment related to support from the project team, problems with the CD-ROM, difficulty in interpreting the levels and outcomes and problems reporting achievement to parents and students. Most of these issues are covered later in this report.

The many positive comments covered a wide range of topics, including the value of the KLA, the responses of students, and the support from teachers. Most of the teachers found that students eagerly took up the design challenges:

- *A lot of work has been put into it. It has been good to be involved.*
- *Technology syllabus is worthwhile with real benefits for the kids. I'm really happy using it.*
- *I like it. It's very worthwhile. Some of my kids are 'shining'.*
- *Only that I think it has possibilities. It is working well. It is a good idea.*

Case Study 1: P to 10 State School

In this P to 10 school in a small community, Technology KLA units were taught at all levels from Years 1 to 10.

Primary teachers set up unit plans in the first term of the pilot and turned them into practice in the second. Secondary teachers worked on a unit that integrated across business, home economics and manual arts.

The draft curriculum had strong support among staff. Teachers could see everything working towards a final product. They found that the students were more motivated and easier to keep on task because they were working towards tangible outcomes. There was an excellent response from the parents and the local community.

According to the teachers:

From the negative side, we have had so many things cut across us this term that it has been very difficult for us to do justice to it but we have tried.

The elaborations were found to be very helpful:

The elaborations help to give more of an idea of what the level statements call for. When we come to write up the units the CD-ROM will come into its own. The planning wizard is great.

One of the units had students set up a restaurant, where they planned the business, established the environment, prepared food and served it to another class. All aspects such as budgeting, planning, food preparation and restaurant presentation were included.

Teachers described their experiences with planning and teaching the unit this way:

We started with an idea for a project. Then we had a look at the levels and outcomes. We did a concept mapping and prepared a set of teaching processes. It was much easier to plan once we had identified the activity. We used the outcomes to give a focus to the project.

There has been no problem with resources. They are using a lot of things that are already in the school and using resources in the local community. Parents have been very good in providing materials and assistance.

The kids' response has been enthusiasm at all levels. There has been no problem motivating students, many of whom were often not interested in class before. Students are learning in all KLAs. The learning is evident in what they are doing and saying. The low achievers have been able to accomplish something and feel they have been achieving.

It linked in with maths (weights and measures), literacy (menus, letters, signs), visual arts, science (the senses) and health (hygiene).

It can be difficult keeping the KLAs distinct – it all blurs together.

Teacher knowledge and expertise has not been a problem. Teachers worked together and the community has been called upon to help out. The high school section is available to help the primary teachers.

- *Teachers see that this is good because they are working towards a particular goal. Children are more motivated and easier to keep on task because they are working towards tangible outcomes. There has been excellent response from the parents and the local community.*

Generally teachers appreciated the efforts of the project team, but some said they needed more support:

- *I feel like we haven't been very well supported out here. We went to the seminar, then we have had one short visit – an hour at the most.*
- *I would have liked to see more support from the project team. Maybe this is my responsibility to maintain contact but more visits would have helped my problems.*
- *Everyone has done a really good job. It's a pleasure working with the Project Team. They made a difficult job easy.*
- *The Project Team has been very supportive. Their visits are very useful.*
- *On the whole, we've worked very closely with our Project Team member and he has been very willing with his time. The conferences were worth going to. I have thoroughly enjoyed being part of this process.*

Some teachers made special mention of problems with the CD-ROM:

- *The CD-ROM has problems. When I print out information it is hard to read because of the shading. Teachers don't have time to sit in front of a computer and read all that. The problem learning with the CD-ROM is that you can't flip back to what you were working on before.*
- *The CD-ROM has hiccups. We can't make it save in Word properly – we have to manipulate a great deal. We're not all linked to the Web in the classrooms.*

Interpreting the draft syllabus, particularly the outcomes, was difficult for some of the teachers who complained of wordiness, jargon or lack of specificity:

- *The Technology syllabus has lots of jargon – it's not user friendly. There's lots of reading and re-reading and discussion to get the meaning out of it.*
- *Be more specific throughout the document. Get to the point. Make it obvious for teachers to see how outcomes progress throughout.*

Some of the teachers (mostly secondary) had concerns about assessment and reporting:

- *How do we write a report to the parents? Do we show which level they are on? How do we explain what these levels mean?*
- *I am concerned that the suggested methods of assessment are very much based on teacher judgment and it will be difficult to justify to parents why a student is at Level 4 and not 5 etc.*

Teachers in Special Schools wanted more information at the Foundation Level, and some ideas about outcomes:

- *Special Schools are not catered for. There are no outcomes for the Foundation Level, which is where all our students are operating.*

2.1.2.2 Interview question: How is the Technology KLA progressing in your school?

Results in Report 2 of the evaluation showed that teachers who were interviewed in the first term of the pilot were mostly satisfied with progress in their schools. The second term results showed that, generally, teachers still believed the pilot was making satisfactory progress, but the pressure of other commitments within a limited timeframe was a common concern.

Progress was reported across the Year levels as well as the different subject areas in secondary:

- *The pilot's progressing fine. We have six teachers involved.*
- *Good. Everyone is aware and including Technology in their work. Years P-7.*
- *I am quite pleased with the progress of the pilot. Nine staff are involved.*
- *We have tried to make the secondary unit cover the different subject areas and integrate across them. We are doing units across all 1 to 10 levels.*
- *We've adapted it and created a workable curriculum for our Special School.*

Case Study 2: Small School

This is a small school in a rural setting. The teaching principal described her experiences with the Technology KLA pilot this way:

It has been useful because it is making us look at our program in a different way. We are quite prepared to go with the outcomes-based style of education because it makes sense to staff to look at what you are trying to achieve. There is still a lot of work to get them there but the focus on the end product is appropriate. Three classes have been working with it. The Year 2 to 3 teacher found it difficult to find time to do it with her other responsibilities. The other teachers have done it fairly thoroughly.

It needs to be linked well to the other KLAs. The elaborations should show specific links to the other syllabi. Otherwise it is too complex for primary, especially in small school and multi-age settings. The CD-ROM was not very helpful at all. The syllabus was quite helpful. The elaborations are quite useful. They are time-consuming. It is hard to find the time to work with this in the middle of other duties.

In my class, children were to make a carry bag to take with them on a class excursion to the Brisbane Show. It went well at the start but fell over when the sewing machine broke down. We made two prototypes but the children did not get theirs made. We will continue but call them Christmas bags.

The kids learned quite a lot in the early stages of the project. This was worthwhile learning for them. All participated, all had opinions, all learned terminology (such as 'prototype'). They learned necessary skills.

Time was always going to be tight because there was not enough time available in the curriculum. There was not enough time to have the kids actually doing it themselves.

I still need to pick up on assessment. I need some sort of checklist or something to use for assessment. I kept notes on children but that is very time-consuming.

The CD-ROM has problems. When I print out information it is hard to read because of the shading. Teachers don't have time to sit in front of a computer and read all that. The problem learning with the CD is that you can't flip back to what you were working on before. It cost a fortune to print out. I think it is a cop out not to provide paper.

We probably needed more support once we started activities. Equipment was a problem.

In some places, lack of time and the pressure of other priorities in schools limited the effort teachers could apply to the pilot:

- *We've had so many other things going, I've put it on the backburner. I was pleased with the unit I did. It hasn't rippled outside the official pilot teachers.*
- *We are all playing catch up at the moment because of too many interruptions and things to do this term. We have nearly finished planning units that we will implement next term with our classes.*
- *It went really well in the first term but in this term there were external things that cut into our time and we haven't done as much.*

A few of the teachers found progress hindered by difficulty understanding aspects of the draft syllabus:

- *Because the Level Statements are not easily understood, the lower school find it hard to determine what is Technology and there is a lack of case studies under Year 5.*
- *We are a little confused about what the outcomes actually mean. They are too general in their wording.*
- *The curriculum is a little bit hard to understand in places for people who don't know the terms or the jargon. The modules will probably help that when they come out.*

2.2 Survey

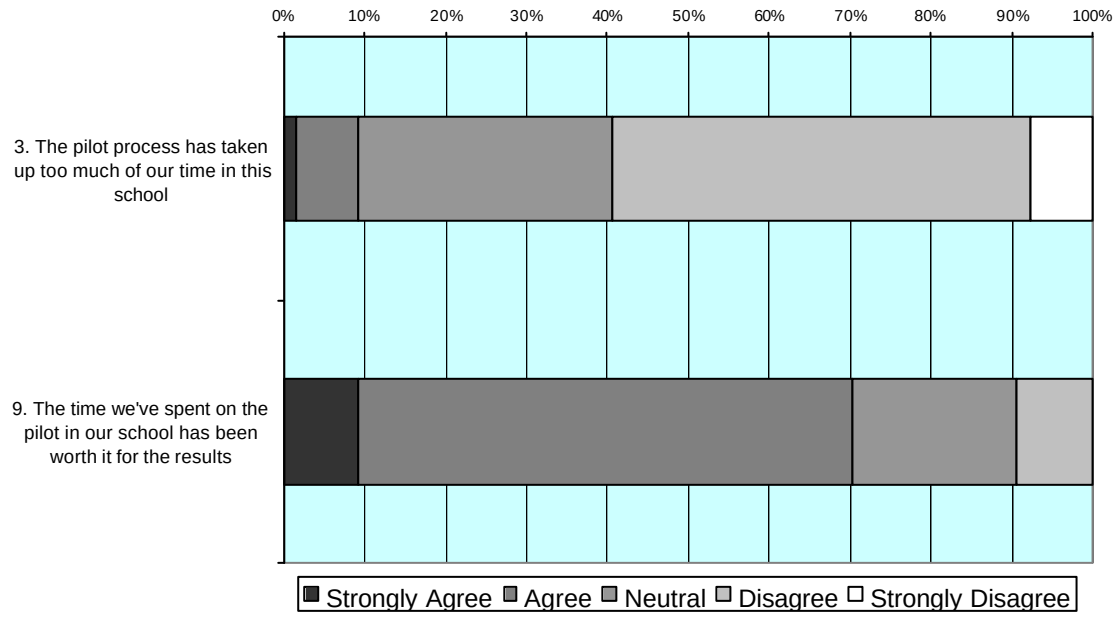
The survey included two items asking teachers to indicate their agreement or disagreement with the statements:

- The pilot process has taken up too much time in our school.
- The time we've spent on the pilot in our school has been worth it for the results.

The results are shown in Display 1, which indicates that the pilot teachers generally disagreed with the first statement and agreed with the second.

In other parts of the survey and interviews, many teachers commented on the amount of time taken to come to terms with the draft materials and put them into practice, but these two survey items indicate that, generally, the time spent on the pilot process was not excessive and was justified by the benefits.

Display 1: Progress of Pilot



2.3 Summary and Conclusions

Evaluation Report 2 indicated that the pilot was progressing well in most of the pilot schools. The current evaluation phase shows that this progress continued into the second term of the pilot in most cases.

School administrators reported that the pilot teachers were enthusiastic about the pilot and were coping in spite of the difficulty of finding time for the pilot tasks. Most of the administrators believed the teachers' task had been realistic and that success had been achieved. Most saw benefits for their schools in being involved in the pilot.

The pilot teachers were generally quite positive about the pilot process, although some would have liked more support from the project team. Other complaints from a few of the teachers related to technical problems with the CD-ROM, concerns about reporting students' achievement and difficulty in interpreting the levels and outcomes.

Teachers in Special Schools wanted more information at the Foundation Level, and some ideas about outcomes.

For the most part, the messages from pilot teachers included strong expressions of approval and, in some cases, described a very favourable response from students.

Satisfactory progress with the pilot during Term Three was reported by a majority of the teachers. Progress was reported across the Year levels as well as the different subject areas in secondary. In many places, lack of time and the pressure of other priorities in schools limited the effort teachers could apply to the pilot, and a few of the teachers found progress hindered by their difficulty in understanding aspects of the draft syllabus.

The survey indicated that, for most teachers, the time spent on the pilot was not excessive and that it was justified by the results.

We conclude that:

1. In most of the pilot schools, the pilot proceeded in a satisfactory way during Term Three 2000, with good results for schools, teachers and students. Pilot work with Technology KLA was reported across the Years 1 to 10 and across the various relevant subject areas in secondary. Finding time to devote to the pilot was a problem in many schools.

3. The Draft Materials and Current Views of Education in Technology

Focus Question 2: To what extent do the draft curriculum documents reflect current and emerging views of education in Technology?

In Evaluation Report 2, this question was addressed in terms of the draft syllabus. For the present report, the focus was on the CD-ROM. The main evaluation approach was the external review, but the survey and interviews included items relevant to this question.

3.1 Interviews

3.1.1 School Administrator Interviews

School administrators were asked, ‘What are your thoughts about the draft curriculum?’ and 16 of the 21 were sufficiently familiar with the materials to comment.

Some of the administrators were concerned that implementation would require a lot of teacher support, but most approved highly of the curriculum.

- *I think personally the curriculum is good, but my concerns lie around how to support and in-service teachers to move to the ways of teaching.*
- *Learning outcomes are like some of the other KLAs, and they're not 'mumbo-jumbo', either. I like the layout – it fits in with the science KLA. Technology integrates well with all other KLAs.*
- *Very user friendly. Technology is the way of education in the future.*
- *I like the context of it being an area that very easily integrates other areas of the curriculum. You can incorporate almost every other area into technology.*

Case Study 3: Rural School

This is a small rural school. Two young teachers, Annette and Andrew, worked in consultation with the principal. Annette taught Years 1 to 3 and Andrew taught the older students.

The teachers felt they needed much assistance with the planning, but had received this from the Project Officer who had visited their school. They spent a lot of their own time preparing and planning for the pilot, but appreciated the release days provided by the Council, although they could have used more. One of the teachers talked about a very steep learning curve.

The principal said they were all 'muddling' quite a bit and could have done with more of the Project Officer's time.

The school had made good progress with the Pilot, but Andrew was having difficulty writing up his Unit. He had a beautification project under way with a grant from the Australian Habitat Project. He had decided to use this as the springboard for his Technology unit.

The teachers found the draft syllabus was very helpful but they felt it contained too much jargon. The elaborations were very useful for clarifying things and the teachers. The core learning outcomes were adaptable and flexible, but the teachers would have liked more examples to clarify their understanding of the outcomes and a model plan to guide the preparation of their units. The draft materials took up too much time to read.

Andrew felt his lessons were very well received by his students, but Annette said she wouldn't do it this way again. She had planned too much to fit into the available time, and didn't complete it all. Although it was good to integrate with other KLAs, some of the students were unsure of what was required of them, even though most were very interested. Annette felt she'd pitched her planning too high for some of the younger students. More modelling would have helped her with this. Perhaps if she'd planned a smaller-scale operation, the students would have had more time to make mistakes, more involvement and more practice. Nevertheless, she felt all students had learned something from the unit.

Andrew said the project was practicable in terms of time, but he hadn't made much use of the elaborations. The outcomes surfaced as the project unfolded, and he had made notes of this. It was feasible in terms of his training and experience and he felt other teachers would manage it easily. He hadn't done much assessment of the students' work as yet, as many hadn't finished their individual notebooks. He had linked with other KLAs, but this had happened spontaneously and hadn't really been part of the unit planning.

Annette ran out of time but she had planned too much. It was her planning, not the curriculum materials that were the problem. Her young students needed much direction and modelling before having the confidence to 'go it alone.'

The Principal was concerned about the amount of work the teachers had done in their own time. It had been a learning curve for students and teachers alike. The students were not used to the extra freedom but they relished this and were really keen. She felt the school had benefited from being in on the ground floor of an entirely new KLA, and would be well placed to implement Technology when all schools were required to do so. Outcomes education was becoming clearer through this involvement. It confirmed that what they were doing was on the right path. She was enthusiastic about the draft curriculum, especially the elaborations.

For such a small, isolated school, she thought they had needed more assistance with what they were supposed to do and how to write it up. A little more specific direction would have made their task less daunting, but they would be more confident to tackle the next unit.

3.1.2 General Interviews

The pilot teachers were asked to rate the draft syllabus in general terms.

3.1.2.1 Interview question: In general terms, how do you rate the draft Technology KLA curriculum?

The ratings were mostly high:

Very High: 3	High: 29	Moderate: 17	Low: 4	Very Low: 0

The results are comparable with those for a similar interview question in the Term Two interviews reported in the previous evaluation report. While the majority of ratings were high, few were very high and many were moderate. This indicates solid, though not intense, approval.

Most of the comments associated with the very high or high ratings focused on the benefits for children and teachers. Moderate ratings were usually associated with comments on difficulties with interpretation and the time needed to comprehend and apply the materials.

Comments that focused on benefits for students included:

- *The concept of it is very good. It gives children the opportunity to give purpose to what they do. It is a matter of fitting it all in that is the problem.*
- *I like the idea of it and it has potential to make school fun and interesting.*
- *I like the new curriculum and I don't have any negative comments. I think it is exciting for the kids and they love doing the design briefs.*
- *The concept is good developmentally for students because it links knowledge base across a wide area and ensures currency in what they are doing. It teaches independent thought.*

Comments that focused on benefits for teachers included:

- *It is useful. I found that if you use it as an umbrella for other KLAs there is no problem at all. It is not so much a content area but a way of operating in the classroom.*
- *It is extremely worthwhile. Once refinements are made it should be very high. The objectives and scope of the KLA are very good.*
- *I understand what it is about and I think it is quite good. It brings in areas we haven't looked at before such as the ethics of things, recycling and so on.*

Some teachers thought highly of the materials but suggested that improvements were needed:

- *It is well conceived and well thought out, but from a primary point of view it needs to have links with other KLAs to try and reduce the workload.*
- *The elaborations should show specific links to the other KLAs. Otherwise it is too complex for primary especially in small school and multi-age settings.*

The teachers who rated the draft materials as moderate or low tended not to comment on the actual nature of the curriculum but expressed concerns about the readability of the documents and the time taken to comprehend them. For example:

- *Too many words. We need to take much time to interpret and discuss its contents. It requires a change in thinking to get it right.*
- *Some of the terminology in the syllabus is hard to understand or to interpret. The elaborations help to a point and I guess the modules will help even more once they are available. It is clearly set out though.*

It was my first encounter with outcomes-based planning. It took some time to come to grips with the materials and the concept of planning from outcomes. There needs to be a lot of in-service on outcomes-based education.

- *It takes too long to read through the syllabus three or four times before you can even get started. This takes a week and nobody has that time.*

Some comments related to assessment and reporting, with teachers expressing concerns about consistency of interpretation of the levels:

- *Assessment and reporting are very vague. It's hard to correlate a marking criterion that allows for all different levels of achievement within an outcome.*
- *It needs some refining. We also need moderation across schools to have a consistent interpretation of the outcomes.*

Case Study 4: Country Town State High

Two business education teachers in the same rural high school (we will call them Kylie and Melissa) had different perceptions of the draft syllabus:

Kylie

I liked the conference at Bardon and the package we got there. It was really excellent.

I am not happy with it in business yet and I think this kind of syllabus lends itself more to the shop, agricultural science and home economics than to business. It doesn't suit business as well as it does the other subjects. Agriculture and shop cover a lot of the outcomes, but the less practical ones and a few others are left to us.

I did a unit on Technology Practice in my class. We worked in substrand Evaluation at Level 3. We were looking at local businesses. The students had to do a business plan for a local business, then evaluate the floor plan and draw up a new floor plan.

In my planning process, I started with what I wanted them to know then found an outcome to fit.

I don't think all of the students learned from it. They were all at different levels to begin with. Some just couldn't get started.

I did find that some of the kids did not take to it, especially the LD kids.

In general, the levels and outcomes are OK, but LD and special needs kids won't reach the higher levels. I don't think there is enough time to cover all of these outcomes to Level 6.

I don't think the material gives enough specific details on what to do. Not many of the examples are business examples.

Melissa

It has been OK in my business area. In general, I am pleasantly surprised at the level of student interest. It allows students to tell me what they already know. It may be a continuation from what they do in primary but they seem to like the way they work.

There are teething problems of course but you try to improve as you work with different groups. I think it is well suited to a small school like this. We work with the local businesses and they support us.

I did find the draft materials very difficult to interpret at first, but with the help of the HOD I am now starting to feel a little more confident.

The materials area does not apply to business – we don't work with materials. The others come into it a lot.

We are having students investigate aspects of writing a business plan and then applying that to local businesses. The kids are finding it excellent and are very enthusiastic. It still surprises me the business knowledge they have even before they start.

The outcomes work well with most students. The students vary a lot, some do excellently well and others need special help. Some special needs and LD kids need a lot of help. It is very much in their interests to look at something like this. It can help them understand basic and simple things that will be useful for them in a life skills context.

3.1.2.2 Interview Question: What messages do you have for the Project Team, the Evaluator or the Queensland School Curriculum Council?

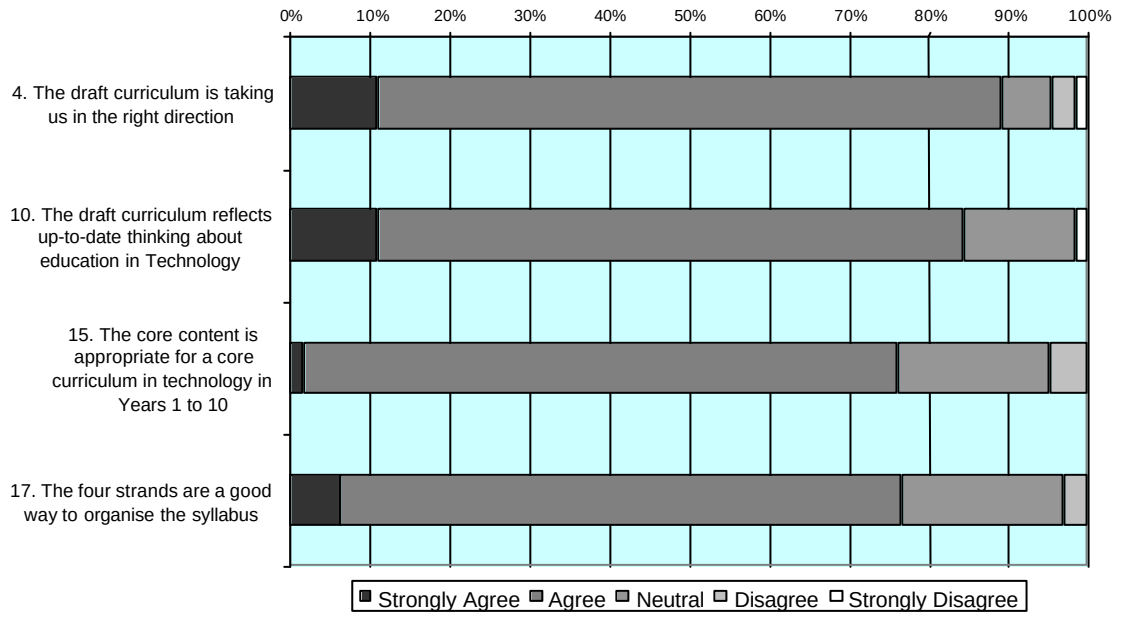
Most of the 'messages' in the interviews included strong expressions of approval from the pilot teachers:

- *I think it is great. I use the word exciting. Mainly in the area of integration throughout the curriculum we are in the box seat. This gives a little bit extra to take it in directions we haven't gone before.*
- *The intent of the syllabus is fantastic.*
- *Technology Syllabus is worthwhile with real benefits for the kids. I'm really happy using it.*
- *The developing of thinking and problem-solving skills is laudable. Now teachers will have the means to do this.*

Some of the pilot teachers remarked upon a very favourable response to Technology KLA from their students:

- *In general, I am pleasantly surprised at the level of student interest. It allows students to tell me what they already know. It may be a continuation from what they do in primary but they seem to like the way they work.*
- *Children are more motivated and easier to keep on task because they are working towards tangible outcomes.*
- *What I have found so far with my kids is that they are directing the learning process and I am more a facilitator than a traditional teacher. That is good because it is their work and they try hard to get it right for themselves and not just for my benefit.*

Display 2: Appropriateness of Draft Curriculum



3.2 Survey

The survey included four statements relevant to teachers' opinion of the appropriateness of the draft curriculum:

- The draft curriculum is taking us in the right direction.
- The draft curriculum reflects up-to-date thinking about education in Technology.
- The core content is appropriate for a core curriculum in technology in Years 1 to 10.
- The four strands are a good way to organise the syllabus.

The responses, shown in Display 2, indicate that most of the pilot teachers agreed with these four statements, although very few were in strong agreement.

The results here support the results of the interviews, which showed that most of the pilot teachers were solidly in support of the draft curriculum without being enthusiastic believers.

Responses from primary and secondary teachers were similar on these items, as shown in Appendix 4.

Responses from those who attended the April conference for pilot teachers were similar to those of the teachers who did not attend. The means for the conference attendees were higher, as might be expected, but only to a small extent. Appendix 4 shows the comparison.

3.3 External Review

One of the guiding questions for the external review of the CD-ROM was: 'How appropriate is the material in each section for a core curriculum in Years 1 to 10?' Appropriateness was defined in terms of reflecting current and emerging views about technology education as represented by the project design brief.

The reviewers agreed that the material in the CD-ROM was very thorough and all encompassing, clearly reflecting current and emerging views of technology education and consistent with the project design brief.

Examples of reviewers' comments are:

- *The CD-ROM content very adequately reflects current and emerging views of technology education. This is particularly important as many different people take technology to mean many different things.*
- *The content clearly reflects current and emerging views of technology education. Many teachers will find that the CD-ROM content is consistent in its use of technology with the project design brief.*
- *The material on the CD-ROM is very appropriate and of great value to educators. It is directly related to the curriculum and I could envisage how it can be incorporated into the teaching situation easily. The material is very thorough and all encompassing.*

3.4 Summary and Conclusions

The draft curriculum was highly approved by most of the school administrators sufficiently familiar with the material to comment. Some were concerned that implementation would require a lot of teacher support.

When asked to rate the draft Technology KLA curriculum in general terms, most of the pilot teachers responded with high ratings.

Most of the comments associated with the very high or high ratings focused on the benefits for children and teachers. Those who rated the curriculum as moderate or low did not comment on the actual nature of the curriculum but expressed concerns about the readability of the documents and the time taken to come to terms with them.

Many of the teachers spoke highly of the draft curriculum and the responses of students to their technology learning experiences.

The survey showed that most of the pilot teachers agreed with the statements:

- The draft curriculum is taking us in the right direction.
- The draft curriculum reflects up-to-date thinking about education in Technology.
- The core content is appropriate for a core curriculum in technology in Years 1 to 10.
- The four strands are a good way to organise the syllabus.

Apparently most of the pilot teachers were supportive of the draft curriculum without being enthusiastic believers.

The external review of the CD-ROM found that the material it contained clearly reflected current and emerging views of technology education and that it was consistent with the project design brief.

We conclude that:

2. The draft Technology KLA curriculum materials are soundly based in terms of an appropriate direction for the development of school curriculum in Years 1 to 10.
3. There was solid support for the direction of the draft curriculum among the pilot teachers.

4. Workability of The Draft Curriculum Materials for Teachers

Focus Question 3: How effectively can teachers use the draft curriculum documents for planning, teaching and assessment?

As described in Section 1.2, the draft curriculum materials consisted of the draft syllabus, the draft elaborations and the CD-ROM.

Workability of the materials was approached through the interview with pilot teachers, the survey and the external review.

4.1 Interviews

4.1.1 General Interviews

The general interview included a direct question on the workability of the curriculum materials. In addition, a large part of the interview consisted of teachers explaining their experiences in the planning, teaching and assessment processes using the draft materials. Responses to this section of the interview provided rich information on the teachers' practical experiences with the draft materials and hence their workability.

4.1.1.1 Interview question: How do you rate the workability of the draft Technology KLA materials in your teaching situation?

The ratings were mostly high or moderate:

Very High: 5	High: 25	Moderate: 18	Low: 3	Very Low: 0

Two teachers did not rate this item.

The ratings indicate that most of the interviewees found the materials to be workable, but many gave only moderate ratings. Few were prepared to rate workability as very high. Ratings for primary and secondary teachers were similar.

No clear pattern emerged from the teachers' comments. Some said that they liked the elaborations. Some found the CD-ROM workable but others did not:

- *With the wizard and the elaborations I rate this high.*
- *I have found the content within the materials to be workable enough to be able to directly use it in planning, implementing and assessing what I teach.*
- *Very user friendly and flexible.*
- *The draft syllabus and elaborations were useful. The CD-ROM was confusing.*
- *The elaborations help to show what to do and why to do it. With the CD-ROM, I lose track of where I found things.*
- *I found my way round the CD-ROM fairly well. It has been a lot more work than I have been used to as a manual arts teacher.*
- *The syllabus and elaborations are useful documents and I go back to them all the time. The CD-ROM planning wizard is the best thing I have seen for a long time. I would have hated to try it without the CD-ROM.*

Some teachers complained that it was time-consuming to understand, work with and implement the draft curriculum:

- *It is hard to find the time to work with this in the middle of other duties.*
- *Too much reading, and too much time needed to do this reading.*
- *Time to access computers and the Internet is an issue.*
- *We need more time to plan it with the project officer not far away.*

One comment gave a clue to why many ratings were only moderate:

- *Fairly user friendly, will be more useful when the elaborations and examples are more extensive.*

Based on comments like this that occurred in many interviews and appear in various parts of this report, we believe that teachers need access to ideas that they can apply immediately in the classroom or use as concrete guides to generate teaching ideas. If the pilot materials had provided such ideas, the teachers would probably have found them more workable. The pilot materials did not include sample modules, which will feature in future versions of the CD-ROM. When the sample modules are available, if teachers can find the time and opportunity to access them, ratings of the workability of the materials could be expected to increase.

4.1.1.2 Interview item: Discussion of pilot teachers' experiences with planning, teaching and assessment

Most teachers used the draft curriculum materials in a way that suited their current planning methods. Most did not begin with the levels or outcomes. They decided on end products or adapted existing units as their initial planning step, then turned to the materials to ensure outcomes were met.

- *I had the end product in mind: designing and making kites. Then I thought of the design brief. The students have had design briefs before. The focus then was on materials. I went to the CLOs Levels 1 to 4 and found those that meshed with the plan. I had to identify and look for processes that fit.*

The elaborations were generally rated as a helpful guide and were the starting point for some.

- *The elaborations gave a good overall picture. I linked that to what I wanted to do. The elaborations gave a focus to ensure outcomes would occur during the process of the unit. It was clear that more examples could have helped.*

Case Study 5: Catholic Primary School

Corinne is a Year 5 teacher in a Catholic primary school. Like many of the pilot teachers, she had difficulty finding time to devote to the pilot process:

We are all playing catch up at the moment because of too many interruptions and things to do this term. We have nearly finished planning units that we will implement next term with our classes.

Corinne was impressed by the draft curriculum:

It is well conceived and well thought out, but from the primary school point of view it needs to have links with other KLAs to try and reduce the workload. Treating the KLA as a separate factor will be hard. It will be better integrated with other KLAs. It will not be hard to do that in primary.

The CD-ROM is great. I wish the other KLAs had something similar to the planning wizard. I find the syllabus and elaborations easy to follow.

The core learning outcomes suit my mind set. I can work with this kind of thing but I know others who find it difficult.

Together with two of her colleagues, Corinne had planned a unit for the school on 'communications of the past':

We will investigate early communication from square one. The children will research a mode of communication and will try to emulate some products, for example make paper, ink etc. They will evaluate the quality of their product and measure their success.

We started with a general concept that we could develop across three levels over three years. We went through the syllabus and elaborations to find outcomes that would be relevant. Then we looked for context and methods of teaching-learning.

The three of us were able to sort out the overall plan and the individual plans. We used the planning wizard in the CD-ROM and found that this was great.

Everything is rolling along well. It is a matter these days of keeping up with everything.

Her colleague, Jack, designed a unit on communication forms in the present day to follow on from Corinne's unit.

We are going to provide students opportunities to investigate modern methods of communication and evaluate their usage, effectiveness and application, and relevance to their lives.

They will identify what forms are available to them, describe the needs and wants of society with regard to communication and research into each form of communication. Each group will prepare a class presentation on the mode of communication they have chosen.

We started with the general idea of a topic. Then we went to the syllabus to identify the appropriate CLOs. We used the elaborations and they fitted in pretty much perfectly. After that we went to the CD-ROM and produced a plan. We will implement the unit next term.

We have access to the computer lab. The communication tool they choose may require them to build a model or acquire an example.

Jack had some criticism of the draft syllabus:

I would have liked to have a general descriptor of each of the four strands – an overview. There is a lot of blending in terms of the outcomes in the strands. For example, what are the information, materials and systems really focusing on? A good general overview would explain each strand and what it involves. I found it difficult to relate these to a primary school perspective.

Nonetheless he was impressed by the draft curriculum:

It is extremely worthwhile. The objectives and scope of the KLA are very good. There seems to be a good blend of giving specific ideas to work with and not being too prescriptive. The CD-ROM is excellent, especially the planning wizard. The books are usable. The elaborations are better than I have seen in the other KLAs. Some of the examples in the elaborations might give concern to some primary teachers.

The CD-ROM found favour as a planning tool. Any difficulties mentioned were to do with operation on Macintosh computers; lack of access to appropriate hardware; or the teachers' lack of experience in using CD-ROMs. Some teachers want hard copies of materials to use in conjunction with the planning wizard.

- *I moved from the basic idea then to the outcomes. I went to the CD-ROM and prepared a plan. The CD-ROM motivated me and gave me plenty of ideas.*

The pilot teachers' responses indicate that they found the elaborations quite helpful. Some had tried the CD-ROM but found it confusing or difficult. Others found that it worked well and greatly assisted with the planning process.

Assessment was not prominent in a few teachers' planning:

- *I haven't done a lot of assessment yet. The students have to show me their work.*
- *I need to pick up on that. I need some sort of checklist or something to use for assessment. I kept notes on children but that is very time-consuming.*
- *We have not got to this stage yet.*
- *Matching the students' work to the outcomes is probably going to be time-consuming to start with until you understand what different levels mean. The assessment is not so much a problem once you have this sorted out.*

Assessment methods used during the pilot, by both primary and secondary teachers, were many, varied and often multi-dimensional:

- *Assessment was by way of observation and student discussion and participation.*
- *We have assignments, written tests and visual assessments of products.*
- *I used checklists based on the outcomes.*
- *Through: video production, self-assessment checklist – kids rated themselves.*
- *The students had to write up their processes. They had to share with the audience of their classmates. Assessment was done on these elements as well as the finished product.*
- *Each group's contribution was assessed. A survey was taken at the end of each pre-school viewing of the segments of the video.*
- *Assessment was done by comparing the finished product with the design brief.*
- *The four-week design project was assessed using peer evaluation, self-evaluation, client evaluation and teacher evaluation. It all worked well. It was a positive experience.*

Some of the teachers, mainly secondary, reported difficulty with assessment and reporting. Some worried about subjectivity in judgments. Some thought that parents would not understand reporting by levels. Some wanted more specific guidance in the materials:

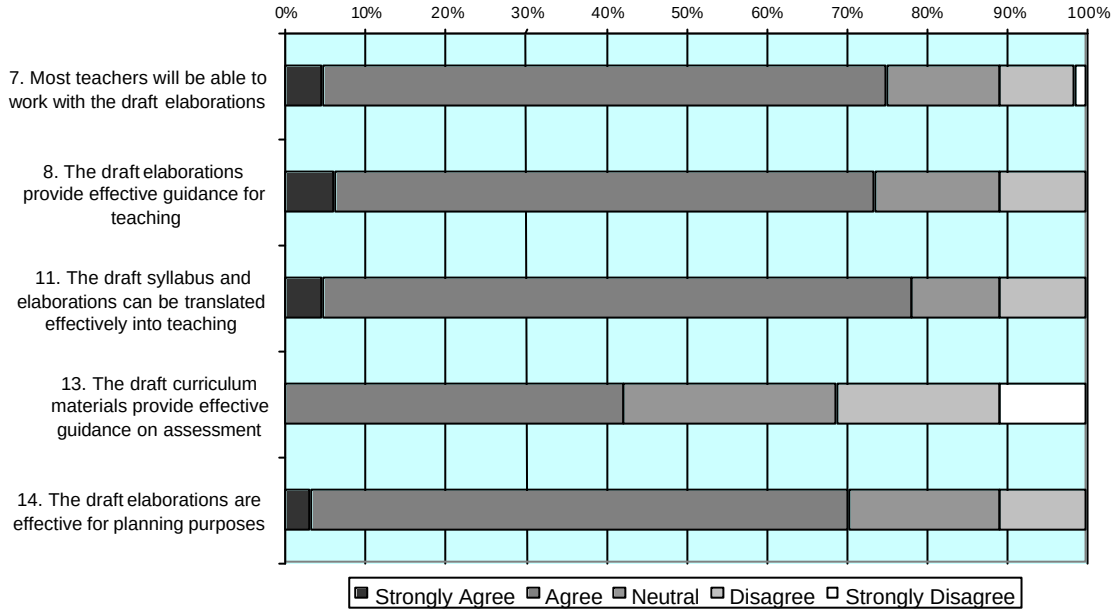
- *There is no problem with assessment but I don't know how to report to parents.*
- *I found it difficult to use the outcomes for assessment. I gave letter grades on the presentation of their work.*
- *I found it hard to work out how to slot them into their level. So I just marked as I usually do according to how well they have answered the criteria set out in the design brief.*
- *The problem with assessment is that parents don't understand the levels.*
- *I'm still having difficulty in establishing criteria to assess outcomes. The elaboration statements are very broad. You have to make a teacher judgment.*

4.2 Survey

Five of the survey items relate to the workability of various aspects of the draft materials for teachers, with an emphasis on the elaborations. The syllabus was covered in Evaluation Report 2, which showed that teachers' ratings of the various parts of the syllabus were mostly moderate or high, with few low or very low ratings.

Display 3 summarises the survey results for the five items.

Display 3: Workability of Draft Materials



The pilot teachers generally agreed that:

- Most teachers will be able to work with the elaborations.
- The draft elaborations provide effective guidance for teaching.
- The draft syllabus and elaborations can be translated effectively into teaching.
- The draft elaborations are effective for planning purposes.

Few of the teachers (just over 10 per cent) disagreed with any of these four items. This result indicates that difficulties in working with the elaborations were confined to a minority of the pilot teachers.

Display 3 shows also that a majority of the teachers were neutral or disagreed that:

- The draft curriculum materials provide effective guidance on assessment.

Appendix 4 shows that workability ratings for the elaborations were slightly higher among primary teachers than secondary. This may be because more examples are needed at the secondary level, which has a more subject-specific teaching context. The result may also reflect the low agreement in secondary that the draft materials provide effective guidance on assessment.

Evaluation Report 2 raised some doubts about the workability of the elaborations, especially for primary teachers. These later results indicate that such doubts have now been dispelled, possibly through support by the project team or as a result of increased practical familiarity with the curriculum through planning and teaching activities.

4.3 External Review

As part of the external review, two reviewers with expertise in communications technology including web design provided critiques of the CD-ROM-ROM from technical and design points of view. Their critiques are shown in Appendix 6.

The focus of this review was on presentation and design, rather than the content itself. A target audience ranging from inexperienced to advanced users was assumed.

Generally, the reviewers found the CD-ROM to be basically sound and potentially useful, but they drew attention to some aspects that detract from its effectiveness and need further consideration. They suggested a range of changes to the homepage design as well as the menu system and navigation clues. The reviewers recommended the inclusion of shortcuts to the planning wizard and the development of a companion website.

The reviewers found that:

- *The presentation has a clean, uncluttered style with good use of colour.*
- *The current homepage design establishes the purpose and focus of the CD-ROM, but in its current form, fails to provide main menu items that are important in providing the user with an obvious and clear overview of the main content of the materials.*
- *The overall organisation of the CD-ROM appears consistent with how the target audience would categorise information. Main menu headings chunk material into appropriate sections and present relevant top-level links using terminology with which users will be familiar. But, the presentation is extremely difficult to navigate without getting lost due to a poor menu system and a very deep site structure.*
- *There needs to be congruency between menus which appear on the left-hand bar and the tops links menu and submenus that often appear on the right-hand side. The main criticism of the navigation in its current form is that once users have entered a particular page there are no obvious visual cues that help the user to locate themselves within the package.*
- *The content is informative and extends beyond itself by linking to a number of external resources, but the menus need more work to make the presentation successful.*
- *The obvious advantage of CD-ROM based materials is the issue of access for those who do not have easy access to Internet based materials. However, while the CD-ROM provides a good basic starting point, web-based materials may be integrated with it. The development of a companion website to the CD-ROM would be desirable for a number of reasons.*
- *Given the intentions of the package, the planning wizard is very useful and forms an important component of the package that is likely to be of major interest to the target users. For these reasons, access to the planning wizard should feature more prominently in the menu items so that users can access it directly from main menus rather than having to 'find it' within one of the other menu sections.*
- *The layout for the wizard is clean and very simple to use. Presenting the wizard in a new window is good in that the user can keep the window open while browsing through other materials in the package. In its current form, closing the wizard window after typing some information into the forms, causes the entered information to be lost. This could be a source of frustrations for users.*

4.4 Summary and Conclusions

The interviews indicate that most of the pilot teachers found the materials to be workable, but many gave only moderate ratings. Few were prepared to rate workability as very high. We see this as solid but certainly not enthusiastic endorsement of the materials.

Ratings for primary and secondary teachers were similar.

Most teachers used the draft curriculum materials in a way that suited their current planning methods. Most did not begin with the levels or outcomes. They decided on end products or adapted existing units as their initial planning step, then turned to the materials to ensure outcomes were met.

The elaborations were generally rated as a helpful guide.

Some who had tried the CD-ROM found it confusing or difficult. Others found that it worked well and greatly assisted with the planning process.

Teachers were enthusiastic about the success of the Technology units they taught. Their comments indicated that tasks using the Technology practices strand engaged the students in lessons to a greater degree than previously.

Some of the teachers, mainly secondary, reported difficulty with assessment and reporting. Some worried about subjectivity in judgments. Some thought that parents would not understand reporting by levels. Some wanted more specific guidance in the materials.

Generally, the reviewers found the CD-ROM to be basically sound in design and potentially useful, but they drew attention to some aspects that detract from its effectiveness and need further consideration. They recommended the development of a companion website.

We believe that the moderate ratings for the workability of the pilot materials can be explained by a need for more teaching ideas. Teaching suggestions that can be applied immediately can be powerful in demonstrating the meaning packed into the core learning outcomes. Future versions of the CD-ROM are planned to include a wide collection of sample modules that should provide such examples. The modules would also provide clear guidance on assessment that may help to allay the concerns expressed by secondary teachers.

If teachers can find the time, opportunity and willingness to access such modules in the final version of the CD-ROM, then their ratings of the workability of the materials could be expected to move into the high to very high range.

We conclude that:

4. The draft curriculum materials were seen as highly workable by around half of the pilot teachers and moderately workable by most of the others. Those who had explored the CD-ROM found it useful and effective.
5. The workability of the draft curriculum materials will be rated more highly as more teaching examples are provided in the form of sample modules.
6. Assessment and reporting remain major concerns for many secondary teachers.
7. The CD-ROM is basically sound in terms of presentation and design, but needs more refinement, especially in the navigation and menu structure. Development of a companion website is recommended.

5. Match with the Needs in Schools

Focus Question 4: To what extent do the draft curriculum documents match the needs of all teachers, students and school administrators as expressed in the range of classroom and school contexts in the pilot schools?

This focus question was addressed in the general interview, the survey and the external review. In Evaluation Report 2, we found indications that examples given in the elaborations may have been seen as impractical for some students or at the fringes of teachers' training and expertise. That result was investigated further for the present report with questions about the workability of the elaborations and the curriculum materials in general.

5.1 Interviews

5.1.1 General Interviews

Two of the interview questions directly sought teachers' opinions on how well the draft curriculum materials met the needs of teachers and students. In another component of the interview, the pilot teachers described their experiences in applying the draft materials to planning, teaching and assessment. This component provided insight into the focus question.

5.1.1.1 Interview question: To what extent are the draft core learning outcomes appropriate for the students you teach?

Most of the ratings were moderate or high:

Very High: 3	High: 25	Moderate: 20	Low: 2	Very Low: 2

One of the teachers did not give a rating on this item.

Just over half of the teachers rated the core learning outcomes as highly appropriate for the students they teach, but almost as many rated the appropriateness as moderate, low or very low.

Teachers who made direct reference to the suitability of the outcomes for their students mostly gave high ratings. They said:

- *They help to pinpoint areas to look for in assessment. They also help to graduate the degree of difficulty in the design process and the portfolio students have done. The levels are appropriate.*
- *I find myself pinching from Level 2 rather than Level 3 for some of my slower students. The CLOs are appropriate.*
- *Level 3 worked well, only some working at Level 4, a couple still at Level 2*
- *Level 4 – students seem to be going well. It's easy to assign levels.*

Some specific comments were made about the suitability of Level 6 outcomes:

- *I have a 9/10 composite. The little bit I've done with the unit was OK for Level 5. Some of Level 6 outcomes are too high for the students.*
- *Some Level 6 statements are too high for most of our kids.*
- *In general, the Levels 5 and 6 are set too far above the cognitive development of my Year 10s.*

Many of the teachers who gave moderate ratings focused more on their own difficulty in interpreting the outcomes or deciding which outcomes that their students were demonstrating:

- *It is just hard because of the diversity in your class to pin them down to a couple of outcomes*
- *They are not specific enough – too broad. If teachers just use the core learning outcomes, they won't be focusing on the specifics.*
- *I have been struggling a little because it is not clear to me the extent to which I can put my own interpretation on some of the terms in the outcomes.*

Case Study 6: Girls' School

This is a large, private girls' school. We spoke with deputy principal, Rebecca, Business Studies teacher, Judy, and Year 4 teacher, Pamela.

Rebecca felt that the pilot was well within the bounds of what teachers had to manage. It was operating with some very positive feedback from the teachers.

Judy planned a spread sheeting unit and a desktop publishing unit with home economics and business education staff. The teachers liked the draft curriculum materials. Sometimes there was too much esoteric language, but they liked the organising strands.

Judy found the core learning outcomes to be appropriate for her secondary students, but was careful to say she wasn't pushing too hard, and most of her students were operating at either Level 4 or 5.

Both teachers were enthusiastic about the draft curriculum materials meeting their needs as teachers. The elaborations were a good starting point. They were quick to point out that they needed more strategies to implement Technology 'properly'.

Pamela planned a unit for her Year 4 students with an end product in mind. A student's cat had been injured and needed a safe enclosure in which to recover. Small groups worked together to design this enclosure. The whole class listened to each group's plan, and evaluated it as a large group. Larger groups were formed to design and construct a prototype enclosure. The whole class evaluated the prototypes then shared the task of constructing it. The children brought materials from their homes.

Pamela found that she had to stop quite often to teach basic skills she had assumed the children had already. This took up much of the class time, and the project dragged on long after the cat was well again.

All of the students, primary and secondary, were very keen to work on the units, although many of the basic skills (such as measuring in the junior school) had to be taught as new skills in order to complete the tasks as required.

For the secondary students, the aspects of appropriateness were a major consideration as students had to design posters and advertising for their projects. All students learned from their involvement in the unit, although some learned much more than others depending on their level of involvement. In the Year 4 class, a couple of learning disabled students boosted their self-esteem greatly by their participation in the successful project.

Both teachers felt they had learned a great deal themselves through participation in the pilot, and they thought other teachers could accomplish what they had. To interpret the outcomes, both had read the material several times and discussed it with colleagues to clarify the meaning.

In the secondary classes, assessment was done using a criteria sheet with levels of A, B or C assigned. In Year 4, the finished product was the result of the whole class effort. The teacher kept anecdotal notes of each student's input, but felt she could have done it better.

Pamela found it easy to integrate technology with other KLAs, but didn't find the draft curriculum documents any particular help with this. She 'just did it.' She found it tied fairly well with language, mathematics and art. Judy, on the other hand, didn't integrate with other subject areas at all. It was a computer-generated unit, and didn't lend itself to any integration.

5.1.1.2 Interview question: To what extent do the draft curriculum materials meet your needs as a teacher?

The ratings were mostly moderate or high:

Very High: 3	High: 23	Moderate: 16	Low: 9	Very Low: 1

One teacher did not rate this item.

About half of the teachers said the draft materials met their needs to a high extent, and about half said to a moderate or low extent. The overall result is good, but there were relatively large numbers of moderate and low ratings. This indicates that the draft materials were not meeting teachers' needs effectively in many cases.

Teachers who were critical of the materials expressed two main concerns: difficulty in interpreting the materials and a lack of specific guidance on assessment:

- *The level statements are great big chunks. The elaborations are nowhere near as useful as the SOSE and Science ones. It's a new area to people so we need clear examples.*
- *The teachers in my department, who didn't go to the conference, found them difficult to interpret. It required a lot of input from me to talk things through with them.*
- *I didn't find them that user friendly in that they are too vague, lacking in specifics. There are blanket statements with little guidance on how to use the materials or put them into place.*

On the other hand, many teachers spoke very positively about those issues:

- *For someone who hasn't had any experience with teaching Technology, it provides a core set of materials.*
- *I haven't had any guidance from anyone and have relied on the materials and have found I have been able to comprehend what I need to know.*
- *The elaborations help to give more of an idea of what the level statements call for.*

The CD-ROM and the elaborations received special mention by several teachers, most of it positive. Most teachers valued the planning wizard although one or two were critical. Typical comments were:

- *When we come to write up the units the CD-ROM will come into its own. The planning wizard is great.*
- *The CD-ROM has much potential. The elaborations are very useful, especially the examples given.*
- *The CD-ROM is excellent, especially the planning wizard. The books are usable. The elaborations are better than I have seen in the other KLAs.*
- *The CD-ROM was not very helpful at all. The syllabus was quite helpful. The elaborations are quite useful.*
- *The CD-ROM has a lot on it but I haven't looked at it. I'd rather have a book.*

Some of the teachers asked for more examples to assist them in planning:

- *More examples would help.*
- *I would have preferred more examples to keep me on track.*
- *The design brief section in the planning wizard needs to have examples.*
- *Practical examples are very useful, but there are not enough given.*

Integration of Technology KLA with other KLAs was found to be very easy by the primary teachers. They were able to integrate well with most other KLAs and indeed many saw Technology design briefs as providing an ideal focus for integration.

Most teachers linked their unit with other KLAs:

- *I planned the other KLAs first then looked for links to incorporate with Technology. We integrated with SOSE, English and Art.*
- *To me it was art – it is what I would have called art before I got a technology curriculum. Some of it was maths in the planning stages.*
- *It was very easy to work technology into our Year 7 work and integrate with other subjects.*
- *It links in with maths (weights and measures), literacy, (menus, letters, signs), visual arts, science (senses), health (hygiene). It can be difficult keeping the KLAs distinct – it all blurs together.*

A small number made no links with other KLAs. All but one of these were secondary teachers:

- *In secondary, it is hard to break down barriers across departments, for example when in shop, I ask kids about calculating area it is seen as something for maths.*
- *Not in this one. We have a unitised curriculum so it makes it hard to integrate other KLAs.*

Overall, the responses of teachers demonstrated an enthusiasm for the design brief approach.

The results tend to indicate that the draft materials go a long way towards meeting teachers' needs, but many teachers need more teaching examples and more detailed guidance with assessment. Many saw the CD-ROM as a valuable aid to planning.

5.1.1.3 Interview item: Discussion of pilot teachers' experiences with planning, teaching and assessment

In the discussions about teachers' experiences with the draft materials, all but a few spoke about the success of their units and the keen involvement of students in the design and production processes. Some were surprised at the enthusiasm shown by the students and by the way they worked on their design projects.

Many teachers commented that the Technology strands and sub-strands engaged the students in motivating and challenging tasks with high levels of problem solving:

- *It went really well. They learned to organise themselves and they learned the different theory involved in food production. They learned a lot. They showed me that they had learned the skills. I believe that the design brief results in a better final product.*
- *The units gave the students more meaningful activities using solid and plane geometry, development and pictorial skills and processes. The skills were important and so is knowing when and where to use them. The students responded well.*

Good motivation and achievement were found across a wide spectrum of students' abilities and interests. When asked whether all students in their class were able to learn what was intended or benefit in some way, the majority of the teachers answered with an emphatic ‘yes’. Technology KLA enabled them to plan lessons that involved students more thoroughly and willingly in classroom lessons. The design and production processes enabled students to engage at their level although some students took longer and needed more of the teacher's attention:

- *All participated, all had opinions, all learned terminology. They learned necessary skills.*
- *The students who are not so academic enjoyed the 'doing' parts of the task. The G and T kids took over the organisation of the task. All benefited at different levels with different outcomes for different students.*

- *Some special needs and LD kids need a lot of help. It is very much in their interests to look at something like this. It can help them understand basic and simple things that will be useful for them in a life skills context*
- *It was relevant to the students. Boys and girls were both completely engaged. I engaged a very noisy class into achieving high outcomes.*

5.2 Survey

Six items on the survey are relevant to this focus question. Four items related to the usefulness of the CD-ROM for teachers and two items to the appropriateness of the levels and outcomes for students.

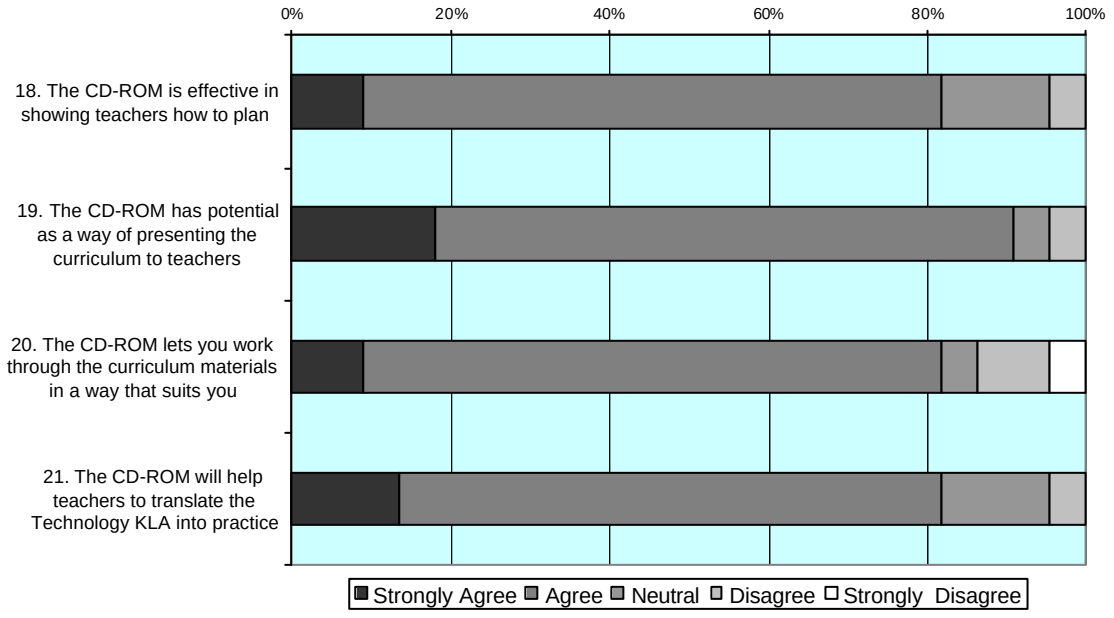
Display 4 shows the results for the CD-ROM and Display 5 shows the results for the items on appropriateness of the levels and outcomes.

A background item on the survey asked, 'To what extent have you explored the CD-ROM?' Most teachers indicated no exploration (25%) or limited exploration (41%). The results in Display 4 include only those teachers who had explored the CD-ROM to either a moderate or high extent.

The four items on the CD-ROM produced a split between 'neutral' and 'agree' responses to the statements:

- The CD-ROM is effective in showing teachers how to plan.
- The CD-ROM has potential as a way of presenting the curriculum to teachers.
- The CD-ROM lets you work through the curriculum materials in a way that suits you.
- The CD-ROM will help teachers to translate the Technology KLA into practice.

Display 4: Opinions of CD-ROM (by teachers who had explored it)



Display 4 shows high levels of agreement about the effectiveness of the CD-ROM but not strong agreement. Appendix 4 shows that more of the teachers who had explored it to some extent saw merit and potential in the CD-ROM.

These results are probably not surprising, but they do indicate that there are still high levels of reluctance or lack of opportunity to access information in CD-ROM format among teachers. Unless and until these can be overcome, the CD-ROM will not be valued by the majority of teachers and cannot be successful in its aims. Only if the CD-ROM comes to be seen as something that is accessible and easy to use, with something significant to offer teachers, will they take it up.

Taken together, the results tend to indicate that the draft materials go a long way towards meeting teachers' needs, but many need more teaching examples and more detailed guidance with assessment.

Case Study 7: Special School

School Profile:

- A Special School in a provincial city.
- All students multiply impaired – intellectual disability and at least one other disability.
- 23 students from 5 years to 19 years.
- 4 classes grouped by age.
- All students involved in all program elements.
- Each class program coordinated by a teacher and supported by teacher aides and volunteers.

The school was keen to be included in the trial and pilot of the new Technology KLA curriculum. Technology would provide a good place to start a new organisation of the curriculum at school level.

Understanding the focus of the syllabus in each Key Learning Area was vital for teaching staff. Teachers could then appreciate how the school curriculum links into the broader curriculum context and plan for extending and enhancing students' learning opportunities in line with the direction indicated.

Using the draft documents as a springboard, the school prepared its own Technology and Applied Studies Life Skills curriculum to 'enable students to develop confidence, competence and a sense of control for living in our increasingly technological world'.

Curriculum delivery occurs in three domains: home/school, leisure and recreation environments and the community.

Teachers worked with the draft Technology KLA documents and tried to adapt these to the situation at their school. The teachers felt that there wasn't enough guidance in the Foundation Level, where all of their students were operating. They needed core learning outcomes at that level.

Scott, the teacher working with older students, and Leanne, working with younger students, felt that the school had made considerable progress creating a workable curriculum for their school. The draft syllabus was readable and useable, but the elaborations were not at a level where their students were operating. They had to devise their own elaborations and activities to suit their students and found this to be an onerous task. Neither teacher found the planning wizard to be appropriate at Foundation Level and hadn't used it.

Scott went about his planning by:

- dissecting the Foundation Level statements, to arrive at a series of steps;
- placing these steps into the school's curriculum document;
- selecting ideas from this document to suit his unit on the topic of 'Sound';
- allowing the unit to evolve as it was implemented using weekly and daily plans;
- constantly revisiting and modifying his plan.

The students' reaction was mixed. Some were extremely enthusiastic about the experiences, some were measurably unimpressed, but most were interested. On the basis of assessing learning from awareness to knowledge to understanding, all of the students were at least aware of the things to which they were exposed. It was difficult to assess knowledge beyond the awareness stage, when so many of them are so impaired.

Time was not an issue because they could take whatever time was needed to work on the unit.

5.3 External Review

The external reviewers considered the question of how well the issue of inclusiveness was addressed within the material presented in the CD-ROM. Reviewers found that while inclusiveness was discussed in general terms in the draft syllabus, concrete suggestions for teachers addressing inclusiveness in their planning, teaching and assessment were not evident. Suggestions for building inclusiveness into the materials include:

- incorporating inclusiveness as a necessary aspect into the planning wizard;
- building equity requirements into design briefs;
- placing a focus on inclusiveness in group work;
- raising awareness of interactions between technology and culture;
- demonstrating how limitations on access to materials and equipment can be recognised and overcome.

5.4 Summary and Conclusions

Just over half of the teachers rated the core learning outcomes as highly appropriate for the students they teach, but almost as many rated the appropriateness as moderate, low or very low. In their comments, the teachers who gave moderate or low ratings tended to focus on their own difficulty in interpreting the outcomes or deciding which outcome students were demonstrating. Those who commented directly on the suitability of the outcomes for students usually gave high ratings.

About half of the teachers said the draft materials met their needs to a high extent, and about half said to a moderate or low extent. The overall result is good, but the relatively large numbers of moderate and low ratings indicate that the draft materials were not meeting teachers' needs effectively in many cases. Those who were critical of the materials expressed two main concerns: difficulty in interpreting the materials and a lack of specific guidance on assessment.

Primary teachers found integration of Technology KLA with other KLAs to be very easy. They were able to integrate well with most other KLAs and indeed many saw Technology design briefs as providing an ideal focus for integration.

All but a few teachers spoke about the success of their units and the enthusiastic involvement of students in the design and production processes. Many commented that teaching using the Technology strands and sub-strands engaged the students in motivating and challenging tasks with high levels of problem solving. Good motivation and achievement were found across a wide spectrum of students' abilities and interests. Overall, the responses of teachers demonstrated an enthusiasm for the design brief approach used in Technology.

In interviews, the CD-ROM and the elaborations received special mention by several teachers, much of it positive. Teachers found the elaborations quite helpful. Some had tried the CD-ROM but found it confusing or difficult. Most teachers who had used the CD-ROM valued the planning wizard although one or two were critical. Many saw the CD-ROM as a valuable aid to the planning process.

The survey showed that teachers who had explored it generally agreed that the CD-ROM was effective, but few strongly agreed. The results indicate also that there are still high levels of reluctance or lack of opportunity to access information in CD-ROM format among teachers. Unless and until these can be overcome, the CD-ROM will not be valued by the majority of teachers and cannot be successful in its aims. Only if the CD-ROM comes to be seen as something that is accessible and easy to use, with something significant to offer teachers, will they utilise the format.

Reviewers found that while inclusiveness was discussed in general terms in the draft syllabus, concrete suggestions for teachers for addressing inclusiveness in their planning, teaching and assessment were not evident.

We conclude:

8. The draft materials go a long way towards meeting teachers' needs, but many teachers need more teaching examples and more detailed guidance with assessment.
9. The CD-ROM was seen as effective by those teachers who had explored it. The planning wizard was seen as particularly helpful.
10. There were still high levels of reluctance or lack of opportunity among teachers to access information in CD-ROM format. Unless and until these can be overcome, the CD-ROM will not be valued by the majority of teachers and cannot be successful in its aims. Only if the CD-ROM comes to be seen as something that is easy to use, and has something significant to offer teachers, will they take it up.
11. Technology provides an ideal focus for primary teachers to integrate learning across other KLAs.
12. Pilot teachers generally found that implementing the draft curriculum resulted in good motivation and achievement across a wide spectrum of students' abilities and interests.
13. The draft materials need to provide concrete suggestions for teachers for addressing inclusiveness in their planning, teaching and assessment.

6. The Draft Curriculum – Feasibility and Potential

Focus Question 5: How realistic is the draft curriculum, as represented by the draft syllabus, the draft elaborations and the sample modules, in the range of classroom and school contexts in the pilot schools?

This focus question was addressed in the general interviews and the survey.

In the interviews, pilot teachers, were asked to describe their experiences with planning, teaching and assessment. The survey included four items on the resource and time requirements for the draft curriculum.

6.1 Interviews

6.1.1 General Interviews

For this focus question, the interview included an extended discussion with teachers about their experiences with planning, teaching and assessment as they worked with the draft materials.

6.1.1.1 Interview item: Discussion of pilot teachers' experiences with planning, teaching and assessment

In discussions with the pilot teachers, the interviewers looked at three main issues:

- resources
- time
- teachers' training and expertise

Case Study 8: Country Town Catholic P to 10 School

A secondary home economics teacher in a rural non-government P to 10 school found the Technology KLA draft curriculum to work quite well for her:

> We found that most of the documents were quite good to work from. In Home Economics, I was already doing what Technology KLA is about. I felt that it is very relevant.
>
> My Year 9 students had to prepare a series of gift hampers for friends. A hamper would include food items and craft items. The container had to be decorated. The food items had to be prepared and presented. Storage had to be considered.
>
> I adapted a unit that I have used before. I changed the assessment criteria to match the outcomes in the syllabus. Little change was needed.
>
> Students supplied a lot of their own materials. The kitchen had adequate resources available such as freezer space and cooking facilities.
>
> It went really well. They learned a lot. They learned to organise themselves. They learned different theory involved in food production as well as the practice of food preparation and presentation. They showed me that they had learned the skills. I believe that the design brief results in a better final product.
>
> For assessment, I developed criteria to match the desired outcomes. I made judgments based on the final product and their folio. I kept notes each prac week to assess the way they went about the task. I do find it very difficult with reporting. It might be hard in a large school for Technology teachers to get together and report across the different areas.
>
> The outcomes are quite appropriate and it was really good to be able to pinpoint the levels for different kids. I found the elaborations very useful. The CD-ROM was useful to the extent that I was capable of using it. I am not very computer literate and I did not get the full benefit of the CD-ROM. What I did use was good.

Her Manual Arts colleague worked on a different type of design challenge:

> My Year 10 woodwork class did a design brief to make an artefact using a specified size and type of timber stud.
>
> I got the idea from someone at the conference and then referred back to the outcomes. I used the CD-ROM planning wizard to get a hard copy. I based the unit on my previous experience with things like this.
>
> It worked well. Previously, they had done a specified article, but this was more open. They did get into it. They consulted books, magazines, TV etc. and did their designs and got to work. They enjoyed the challenge and liked doing something different.
>
> They all had a go and all learned to a degree. They learned a lot about the different properties of timber. Some used tools and techniques they had not used before. Some products were really good, some were not so good. Overall, I was quite happy with the products. I was also quite happy with the skill levels with this Year 10 class.
>
> The outcomes help to pinpoint areas to look for in assessment. They also help to graduate the degree of difficulty in the design process and the portfolio students have done. The levels are appropriate.
>
> The two booklets (syllabus and elaborations) have a lot, but when you take the time to look through them, they are helpful and make sense. The curriculum is very general and it is very easy to work with. It could present inconsistency across the State but it is good to work with.
>
> In Manual Arts in secondary it works well and is integrated with Home Economics and IT. Looking at the whole school, it would be workable but a lot of work would be needed to get it into the primary. It has been easy to fit into our existing program in secondary. It has been working well for us.

Few problems were encountered with resources. Most teachers used what was in the school and sought support for additional resources from parents and the business community. In secondary, lessons were usually held in the shop, kitchen, computer room etc. with few problems. Primary teachers tended to rely on parents and community members for resources not available in the school.

Teachers' comments indicated that they planned their units with the availability of the resources clearly in mind, as teachers do. The suggested resources contained in the elaborations were not usually a starting point.

- *They are using a lot of things that are already in the school and using resources in the local community. There has not been any problem.*
- *We were lucky. We used 'found' materials; therefore there was no cost. The projects were limited only by the students' imagination.*

Time was an important issue for teachers. About half of those interviewed could implement their planned units in the time available. Some 'made' time by integrating technology with other KLAs:

- *It was practicable in terms of time.*
- *I made it work in terms of time.*
- *Yes, it was practicable in terms of the time. Kids loved doing it and were reluctant to stop.*
- *I integrated with other areas with Technology as a focus.*

Close to half found that time was inadequate, for various reasons. Some had planned too many activities; others found that local factors such as timetabling, sports days, student and teacher absence interfered with the allocated time. Others said that students lacked experience in the processes associated with design challenges or that relevant skills had to be taught before the design brief could be initiated.

- *It is hard to juggle everything in the curriculum plus all of the extras. There is not enough time to get the lessons in. There is always something on, like the athletics.*
- *There are so many things that our school is involved in at the moment that it interferes with our schedule.*
- *I still underestimated the time I needed. The students needed direction and modelling before having confidence to go it alone.*
- *Time is a problem in that you have to allocate long blocks to the project in the construction stage.*
- *We ran out of time because of the open nature of what we are doing. It is something that we have to address. We may have tried to do too much or perhaps we did not do enough introductory work.*
- *Time was a problem in that the students' planning skills were not adequate.*
- *Students' absences can put them into difficulty to complete a project on time.*
- *Time is a problem because we only see a class twice a week and there are interruptions. They can do work at home though and so it is not so bad. One of the goals is for them to learn independent habits.*

In spite of the problems with time, very few thought the draft curriculum documents were to blame:

- *I don't think there is enough time to cover all of these outcomes to Level 6.*

Nearly all of the pilot teachers said the curriculum materials were feasible in terms of their training and expertise, and most of these felt the draft materials would be feasible for other teachers.

- *It is feasible for other teachers but my advice is to keep it simple over short time spans – practise the skills.*

- *Some of the examples in the elaborations might give concern to some primary teachers.*
- *I have a lot of expertise in the area. It is absolutely feasible for other teachers as long as they have in-service in what Technology really is.*

A small number of teachers felt that their training and/or experience was inadequate:

- *It was difficult for me. I don't know how other teachers would find it.*
- *I don't like this way of teaching. Change is difficult after my years of teaching.*
- *I had to do a lot of investigation to stay one step ahead of the kids. We have also used experts in the area to call on.*

6.2 Survey

Four survey items dealt with teachers' opinions on feasibility of the draft curriculum in terms of resource and time demands. The items and results are shown in Display 6.

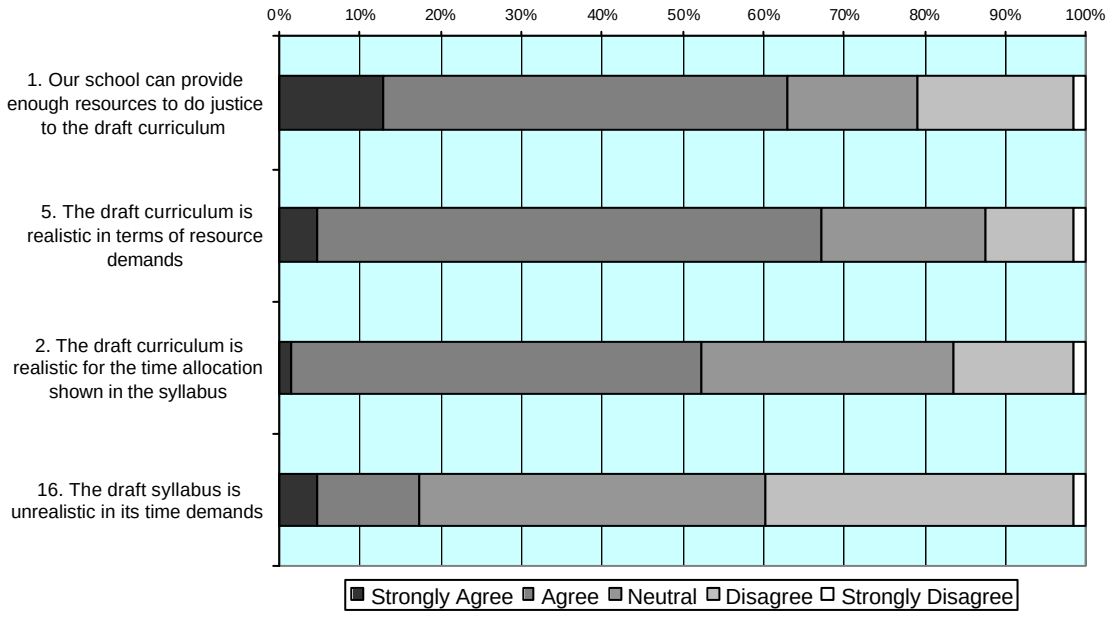
The results indicate that most of the teachers saw the draft curriculum as realistic in its time and resource demands. Some doubt existed, however, for 10 to 20 per cent of the teachers, and many were neutral on the issue.

The chart in Appendix 4 indicates that the primary teachers tended to show stronger agreement, but differences were small.

The survey results on these two items confirm findings in the interviews. They are also consistent with findings in Evaluation Report 2 that indicated doubts about the feasibility of the draft curriculum considering the resources and time that may be available to Technology KLA.

Report 2 also indicated that doubts were more prevalent in primary than secondary, but the present result would suggest that some of those doubts have been removed for the primary teachers. One explanation for the change may be that the project team provided additional support to primary teachers following Report 2. Another possible explanation is that more exposure to the draft materials and experience with them had the effect of increasing familiarity and confidence.

Display 6: Time and Resource Demands



6.3 Summary and Conclusions

The interviews and the survey indicate that most of the pilot teachers found the materials to be realistic in terms of time and resource requirements, but some doubt existed for a minority of the teachers. Some complained that it was very time-consuming for them to understand, work with and implement the draft curriculum.

Results for primary and secondary teachers were similar, but a change was detected from the results obtained in the early part of the pilot phase. A tendency for primary teachers to be less convinced about the feasibility of resource and time demands had disappeared suggesting that some of those doubts had been removed.

We conclude that:

14. The draft curriculum is basically realistic in its demands on time, resources or teachers' training and expertise.

7. Improvement of Draft Curriculum Documents

Focus Question 6: What improvements can be made to the intent and content of the draft curriculum materials?

Findings from the general interviews and the external review, as set out in the previous sections of this report, were considered in addressing this focus question.

The results seem to show that most of the pilot teachers found that the hours of reading or CD-ROM browsing required for a thorough understanding of the syllabus stood in the way of its implementation. This indicates that the initial in-service should be presented in such a way that will help teachers to quickly grasp the essence of the core learning outcomes and be able to make a start with teaching Technology KLA in the classroom.

We suggest a brief start-up kit in print and CD-ROM form that would address this need and, at the same time, encourage teachers to further explore the CD-ROM. This kit would precede a more comprehensive in-service package.

We propose the following directions for improving the draft curriculum materials.

7.1 Directions for Improvement of Syllabus and Guidelines

- Provide plenty of practical examples in the elaborations and sample modules, covering all levels and a wide variety of teaching contexts, to assist teachers with the task of comprehending the intent of the level statements and core learning outcomes in the syllabus.
- Use the simplest possible language in the level statements and core learning outcomes, within the constraints of necessary brevity.
- Provide more information on the Foundation Level for use in special schools
- Incorporate specific guidance on assessment and reporting into sample modules and elaborations.
- Address inclusiveness on a broad front by providing explicit guidance and recommendations in sample modules and elaborations.
- Develop a basic, easily understood start-up kit that allows teachers to gain rapid understanding of the meaning and intention of the core learning outcomes and begin teaching the Technology KLA.

7.2 Directions for Improvement of CD-ROM

- Make the CD-ROM compatible with all commonly used operating systems and browsers.
- Refine the menu and navigation system to make it more user friendly.
- Make the planning wizard accessible to users at any point.
- Develop a companion website and link the CD-ROM to the site.
- Incorporate a 'start-up' kit as described above and make it immediately accessible to users from any point in the CD-ROM.

7.3 Summary and Conclusions

We conclude that:

15. The main directions for improvement of the draft curriculum materials are:
    - The inclusion of copious practical examples of planning, teaching and assessment.
    - The development of a start-up kit, based on practical examples, designed to provide rapid understanding of the level statements and core learning outcomes and to enable teachers to begin teaching the curriculum.

8. Concluding Comments

The results in the present report should be seen in conjunction with those set out in Evaluation Report 2. In most cases, the present report either confirms the findings from the second report or extends upon them. Some issues covered in Report 2 were not revisited in the data collection for Report 3.

The draft syllabus is basically sound in its structure and content. It has been implemented successfully in most of the pilot schools with very good responses from students. This success has been achieved in spite of reported difficulty in interpreting the draft materials or finding time to come to grips with what the levels and outcomes mean or how the outcomes can be achieved.

Teachers found the Technology KLA very easy to integrate with other KLAs and many have seen it as providing an excellent focus for integration of the eight KLAs.

The syllabus was found to be feasible in its requirements for resources and time, and its demands on teachers' training and expertise.

Reports of students' responses were usually enthusiastic, but this enthusiasm was not matched by teachers' ratings of the draft materials. Generally, the ratings were approving but by no means effusive. Three explanations are offered for the non-committal nature of teachers' support:

- The pilot teachers did not have sample modules to simplify the comprehension task for teachers.
- The syllabus is, of necessity, tightly worded in order to keep documents brief.
- Teachers have difficulty accessing the CD-ROM for various reasons including lack of time, incompatible hardware, limited access to computers or reluctance to use browser software to access documents.

Two items that need much more attention in the draft materials are:

- Guidance for reporting of students' achievement and progress (especially for secondary teachers still working in the criterion-based assessment environment).
- Explicit direction on working towards greater inclusiveness in curriculum content, teaching and assessment.

The CD-ROM is very useful for teachers who know how to take advantage of what it offers, if they have the time and the right hardware, and if it works. It may be hard to justify persevering with the CD-ROM format as long as a majority of the teachers do not or cannot easily use it, but we believe that it is worth the effort. The CD-ROM promises a way of presenting ample amounts of up-to-date material to teachers in a format that can be accessed in the teachers' own way in the teachers' own timeframe. It provides a tool for planning that can simplify and expedite teachers' work, save them time from routine tasks and present plans with a professional appearance. Nonetheless, at the present stage of take-up of this kind of information technology by schools and teachers, the need to provide convenient printed materials will probably continue for some years.

Teachers' ratings of the draft materials would probably have been much higher had sample modules been included for the pilot. In their planning, teachers usually started from a teaching idea, not levels or outcomes. The elaborations were useful but many of the pilot teachers wanted more examples, especially examples that were suited to their teaching level or subject specialty. We believe that sample modules should be the starting point for explaining the syllabus and its intentions to teachers. For this reason we propose that introducing teachers to the curriculum should begin with a strong focus on sample modules including illustrative teaching activities.

We suggest that the initial in-service be presented in a way that will help teachers to arrive quickly at a basic understanding of the syllabus, especially the core learning outcomes. One strategy could be to develop a ‘start-up’ kit in print and CD-ROM form. Teachers could use such a kit to grasp the gist of the curriculum quickly and easily, and begin teaching it in their classrooms with minimum delay. The start-up kit should also aim to whet teachers' appetites for further exploration of the CD-ROM.

Another major component of the in-service process should be the provision of opportunities for teachers to sit down with the CD-ROM, away from their regular duties, and become familiar with its content, learn how to navigate through it, practise using the planning wizard and generally learn to appreciate what it offers to them.

Appendix 1: Pilot Teacher Interview Questions

THE YEARS 1 TO 10 TECHNOLOGY KLA
CURRICULUM DEVELOPMENT PROJECT – PILOT PHASE
EXTERNAL EVALUATION TERM THREE 2000

This interview is for teachers taking part in the pilot phase of the Years 1 to 10 Technology KLA curriculum development project during Term Three 2000.

Questions 3 to 6 (indicated by [**R**]) require a rating as well as a brief comment. The scale for ratings is:

Very Low	Low	Moderate	High	Very High

Section 1:
1. What messages do you have for the Project Team, the Evaluator or the Queensland School Curriculum Council?
2. How is the Technology KLA pilot progressing in your school?
Section 2:
3. In general terms, how do you rate the draft Technology KLA curriculum? [**R**]
4. To what extent are the core learning outcomes appropriate for the students you teach? [**R**]
5. To what extent do the draft curriculum materials meet your needs as a teacher? [**R**]
6. How do you rate the workability of the draft Technology KLA materials in your teaching situation? [**R**]
Section 3
7. Which strands, levels and elements have you worked with?
8. For this item, please select an outcome from the elaborations document* – one that you have worked with previously – and tell us how you went about your planning, teaching and assessment. *In our discussion of your experiences we may refer to* • *Planning processes* • *Resources* • *Teaching (how the lessons went)* • *Inclusiveness (Did all students learn or benefit?)* • *Time* • *Teachers' expertise (Was it feasible considering your training and experience?)* • *Assessment* • *Integration (How did you link Technology with other KLAs?)*

*Years 1 to 10 Draft Core Learning Outcomes with Elaborations for Pilot Schools

Appendix 2: Survey Questions

EdData is conducting this survey as part of the external evaluation of the Years 1 to 10 Technology KLA curriculum that is being piloted in your school by the QSCC.

Most of the survey consists of statements about the draft curriculum materials, that is the syllabus, the elaborations and the CD-ROM. Please show your level of agreement or disagreement with each statement.

You may add comments in the space at the end of this form if you wish.

- Your responses are anonymous.
- We will send you a copy of the survey results via the contact person in your school.
- Please return the survey as soon as possible in the reply paid envelope.

We start with some background information:

A. Year level(s) of your class(es) for the Technology KLA Pilot: (√ one or more)

ÿ Years 1-3 ÿ Years 4-7 ÿ Years 8-10 ÿ Special

B. Your school sector:

ÿ Government ÿ Catholic ÿ Other Independent

C. Did you attend the April Conference for Pilot Teachers at Bardon?

ÿ Yes ÿ No

D. To what extent have you explored the CD-ROM?

ÿ None ÿ Limited ÿ Moderate ÿ High

Please show your agreement or disagreement with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Our school can provide enough resources to do justice to the draft curriculum	ÿ	ÿ	ÿ	ÿ	ÿ
2. The draft curriculum is realistic for the time allocation shown in the syllabus	ÿ	ÿ	ÿ	ÿ	ÿ
3. The pilot process has taken up too much of our time in this school	ÿ	ÿ	ÿ	ÿ	ÿ
4. The draft curriculum is taking us in the right direction	ÿ	ÿ	ÿ	ÿ	ÿ
5. The draft curriculum is realistic in terms of resource demands	ÿ	ÿ	ÿ	ÿ	ÿ
6. The levels & outcomes in the draft syllabus aim too low for most students	ÿ	ÿ	ÿ	ÿ	ÿ

7. Most teachers will be able to work with the draft elaborations	ÿ	ÿ	ÿ	ÿ	ÿ
8. The draft elaborations provide effective guidance for teaching	ÿ	ÿ	ÿ	ÿ	ÿ
9. The time we've spent on the pilot in our school has been worth it for the results	ÿ	ÿ	ÿ	ÿ	ÿ
10. The draft curriculum reflects up-to-date thinking about education in Technology	ÿ	ÿ	ÿ	ÿ	ÿ
11. The draft syllabus and elaborations can be translated effectively into teaching	ÿ	ÿ	ÿ	ÿ	ÿ
12. The levels & outcomes in the draft syllabus expect too much of students	ÿ	ÿ	ÿ	ÿ	ÿ
13. The draft curriculum materials provide effective guidance on assessment	ÿ	ÿ	ÿ	ÿ	ÿ
14. The draft elaborations are effective for planning purposes	ÿ	ÿ	ÿ	ÿ	ÿ
15. The core content is appropriate for a core curriculum in technology in Years 1-10	ÿ	ÿ	ÿ	ÿ	ÿ
16. The draft syllabus is unrealistic in its time demands	ÿ	ÿ	ÿ	ÿ	ÿ
17. The four strands are a good way to organise the syllabus	ÿ	ÿ	ÿ	ÿ	ÿ
18. The CD-ROM is effective in showing teachers how to plan	ÿ	ÿ	ÿ	ÿ	ÿ
19. The CD-ROM has potential as a way of presenting the curriculum to teachers	ÿ	ÿ	ÿ	ÿ	ÿ
20. The CD-ROM lets you work through the curriculum materials in a way that suits you	ÿ	ÿ	ÿ	ÿ	ÿ
21. The CD-ROM will help teachers to trans - late the Technology KLA into practice	ÿ	ÿ	ÿ	ÿ	ÿ

Appendix 3: Survey Respondents

Year levels taught

1-7	2
1-4	16
4-7	25
8-10	21
Total	64

Sector

State	35
Catholic	15
Independent	14
Total	64

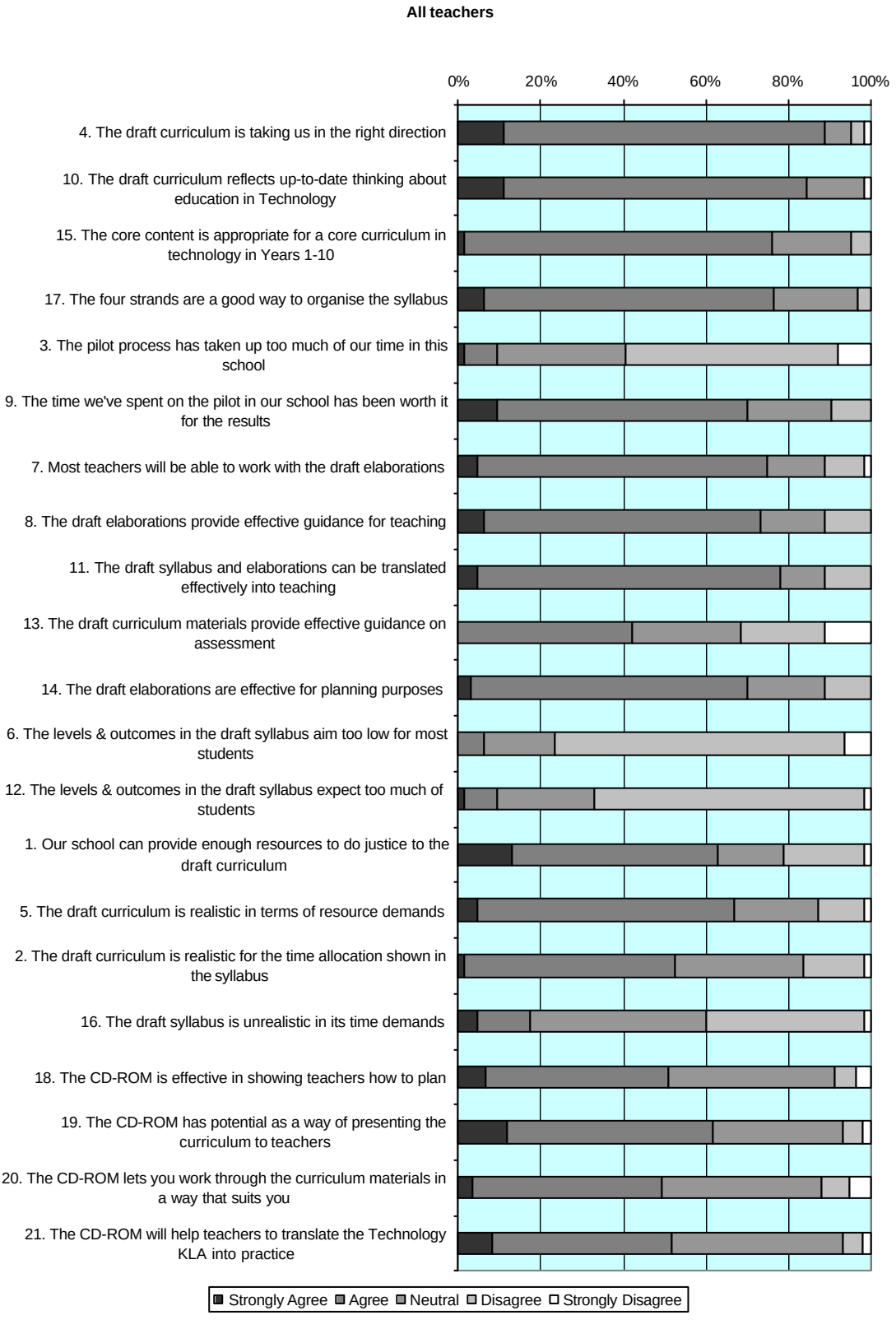
Attended April Conference

Yes	34
No	30
Total	64

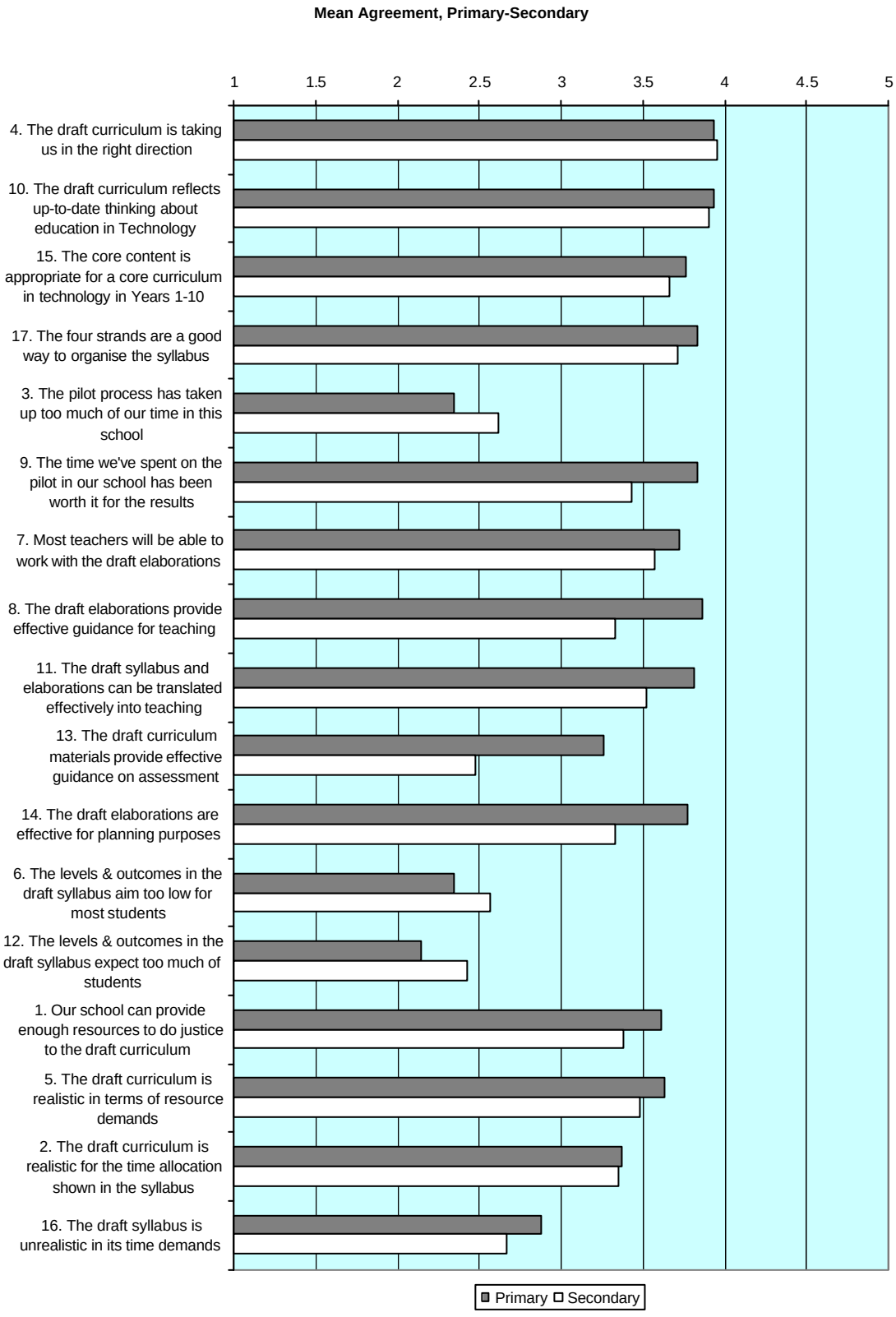
Extent explored CD-ROM

None	16
Limited	26
Moderate	19
High	3
Total	64

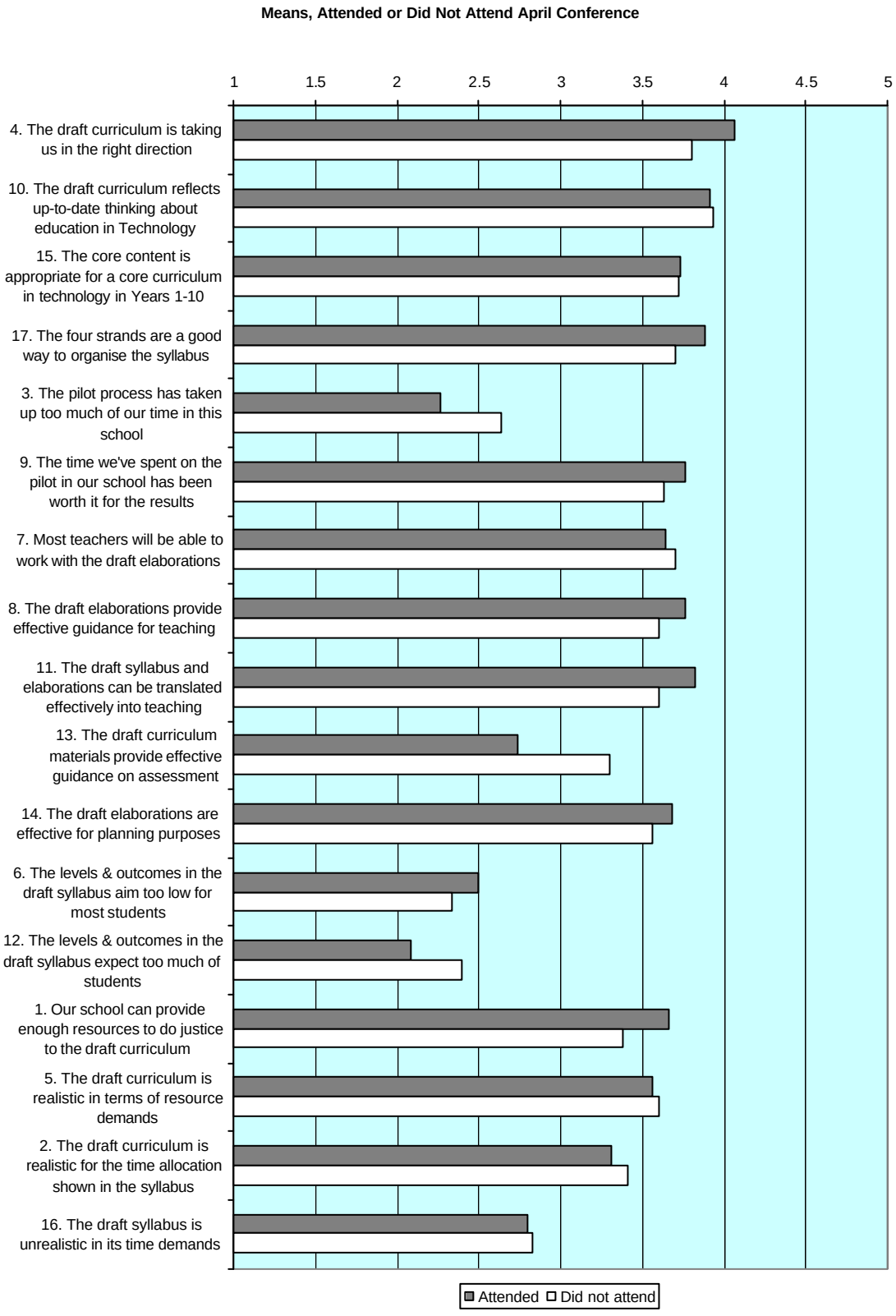
Appendix 4: Survey Results



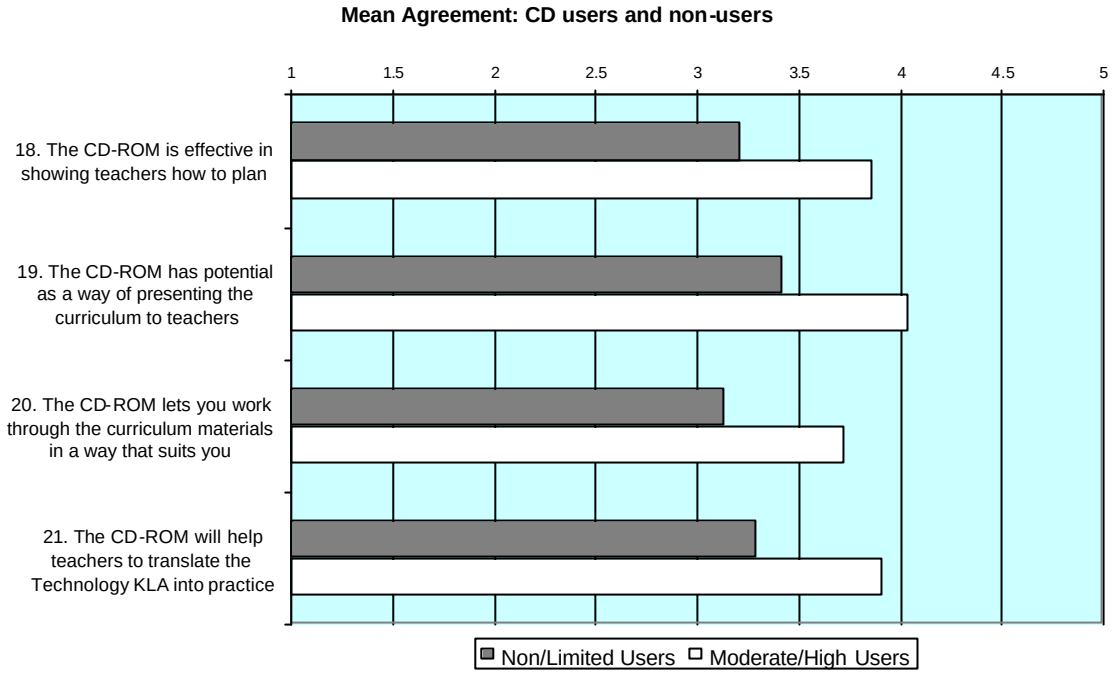
[Numbers on items show order on questionnaire]



[Numbers on items show order on questionnaire]



[Numbers on items show order on questionnaire]



[Numbers on items show order on questionnaire]

Appendix 5: External Review

Review of the Years 1 to 10 Technology CD-ROM

Dr. James S. Fisher

25th August 2000

Five reviewers were asked to explore the CD-ROM and respond to four questions:

- How appropriate is the material in each section for a core curriculum in Years 1 to 10?
- How well do the separate parts of the CD-ROM form a coherent whole?
- How well is the issue of inclusiveness addressed?
- How suitable is the CD-ROM format to this type of material?

Their responses to each question are summarised below, with illustrative comments.

Question 1: How appropriate is the material in each section for a core curriculum in Years 1 to 10?

Appropriateness is defined in terms of reflecting current and emerging views about technology education as represented by the Project Design Brief. Reviewers' findings are grouped under the headings of Organisation; Syllabus; Evaluation and Assessment; In-service; and Planning.

Organisation

The reviewers found that the material in the CD-ROM is well organised into appropriate sections that allow the further accessing of information. The content was found to reflect clearly current and emerging views of technology education. The concept of technology was seen to be consistent with the project design brief.

- *The CD-ROM content very adequately reflects current and emerging views of technology education. This is particularly important as technology is used by many different people to mean many different things. The CD-ROM content is consistent in its use of technology with the Project Design Brief.*
- *The material is well organised in each section as a starting point on which to build additional features and information.*
- *The CD-ROM is very easy to navigate. I had an initial problem with locating the menu referred to on the opening page, as there seems to be a problem with the frame at the top of the page. At the end of the day, there needs to be a vast improvement in this area as teachers who are not normally* au fait *with computers will find it too difficult to access.*
- *I think that the material on the CD-ROM is very appropriate and of great value to educators. It is directly related to the curriculum and I could envisage how it can be incorporated into the teaching situation easily. The material is very thorough and all encompassing. I have expressed before that at times in reading the documents associated with this review I am often impressed by some areas that are included. I am aware that we should all be aware of these areas but to have them expressed in a succinct manner is very striking.*
- *I had no difficulty in finding my way around the CD-ROM; the material is well organised into sections that allow the further accessing of information. The content clearly reflects current and emerging views of technology education.*

Syllabus:

The CD-ROM was found to be very easy when it comes to navigating and accessing the various components of the syllabus. The cascading menu allows users to locate information directly without having to wade though large quantities of information via complex search structures. Teachers should have no problems in finding out what is appropriate for their particular year level or class.

- *Navigation is intuitive here and material provided can be accessed using the cascading syllabus menu to find rationale, outcomes, and assessment. The section on the Syllabus is very simple to access, once the initial problem of opening the menu is overcome. The links make it possible to locate any area of interest or concern, without having to wade through too much information.*
- *Navigating around the syllabus is very easy, indeed intuitive for those of us who are computer literate. Sections are very easy to access, and it is easy to locate data upon areas of interest without having to delve deeply via search structures. The menu system works well.*

Evaluation and Assessment:

Concern was expressed that evaluation appears to be somewhat neglected. Much of the assessment information will be useful to teachers, but most of this information is of a general nature. More specific help with assessment is needed in the form of assessment ideas and examples.

- *The information presented through the heading evaluation and assessment seems to include only reference to assessment, which raises the question as to why evaluation is included in that heading. The material provided is general in nature and probably requires links to materials that will provide teachers with a database of assessment ideas.*
- *The section about evaluation and assessment says much about the requirements of assessment and evaluation but gives the teacher little guidance on the practical application of this. Teachers need more specific help with this area, and a number of case studies or examples would help put this area into perspective. I feel teachers will demand more examples to help them. There seems to be a slight problem with 'standards expected'.*
- *I found it difficult to find information upon the practical aspects of evaluation; however, much is said about assessment, which will be useful to teachers. Much of the data is general and hence the linkages between these two areas need to be spelled out in some detail, perhaps in the form of a mini-database of samples, which could be accessed by teachers who need guidance in this area.*
- *The judgments that are made during any reporting need to demonstrate at all levels how teachers undertook the decision-making process and made the final decision. Learners need to feel that they were treated fairly in this process and there needs to be room for any negotiation.*

In-service:

If the CD-ROM is seen as a small, but important, component of a more comprehensive in-service package, then it seems to be appropriate. A variety of approaches will be needed for effective in-service. If the CD-ROM is to stand alone as the in-service package, then much work is required in terms of the quantity and quality of materials and the way it might be used within school-based in-service programs.

Perhaps suggestions for schools on effective in-service strategies might be appropriate here.

- *To include in-service materials is an ambitious undertaking and my review of these materials tended to conclude that this was simply more background information. Consequently, perhaps the information in this section might be presented as background information rather than claim to be in-service materials. One of the biggest challenges that confront education systems, schools and teachers is how to design effective professional development (in-service) programs. 'PD by CD-ROM' undertaken in isolation has often been unsuccessful. Collaboration, sharing ideas, teachers talking to teachers, reflective practice built into change models, and a range of teaching resources are examples of enhancing the potential effectiveness of in-service programs. If the CD-ROM plans to proceed to include in-service materials then a great deal of work is required in terms of the quantity and quality of materials made available and how it might complement school-based in-service programs.*
- *The initial in-service provided for practising teachers will need to include many practical examples of requirements. The area about outcome education is clearly set out and easy to understand.*
- *To see the CD-ROM as a small but important in-service package seems to me to be pleasing and appropriate. However, to include a large in-service component on the CD-ROM seems to me to be over ambitious in nature. My experience is that a multiplicity of approaches which include in- and out-of-school courses, conferences, briefings, online Internet access to established technology education sites etc. deliver the goods.*

Planning:

The reviewers believed that the planning wizard would make it very easy for teachers to plan their technology programs and units. Considerations such as the aspects of appropriateness or inclusiveness in planning and teaching need to become integral components of the wizard. This would lead to more comprehensive and cohesive planning by teachers.

- *The planning wizard is a very creative move in the direction of assisting teachers to more effectively and efficiently undertake planning. Facility should be investigated for enabling all KLAs and their outcomes to be integrated into a planning wizard, which then enables the cross-curricular links to be taken a step further. Moreover, access to a database of pre-planned design briefs and unit plans could be developed to provide teachers with a rich resource for planning ideas. Similarly, assessment ideas drawn from teachers could be included to assist teachers when they are planning for their teaching and assessment.*
- *I like the concept of a planning wizard. Such a device will make it very easy for teachers to plan their technology offerings. A pre-requisite to this is that the whole of the process subject areas such as KLAs, evaluation and assessment; ideas and design briefs be linked in an integrated manner. This will then lead to more cohesive planning of the technology curriculum offerings in schools over both the short and long terms.*

Question 2: How well do the separate parts of the CD-ROM form a coherent whole?

All of the components of the CD-ROM were found to be clearly interrelated, forming a coherent whole. All of the key sections of the syllabus were present and accessible. The materials were seen to be appropriate for a Years 1 to 10 core curriculum.

Reviewers' comments included:

- *The form and function of the CD-ROM conceptually present key elements that clearly interrelate. The sections – syllabus, evaluation and assessment, in-service and planning could be reconceptualised to form a more coherent whole.*
- *The sections I was able to access are highly appropriate for a 1 to 10 curriculum. The separate parts of the CD-ROM form a very coherent whole.*
- *Very thoroughly. The navigation techniques are superb. The task of grappling with the Technology syllabus in its entirety is a daunting task but it has been achieved admirably. The inclusion of strand and level information as well as the way it is presented is easy to understand.*
- *All of the components of the CD-ROM are clearly interrelated and form a coherent whole. All of the major key sections are present and accessible.*

Question 3: How well is the issue of inclusiveness addressed?

Inclusivity is addressed in general terms in the draft syllabus, but there is little evidence of the permeation of inclusivity considerations throughout the components of the CD-ROM in a practical way. There seems to be a risk that teachers could plan and teach without explicit consideration of inclusivity. This is a difficult area and specific, practical guidance is needed. A section relating to planning for inclusivity may well be desirable in the planning wizard.

Addressing inclusiveness well would require some form of sensitisation and discussion to make learners think about society at large so they will become more committed to inclusiveness as adults. For example, equity could be included in design briefs by requiring students to 'design in' access for all and fairness for all. Appropriateness can be learned by students working in teams and working responsibly. It requires working with others, and group work could provide a good venue for learning appropriateness if planning and assessment are done skilfully.

Another significant issue in inclusiveness is access to equipment (materials and tools). Also, students need to consider beliefs, nuances and practices of different cultural groups in the application of technology.

- *This seemed to be confined to the section relating to contribution of the key learning area to equity in the curriculum and understandings about learners and learning within the rationale section of the syllabus menu. There was little evidence that would ensure that teachers consider inclusivity in their planning in the planning wizard. Perhaps a section relating to planning for special considerations would be desirable in the planning wizard.*
- *The issue of inclusiveness seems to be slightly 'watered down'.*
- *I found little evidence of inclusivity that would relate to equity, teaching and learning. This needs to be addressed, perhaps in a separate section, to ensure that teachers address this when planning their technology offerings.*
- *Addressing inclusiveness well would require some form of dialogue right across the curriculum to make learners think about society at large so they will become more critical thinking, and committed to change as adults. The aspects of appropriateness provide opportunities for teachers and students to engage in such dialogue.*
  For example, equity could be included in design briefs so that students design in access for all in ways that ensure overall fairness for all. A good approach would be to have students produce designs that work towards people with disability participating in the least restrictive way possible.

- *Appropriateness can be learned by students working in teams and working responsibly. It requires working with others. The materials needs to focus teachers' attention on how students develop skills to work within teams, and how students can learn to be inclusive of everyone within the team, not some people dominating or one cultural context, group or ideology dominating. The materials need to help teachers to see why students need to be aware that they have a culture and are part of a larger culture too. Students need to be aware of the impact of the mainstream culture on themselves and others. Otherwise, for students who identify most strongly with the mainstream culture, it will always be 'us and them'.*
- *Another significant issue in inclusiveness that needs to be addressed is access to equipment (materials and tools). Specialised equipment may be limited in some communities, but students should not be disadvantaged if there is a lack of resources or lack of access. The CD-ROM needs to offer explanations of how potential disadvantage can be recognised and overcome so that students have genuine opportunities to achieve the core learning outcomes.*
- *An important inclusiveness issue is that students need to consider beliefs, nuances and practices of different cultural groups in the application of technology. An issue that could be developed in the curriculum is the borrowing or appropriation of technology from one culture by another.*

Question 4: How suitable is the CD-ROM format to this type of material?

The reviewers saw the CD-ROM format as an excellent move forward and an entirely appropriate medium to present curriculum materials in a dynamic way, especially if it is web linked. Many websites provide lesson plans, unit plans and ideas in a cost-effective way. Even so, it would be sensible to make available hard copies of the material for those teachers who are have difficulty accessing material using computers.

- *The concept of the CD-ROM is an excellent move forward to enable curriculum materials to be more dynamic as opposed to the inability of printed text materials to be updated. In particular, it enables the use of web resources through identifying worthwhile web links.*
- *The CD-ROM format is very well suited to this type of material. Teachers, however, still require a hard copy of all the information so they can access it at home where many of them do their planning. Teachers in many schools state that they do not have easy access to a computer at school, or the school computer does not have a CD-ROM drive.*
- *I have studied a post grad in computer education and as a result have seen some very good and some very poor software. This is at the top end of the scale. I was disappointed with the responses for the CD-ROM in the survey. I feel this is no fault of the CD-ROM or the information, but possibly the target audience. There is the question of how computer literate those assessed are, and what computer resources they had at their disposal.*
- *A CD-ROM format is entirely appropriate for the presentation of curriculum materials at the coalface. All school technology departments have microcomputers with CD-ROM readers. In addition to this, many teachers today have access to a school loan, or their own, microcomputer and will be able to access this material outside of normal school hours. However, it would be sensible to make some hard copies of the material available for those teachers who are not yet computer literate.*

Additional Comments:

The following comments provide additional context to the above findings:

- *Students from the Gold Coast Campus of Griffith University in their study of Technology as a Key Learning Area have been working with teachers from some of the adjacent Gold Coast primary schools involved as trial and pilot schools. During these tutorials and workshop sessions, the planning wizard was demonstrated to students and this generated substantial interest by students in the CD-ROM. The planning wizard was seen by student teachers as a very effective and efficient tool for planning. The planning wizard concept is an excellent platform for teacher and school planning and it is recommended that further development be undertaken to build on this excellent concept.*
- *My area of expertise is in upper secondary school education and as such I am very supportive of the work that has been completed and my recommendations are all favourable.*
- *In the section on information, there is a need to consider ethics of information. In an Aboriginal context and in some other cultures, not all information is presumed as public or should be public. It is not that it is personal information but is not public information.*
- *This CD-ROM has been shown to some teachers in the Wide Bay region who indicated that this was exactly what they need to move forward with technology education.*

The Review Team

James Fisher (Cert Ed, Cert Ed Tech, MSc, PhD) holds masters and doctoral degrees addressing information technology and school technology education studies from Cranfield University, as well as teaching qualifications from London University and Cambridge Institute. He also holds an Electrical Trade Certificate from the Royal Navy. His career has included appointments at Sunshine Coast University College and The Open University. He was Senior Research Fellow in School Technology Education, the University of Tasmania and Co-ordinator of the University of Oxford's Schools' Science & Technology Centre. His responsibilities at Oxford were the management and development of Britain's premier, university based, school science and technology teacher support service. He has several years experience in the UK teaching science-linked technology and design as well as technical studies to students from 9 to 16 years. His classes have included special students and children withdrawn from school for psychological reasons. His research includes topics such as IT in education; information usage by technology teachers; management of change; science-linked technology education; student attitudes to technology and technologists. Dr Fisher has very wide-ranging experience and expertise, with a strong focus in technology education and policy/management.

Matthew Dempsey (Dip Tch, Grad Dip Ed [Computer Ed]) is a manual arts teacher at the Marist Catholic College, Ashgrove. He has qualifications in a range of fields including Welding, CAD, Occupational Health and Safety and Vocational Education. Matthew is a qualified Vocational Education Instructor and Assessor and has worked in cooperation with TAFE colleges in the Brisbane area. Matthew is a member of the College's Industry Management Committee, which provides him with direct links to people in business and industry.

Glenn Finger (Dip Tch, BEd St, MEd, PhD, MACE, MACEA) is lecturer and convenor of the Bachelor of Education (Primary) and the Bachelor of Arts (Psychology)/ Bachelor of Education in the School of Education and Professional

Studies at the Gold Coast campus of Griffith University. Prior to his appointment to Griffith University, Dr Finger was deputy principal at Coombabah State School, where he was a key participant in the Sunrise Project that was concerned with integrating learning technology into schools. He has particular expertise in learning technology initiatives and research, and was the evaluator of the Sunrise Project. Glenn has 24 years experience as a primary school teacher, deputy principal, and acting principal in primary schools in Queensland. He is a member of the Australian Council for Computers in Education, Australian Association for Research in Education, Australian College of Education and the Queensland Society for Information Technology in Education.

Bronwyn Fredericks (Dip Tch, BEd, MEd, M Ed St) is studying towards a PhD in Applied Science (Health Science) at Central Queensland University. Her area of study is Aboriginal women's access to health services and issues of empowerment. She is currently employed as a lecturer in the School of Health and Human Performance at CQU. She has previously worked as Senior Project Officer, Disability Services Program in the Department of Human Services and Health. Prior to that, Bronwyn spent four years teaching home economics in Queensland State High Schools. Bronwyn is chairperson of the Bidgerdii Aboriginal and Torres Strait Islander Community, Vice-President of the Central Queensland Community Legal Service, a member of the Rockhampton district Health Council and a committee member of the Aboriginal and Islander Community Resource Agency. She has published various papers and has presented at several conferences at local, national and international levels.

Lynne Hais (BEd, Dip Tch) has been principal of some of the largest and most challenging primary schools in the Queensland State system. She also served as a Quality Assurance Officer for Education Queensland where she played a central role in assessing the impact of 'Shaping the Future' initiatives. She is currently quality assurance manager for EdData. Lynne has a strong interest in education of children with special needs. Her knowledge of primary school education in Queensland from the perspective of the administration of schools provides a special contribution to this review.

Appendix 6: Technical and Design Aspects of CD-ROM

Critique – Materials in Development Disc

David Anderson

1. Introduction

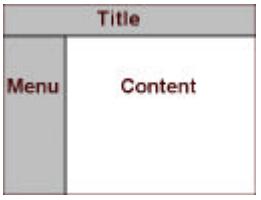
This document is written from the perspective of a web site developer and presents a critique of the 'Materials in Development – Pilot Draft' CD-ROM. The focus of this document is on presentation and design, rather than the content itself. A target audience ranging from inexperienced to advanced users is expected.

2. First Impressions

- The presentation has a clean, uncluttered style with good use of colour.
- The presentation is extremely difficult to navigate without getting lost due to a poor menu system and a very deep site structure
- There is a lot of content on this disc that is not immediately obvious until you really start to explore it.

3. Content Style

- The content is informative and extends beyond itself by linking to a number of external resources. The colour scheme makes a pleasant change from the popular blues, greens and whites while being easy to read.
- The design relies very heavily on JavaScript to drive the syllabus menu system. This JavaScript is kept as generic as possible, which should allow the content to be viewed similarly across a variety of browsers provided they are JavaScript enabled.
- The layout follows a very popular format consisting of a static title frame with two lower frames, one for the menu and one for the content. However, the most notable deviation from this style is the presence of menu items in the title frame as well as the syllabus menu items that appear in the menu frame only after clicking the syllabus link.



4. Recommendations

- The menus need more work to make the presentation successful. I would suggest that the four menu items in the title frame table be shifted to the menu frame. Menu items with dropdowns should feature an arrow or plus/minus graphic to indicate to the user that there are more selections available, as in this example from the Microsoft website. Also, the menu code should be tidied up to stop the frame refreshing whenever a dropdown menu is opened as this can be distracting and confusing.

- Shifting the menu items to the left hand side of the screen also gives you the opportunity to gain a little more 'Real Estate' for the content frame by dispensing with the title frame altogether. A larger area for your content will give you more room for some white space. This is important as it stops your presentation from looking cluttered and makes it easier to read.

- Disabling scroll bars on the menu frame keeps the presentation looking tidy when the menu extends beyond the bottom of the

browser page. As long as users are provided with intuitive symbols, like the Microsoft example above in 4.1, they can close menu subgroups that they are not using if they find that some menu items disappear off the bottom of the screen. Alternatively, if you really want users to be able to scroll the menu, you could place a small non-scrolling frame above a scrolling menu frame. This small frame would contain your logo (as shown) as well as the home and print menu items.

- When creating pages with your content, avoid presenting the page paragraph by paragraph with *more* and *back* links as this can be disorienting for users. Users are much more comfortable scrolling through a document as they read.
- Try to be consistent in your colour schemes and heading styles.
- Content page titles should exactly match the menu item that links to them. This helps users to navigate the presentation more effectively as they can quickly see by looking at the title which document they are currently viewing.
- Avoid using links in content pages unless they are logical progressions to the next document. Make all content pages available via the menu frame. Creating a menu group called Appendixes can link pages that don't relate to a single menu group. Refer the user to links in the menu rather than linking to them directly from within the content. This makes navigation easier for users as they can quickly refer back to pages via the menu.
- Links to external web sites should open a new browser window to minimise disruption during a user session. Also, opening an external web site inside a frame may produce scripting errors due to frame anti-spoofing security.

David Anderson presently works as a Senior Systems Administrator for a Brisbane Corporate Legal Firm. He has approximately 15 years experience in software development and has developed a number of internet/intranet web sites since 1995.

Review of Prototype CD-ROM

Geraldine Torrisi-Steele

Background Information

Intentions:

- The CD-ROM is to explain the new curriculum to teachers and help them with planning for teaching.
- It is to do much more than simply supply a set of documents. A teacher should be able to use the CD-ROM to find out what the new curriculum is about and how to plan, teach and assess students.
- One of its aims is to demonstrate the potential of the medium.
- It is intended that the planning wizard save teachers a lot of time in the process of planning a school program.

Background:

- It is being used in a pilot process for a new curriculum-in-development. The new curriculum is for Years 1 to 10 and the syllabus is framed in terms of core learning outcomes.
- This outcomes approach will be new for most schools and teachers who have traditionally worked from sets of content with specified teaching processes. The idea is that the syllabus defines the intended outcomes and the school systems or schools decide how to achieve them. Therefore there is a section in the CD-ROM about outcomes.
- Eventually, the CD-ROM is supposed to link to other useful websites that will give teachers ideas on how to teach.

Review focus:

- What is the potential of the design given the intentions? Are there ways to 'do it better'?
- The current product must be viewed as a prototype and thus will need to look behind the surface features (which can be expected to be lacking or rough) and the developmental glitches, and focus on the basic design and structure.

Against this background, the review focuses on top-level structure, functionality and navigation support. Finer features of interface design such as screen layout, colour, icons etc. are not addressed given the preliminary prototype status of the project. Some suggestions as to how a companion website might be used to enhance project goals are also made.

Top Level Structure

Criteria:

The homepage for electronic materials needs to fulfil multiple roles. It:

- identifies the purpose of the product
- directs attention to the product's focus
- gives a clear overview of main content – the menu items on the homepage should be appropriate to the interests of the intended audience and in alignment with website aims.

Comment:

- The current homepage design establishes the purpose and focus of the CD-ROM.

- However, the homepage, in its current form, fails to provide main menu items that are important in providing the user with an obvious and clear overview of the main content of the materials.
  The instructions on the homepage directing the user to the menus at the top of the page to begin using the materials are best replaced by menu items integrated into the homepage, perhaps as intuitive (labelled) icons.
  The instruction directing users to the top of the screen to find the menu items, adds complexity to the use of the materials and causes the user to perform unnecessary 'scanning' of the page. The menu items in the top frame can then be used as navigation aids when the user is actually within one of the menu content sections.

Criteria:

Electronic materials need to be structured so that information makes sense to the intended user group.

Comment:

- The overall organisation of the Queensland School Curriculum Council Years 1 to 10 Technology Curriculum Development Project CD-ROM appears consistent with how the target audience would categorise information.
- Main menu headings chunk material into appropriate sections and present relevant top-level links using terminology with which users will be familiar.

Functionality

The prototype of the Queensland School Curriculum Council Years 1 to 10 Technology Curriculum Development Project CD-ROM offers the user the ability to print screens using a 'custom' print button and to plan a unit of work using a wizard.

Print Function

Criteria:

A printable format should be provided for CD-ROM/ web screens that most likely will be printed by the user.

Comment:

- The custom print function included on the CD-ROM is an important feature since novice users often fail to print required screen area when framesets are used.
- Given that users sometimes find framesets confusing in terms of which portion of the page will be printed, the print button, which is currently located over the left frame, needs to be located in proximity with the screen that will be printed.
- It is also suggested that the print function prints a 'printable' version of the page rather than the screen itself. This is especially important in view of the current layout of many 'pages' within the package.

  For example, screens such as those in EVALUATION AND ASSESSMENT – MAKING JUDGMENTS are not the best format for printing given that different chunks of information are spaced out vertically on the page (so that when a link at the top of the page is clicked, the target information is further down on the page).

  This screen format is unsuitable for printing because of:
  - waste of paper
  - increased wait times for printing since there are many more pages (with only small amounts of information)
  - printed materials which are not 'reader friendly'

The printable version should be formatted specifically for printing purposes, being laid out to produce a complete and suitably print formatted document.

Planning wizard

Criteria:

- The intention is for the package to explain the new curriculum to teachers and will also help them with planning for teaching.
- It is intended that the planning wizard save target users time in developing units of work.

Comment:

- Given the intentions of the package, the planning wizard is a very useful and forms an important component of the package that is likely to be of major interest to the target users.
- It is conceivable that, having accessed background information from the package, some users will want to return to the CD-ROM simply to use the planning wizard.
- For these reasons, access to the planning wizard should feature more prominently in the menu items so that users can access it directly from main menus rather than having to 'find it' within one of the other menu sections.
- The planning wizard's importance perhaps warrants the use of an icon/link presence of its own within the main menu items. In order to provide simple access to menu items and to further highlight the potential of the medium, it is suggested that the planning wizard also feature on the homepage menu.

Functionality of the planning wizard

- The layout for the wizard is clean and very simple to use.
- Fields appear to be appropriate to intentions.
- The ability to finalise the work plan as a complete formatted page works well.
- Presenting the wizard in a new window is good. The user can keep the window open while browsing through other materials in the package.
- While opening a new window for the wizard is logical, it must be noted that spawning of new windows can be confusing for novice users, especially since the forward and back buttons suddenly become inactive and the parent window is often times hidden behind the new window. It is suggested that new windows are opened without the browser standard menus and include a 'custom built' close or back type of button.
- In its current form, closing the wizard window after typing some information into the forms causes the entered information to be lost. This could be a source of frustrations for users. For example, the teacher has entered information but then has begun to browse other pages for more information; in the process the wizard window is inadvertently closed resulting in loss of all entered information.

Other suggested functionality for planning wizard:

- Given that teachers using the wizard are new to some of the ideas and approaches presented in the new curriculum, it is suggested that the wizard template more closely integrates appropriate links to reference information contained elsewhere in the package. In its current format, the instructions in the wizard suggest that if relevant text is found in other pages of the package they may be copied and pasted into the template. Rather than require the user to search for sections that may contain relevant information, it would save time and frustration if some relevant links back to information in the body of the package were provided adjacent to each of the main headings of the wizard.

- Access from the planning/wizard section to a set of exemplary plans would be a useful reference for teachers. The planning section might even incorporate some poor work plans with comments about how they do not satisfy the criteria of the new curriculum. It would be useful if exemplary plans could be edited/modified by teachers within the wizard to suit their own purposes better.
- Easy access to other planning resources while teachers are working with the wizard would streamline the planning process and demonstrate the potential of the medium to integrate information from a variety of sources. For example, the wizard may include a suggested resources section which, based on the teacher's choice of say learning outcomes and cross-curricula areas, will 'intelligently' select resource ideas relevant to the selected curriculum area (e.g. having checked mathematics, the web links presented might be to a mathematics lesson resources web page).

Navigation Support:

Irrespective of the quality of content, multimedia materials will fail to engage users and thus fail to achieve the intended goal if navigation is poorly designed. Poorly designed navigation results in user intimidation/frustration and can result in intensifying any resistance to the new medium.

Criteria:

Navigation should

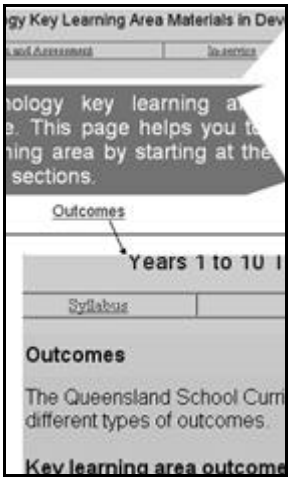
- Allow the user to:
  - easily locate and access required information
  - readily move through the package (consistent use of navigation features)
  - maintain a sense of 'location' at all times (where they have been/come from, what choices are available from the current point)
  - 'feel comfortable' to move within the information space
- Include menus which chunk material categories with which the user is comfortable and they should reflect the conceptual structure of the materials so that the user is able to form a high level 'mental map' of the structure of the site
- Work in a consistent manner throughout the package

Comments:

- There needs to be congruency between menus which appear on the left-hand bar and the tops links menu and submenus that often appear on the right-hand side.

  For example, on the left hand frame, when clicking on Syllabus – OUTCOMES on the left-hand side there appears a submenu ...

- However, when clicking on outcomes in the body of the right hand side:



  - There is no obvious access to the submenu which appeared when clicking on the left-hand side – there is nothing to direct user attention to the fact that this section may contain more information
  - The left-hand side menu does not reveal the submenus which were viewed when clicking on the left-hand side
- The concept of expandable menus on the left-hand frame is valuable in that it can provide the user with a 'map' of the structure of the section content. This enables the user to maintain a sense of location as they move through the package, as well as enabling easy access to any of the sub sections without have to search through pages. In its current form, the left-hand menu appears only when clicking on the SYLLABUS item on the left-hand menu. Ideally, clicking on any of the top bar menus would result in an updated expandable menu on the left-hand bar. Links to subsections within the main sections being reflected as expandable menus on the left-hand side.
- The main criticism of the navigation in its current form is that once users have entered a particular page there are no obvious visual cues that help the user to locate themselves within the package. For example, after spending some time reading through the information in a particular page, the content itself is the only clue as to which section of the menu the page actually belongs to. If the user has followed links along a tree of submenus, then current location within the content structure becomes increasingly difficult to track. Use of the left-hand menu as described above would help alleviate this problem.
- It is also suggested that as the interface is refined, coloured/icon tabs are used to represent each of the main menu items (syllabus, evaluation and assessment, in-service, planning). Perhaps with colour schemes/ icons of the left-hand frame changing to reflect the change in section. In this way, users have help with orientation through the use of visual cues of colour and icons, in addition to the menu and submenu text information on the left-hand side.
- Inclusion of a SITEMAP tool, which maps the entire site can provide users with further assistance in visualising a conceptual map that shows how the information is organised.

Navigation within pages

- Navigation within pages of the style such as those in the EVALUATION AND ASSESSMENT – MAKING JUDGMENTS section might be aided by providing page numbers across the grey bar (which currently has a back link attached only- the grey area seems to suggest some kind of navigation bar within the

section – use it this way with consistently placed forward back and page number functionality). The current 'page number' may be highlighted and the user is able to move forward by clicking more or by clicking on the page number. Again, this is important from the point of view of the user being able to retain a sense of location as well as being able to easily access sections of the package.

- Long pages that currently exist may also be problematic in terms of load time – best to divide up into separate html files rather than one very long spaced out page. Use the navigation and the printable format of the pages as described previously

Suggested Extension to the CD-ROM Materials

The obvious advantage of CD-ROM based materials is the issue of access for those who do not have easy access to Internet-based materials. However, while the CD-ROM provides a good basic starting point, web-based materials may be integrated with the CD-ROM. The development of a companion website to the CD-ROM would be desirable for a number of reasons:

- materials and information can be continually updated
- easy access to a great range of resources: live links to useful resource websites and multimedia-based resources (The website would serve to organise these links and resources for easy access.)
- able to foster a sense of community among teachers from around the state. (A companion website might include Internet communication tools such as live chat groups, discussion groups and mailing lists. A 'sharing of ideas space' can also be created by enabling teachers an area where they can upload and share work plans with other teachers.)

Geraldine Torrisi-Steele (BSc, BEd, MEd Studies) has many years experience in producing and designing educational multimedia materials and providing support to teachers wishing to incorporate new technologies in their teaching. She has worked at James Cook University authoring and designing multimedia course materials for the Remote Area Tertiary Education Project, which delivers course materials for the diploma and bachelor of teaching to Aboriginal and Torres Strait Islander students in their own communities. She was project manager/instructional designer for a pilot project delivering university multimedia-based courses to Mt Isa Mines students in Mount Isa. In 1994, Geraldine held a multimedia production appointment at Griffith University, working with academic staff to develop multimedia courses. More recently, Geraldine was educational designer with Griffith Flexible Learning Services, providing design support to academics developing courses with web-based components. She is currently lecturing in the school of Information Technology at Griffith University. Geraldine offers technical knowledge of interactive multimedia technologies and experience in the application of technologies to enhance the teaching and learning experience in both on campus and distance education modes.

Evaluation and Review Report Series

1997 Year 6 Test: Report on School Survey

Evaluation of 1998 Queensland Years 3 and 5 Testing Program: Results of Principal and Teacher Surveys

Evaluation of 1998 Queensland Years 3 and 5 Testing Program: Results of Principal and Teacher Surveys (Inclusivity Issues)

Evaluation of 1999 Queensland Years 3, 5 and 7 Testing Program: Final Report

Evaluation of the Queensland 1998 Year 3 Test Resource Kit: Final Report

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

Evaluation of the Years 1 to 10 Technology Curriculum Development Project: Report 2

Evaluation of the Years 1 to 10 Technology Curriculum Development Project: Report 3

Evaluation of the Years 1 to 10 The Arts Curriculum Development Project: Report 1

Evaluation of the Years 1 to 10 The Arts Curriculum Development Project: Report 2

Evaluation of the Years 1 to 10 The Arts Curriculum Development Project: Report 3

Review of Queensland Literacy and Numeracy Testing Programs, 1995 to 1999 (Issues Paper)

Review of Queensland Literacy and Numeracy Testing Programs, 1995 to 1999

Review of the Form and Nature of the Queensland Year 3 Test

Copies of these reports are available from the Queensland School Curriculum Council website: http: //www.qscc.qld.edu.au