Evaluation of the Years 1 to 10 Technology Curriculum Development Project

Report 2

Prepared for the Queensland School Curriculum Council by

EdData INDEPENDENT PROFESSIONAL EVALUATION & RESEARCH

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This evaluation was designed and managed by Ted Hobbs. Patricia Connell, Lynne Hais and Ted Hobbs prepared the report. Patricia Connell, Lynne Hais and Ted Hobbs conducted the interviews with pilot teachers. Final editing was done by Lyn Calcutt.

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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/

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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 extends over Term Two and Term Three, 2000. This report covers activity during the first of these terms, when 50 schools were engaged in applying the draft syllabus to planning, teaching and assessing units in the Technology Key Learning Area. In April, before the term commenced, up to three teachers from each school attended a two-day conference in Brisbane and were supplied with a copy of the draft syllabus, draft elaborations and CD-ROM. In the final version of the curriculum documents, the draft elaborations will form part of the sourcebook guidelines, but for the purpose of the pilot, the draft elaborations were provided without the explanation of their purpose and context.

The evaluation was concerned with the appropriateness, effectiveness and efficiency of the draft materials in a range of classroom and school contexts. Three approaches were used: interviews with teachers in the pilot schools, interviews with school administrators in the pilot schools and a questionnaire survey of pilot teachers.

The evaluation found that

The first phase of the pilot has been successful in explaining the draft syllabus to teachers and showing them how to implement planning and teaching processes that can assist students to demonstrate the core learning outcomes.

The teachers believed that they had a good understanding of what Technology KLA entails and most supported the general direction of the draft curriculum. Most of the pilot teachers were highly committed to the concept of Technology as a key learning area for Years 1 to 10.

The draft syllabus-in-development was set out in a clear manner and was basically sound in its organisation by strands. Most of the pilot teachers found the various components to be effective. The level statements and core learning outcomes were seen to make sense to teachers. The outcomes were seen to match the level statements and both were seen to show progression from one level to the next.

The presentation of curriculum materials in the CD-ROM format was a significant feature of the pilot process. At the time of the data collection, many of the teachers (around two out of five) had not explored the CD, mainly because they did not have access to suitable hardware or were inexperienced with computers. Those who had explored the CD were mixed in their reactions: Most applauded the planning wizard. Some were critical of the layout in the pages. Many praised the CD for its flexibility and its potential to help teachers understand the curriculum. Most indicated that print-on-paper materials would still be needed.

There were some indications that for the primary years, adequate resources and time may not be available. Further exploration of this possibility will be necessary in the next phase of the evaluation. More data will also be needed on the workability of the draft curriculum materials, particularly the elaborations, in terms of students' and teachers' needs.

In general terms, further development of support materials should ensure that plenty of examples of planning and teaching are available to assist teachers to understand the core learning outcomes and apply them in their schools and classrooms.

The conclusions of the evaluation as set out in the report were:

1. By the end of Term Two, 2000, the pilot was progressing well in most of the pilot schools.

2. The concept of Technology as a key learning area in a core curriculum for Years 1 to 10 has high levels of support among teachers and administrators in the pilot schools.

3. The general direction of the draft syllabus has high levels of support among the pilot teachers.

4. Teachers generally consider the four strands – Technology Practice, Information, Materials, Systems – to be effective organisers of the syllabus.

5. The elaborations are highly effective in helping teachers to understand the syllabus and saving them time in the process of planning.

6. Those teachers who had explored the CD rated it as moderately or highly effective in helping them to translate the draft curriculum into practice.

7. The various components of the draft curriculum materials are basically workable for teachers and effective in explaining the key learning area to them, but more refinement is necessary.

8. The CD-ROM format for curriculum material promises great advantages in providing teachers with effective and flexible ways to understand the curriculum and translate it into practice.

9. Many teachers, while valuing the advantages offered by the CD, would prefer to have print-on-paper materials available as well.

10. More data is needed on the workability of the elaborations considering students' needs and abilities as well as teachers' training and expertise.

11. Some of the pilot teachers have doubts about the feasibility of the draft curriculum considering the resources and time that may be available to Technology KLA. Initial in-service materials may need to focus on time and resources issues.

12. The support materials for the curriculum should include abundant specific examples on translating core learning outcomes into school and classroom practice, clear explanation of the concept of Technology as a key learning area and guidance on obtaining and managing resources for teaching.

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 Semester 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 extends over Terms Two and Three, 2000 (3 May to 15 September). The present report covers pilot activity during the first 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 Two, 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 and across 8 levels of increasing sophistication and complexity. The four strands were:

- Technology Practice
- Information
- Materials
- Systems

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. 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 material
- A guide to planning
- Links to relevant websites

The information sections of the CD 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 period of the present phase of the evaluation, the CD was still in its early stages of development.

1.3 Evaluation Focus

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

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 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

Three approaches were used in this phase of the evaluation:

- 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 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, 18 schools were visited, 28 interviews were held and 40 teachers were interviewed.

The school administrator interviews were held during visits to school 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. Ten administrators took part in interviews.

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

1.4.3 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 rate each aspect on a scale from Very Low to Very High. 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 185 questionnaires sent out, 92 were returned (50%).

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 Very Low to Very High. 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 included the question, "To what extent have you explored the CD?". Those who indicated Very Low or Low ratings on this item were excluded from the analysis of results on the other CD-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 31 of the 92 returns. Most of these concerned the CD-ROM. The listed comments were 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 parts of the survey related to the progress of the pilot: One set of three questions related to pilot teachers' understanding of their role in the pilot and their commitment to the concept of Technology as a key learning area. Another set of five questions related to the April conference for pilot teachers.

2.1 Interviews

2.1.1 School Administrator Interviews

In answer to the question "What have you heard from the teachers about the pilot?", the administrators indicated that positive messages were coming through. For example:

- *They're keen to be involved.*
- *They think it's good. It's giving them good things to do in the classroom. I've heard only positive comments.*
- *I have heard from some of the teachers. One is excited about the ability to develop a technology unit. It was much less work than another KLA she was working in.*
- *They like the syllabus and find it easy to use. They were a bit bamboozled at first with the amount of outcomes and what to do with them and how to pick where the kids are at. I have helped them with how to work with outcomes and now they are OK.*

In answer to the question "How realistic has their task been?", all but one of the responses were positive. For example:

- *They're enjoying it.*
- *Very realistic. They can incorporate it into what they're already doing. They like the thematic approach.*
- *Some are quite stressed – we are a new school, having opened in 1999. We were a trial school in 1999. Now, in 2000 we are a pilot school.*
- *I think they have taken it in their stride. I have heard no complaints. I think it is realistic.*
- *They haven't expressed concerns. If they needed anything it would be more time to work with the other staff members who are involved.*

In answer to the question "How successful have they been?", the administrators gave generally favourable responses:

- *They're only new at this. They're very keen and interested. The Project Officer's visits have been invaluable.*
- *Various levels of success. I've heard no complaints.*

- *Too early to tell.*
- *I think quite successful. There hasn't been any griping about it as there has been with science and other things in the past.*
- *Some have been very successful, others have not been successful at all. I think it comes down to their organisational strategies.*

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. Some saw direct benefits to students and teachers:

- *By knowing what's going on. We're in on the ground floor. The Professional Development is valuable. The time given is very much appreciated. It will be valuable for other teachers.*
- *It will smooth out the introduction of the Technology KLA. We're getting in on the ground floor. The access to the Project Officer has been very beneficial.*
- *The Department – Manual Arts has benefited. It's more student centred.*
- *Students are aware of the process – this is an enormous benefit. The ideas, swapping, sharing, planning etc. have been good for the staff.*
- *Not really school wide, but a core of teachers is motivating others.*
- *In terms of teacher growth, professional growth the school has benefited.*
- *Our school is at the cutting edge of the formulation of this document. We have been able to clarify things with the project officer. This has helped the project team to clarify the documents.*
- *By having input into the new document and broadening the awareness of teachers.*

2.1.2 General Interviews

In the general interviews, pilot teachers were asked for messages to the project team, the evaluator or the Council. A second question asked about their progress with the pilot. Two questions concerned their support for, and level of understanding of, the concept of Technology as a key learning area.

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

Many of the teachers were appreciative of the conference and the efforts of the Project Team in the pilot process. For example:

- *The Project Team has been very supportive. Their visits are very useful.*
- *The conference was helpful - especially hearing the trial teachers and "How do you start and where do you get ideas from."*
- *The visits from the Project Team have clarified what Technology involves. Waiting for information tends to stop innovation in the area.*
- *Well done - I attended the conference - Excellent! The syllabus was "dry." The conference changed this thinking and got me excited.*

Some of the secondary teachers pointed to problems they were having with assessment and reporting of students' achievement:

- *Our main problem is arriving at assessment. This is a problem for everybody (other schools) apparently. How does level 4 relate to VHA etc.? We have to work in both outcomes and criteria-based assessment. We are gradually coming up with self-evaluation, criteria sheets and tracking booklets, student profiles to solve the problem to some extent. We have done what we think will be suitable. We assess in outcomes then convert it to an overall mark for the school report. This is a bit suss perhaps.*

- *I am concerned that the suggested methods of assessment are very much based on teacher judgement and it will be difficult to justify to parents why a student is at level 4 and not 5 etc.*
- *For assessment, the projects are not comparable from student to student.*

High levels of enthusiasm showed through in some teachers' responses:

- *We are quite happy with it. The elaborations document is excellent. We found it really easy to use.*
- *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.*
- *I think it is a very exciting new KLA.*
- *The developing of thinking and problem-solving skills is laudable. Now teachers will have the means to do this.*

2.1.2.2 Interview question: What progress are you making with the pilot in your setting?

The majority of the interviewees were satisfied with the progress in their schools. Almost all of the teachers who had attended the conference, both trial and pilot, had developed units. Many teachers were enthusiastic about their units and the students' response to them:

- *The students seem to be enthusiastic about doing it. The feedback from them is quite positive. It seems to be well accepted by most of the teachers. Every teacher is doing it to some degree.*
- *We have had success, for example a year 10 boy who couldn't read or write well was an incredible cook. When we came to an assignment using a design brief, he did a practical hangi and had incredible success leading him to have increased confidence. This helped him have the confidence to apply for an apprenticeship chef position and he got it.*
- *I've learned a lot about the concept. It's much broader than I first thought. I've learned much about my students and to have fun while being adventurous and creative.*
- *The children are responding enthusiastically. I'm integrating with other KLAs. The students are cooperating.*
- *The kids like the design briefs. This may be because we have left them open ended.*
- *I trialled the syllabus with one class last year, and stayed with the old Manual Arts with another. The difference in interest was noticeable between the two classes. Also, the kids in Technology KLA had more ownership of their projects. Traditionally Manual Arts is male dominated, but in Tech Year 8 a lot of the girls have responded very well and find it relevant to them. They like the way it is taught with the design briefs.*

Most of the few teachers who reported a slow start to piloting the materials blamed time pressures:

- *I have done a unit plan and I am trying to teach it in my class but I am falling behind time. Here we have had a lot of time lost with the work bans, chicken pox, camps etc. I am starting to fall behind.*
- *The time constraints here make difficulties. We have a technology room that is used for many other things. The facilities are good but access to them is a problem.*
- *Here in my group we have had a 7-week term. This means we are not progressing very well. We haven't had time to get to it except to plan what we are going to do. We will get into it next term.*

2.1.2.3 Interview question: To what extent do you support the concept of a Technology KLA within a Years 1 to 10 core curriculum?

Ratings on this item were consistently high or very high.

Very High: 20	High: 12	Moderate: 2	Low: 0	Very Low: 0

Two interviewees did not record ratings on this item.

Many of the teachers, particularly primary teachers, believed that the Technology KLA would equip children with appropriate and useful knowledge and skills for living in a technological society:

- *It is about time. Kids have ideas and don't know what to do with them. Technology gives them a practical way to see how their brains are working. They get learning here that they cannot get from other KLAs. It is transferable and practical.*
- *I think kids have got to think like this. They have to know how to survive in the world and technology is part of it. The curriculum is very good in giving a broad view of what technology is. It can be integrated with a lot of other subjects.*
- *I believe it is a necessary part of keeping Australia a smart country.*
- *I think it is very important. My students have been doing it since the start of the year and their problem-solving is really good and they know how to go about things much better. They are a lot more independent in the design and making of things.*
- *In today's world you just have to. That is one of the new basics – solving problems.*
- *Very High. Very useful to develop the children's skills. Very useful life skills. More relevant to their life than other subject areas.*
- *Society is going in this direction. Students have enquiring minds. Students get excited, interested, purposeful.*

Several teachers advocated the integration of Technology KLA into other curriculum areas.

- *An important point – we are struggling to cope with the broad curriculum. It must be integrated with other KLAs. QSCC should assist teachers to integrate – not to isolate Technology.*
- *It can be easily integrated into other KLAs such as Maths or English. You can plan a unit on Technology and bring all of the other areas into it.*
- *The concepts are important but I would hate to see it taught as a separate subject.*
- *It helps with design, planning etc. But perhaps it could be part of another KLA – an extra KLA in the curriculum is a concern for teachers.*

2.1.2.4 Interview question: How well do you feel you have a grasp of the concept of Technology as a KLA?

The pilot teachers were generally quite confident of their understanding of Technology as a key learning area. Ratings were mostly high or very high.

Very High: 13	High: 13	Moderate: 8	Low: 1	Very Low: 0

Two interviewees did not rate this item.

Not surprisingly, the teachers who rated their understanding as Moderate were from the pilot schools rather than the trial schools. There was no difference between primary and secondary teachers.

Some teachers said the concept was not something totally new to schools:

- *The more you use it the better you understand it. It becomes more natural. You see that it gives a name to things we were doing already.*
- *It makes sense to me. It's been an unwritten part of the curriculum before.*
- *The word still implies that it is something new. But it is taking an idea and bringing it to fruition, which is not a new thing.*
- *I've been doing it my entire career. Now it's more student centred, but I enjoy the KLA. I need to be more familiar with the current terminology.*

Some were confident that their grasp on the concept would improve:

- *I am still learning. The more units I do the more comfortable I will be with it. It is just time I think.*
- *I have a good idea of the big picture. I'm still working on the details.*
- *Still learning the terminology.*

Some teachers stated what they needed to become more confident:

- *I need much more PD in this area – I need more ideas, eg a sourcebook.*
- *I still have questions as to implementing it across the school.*
- *I feel I need much PD in this area.*

One teacher told of her experience:

- *What made me really grasp it was having all of the tables of outcomes on single A3 sheets and pinning them on the wall. These should be laminated and put on the wall in every classroom and staffroom. This will help students know what is expected.*

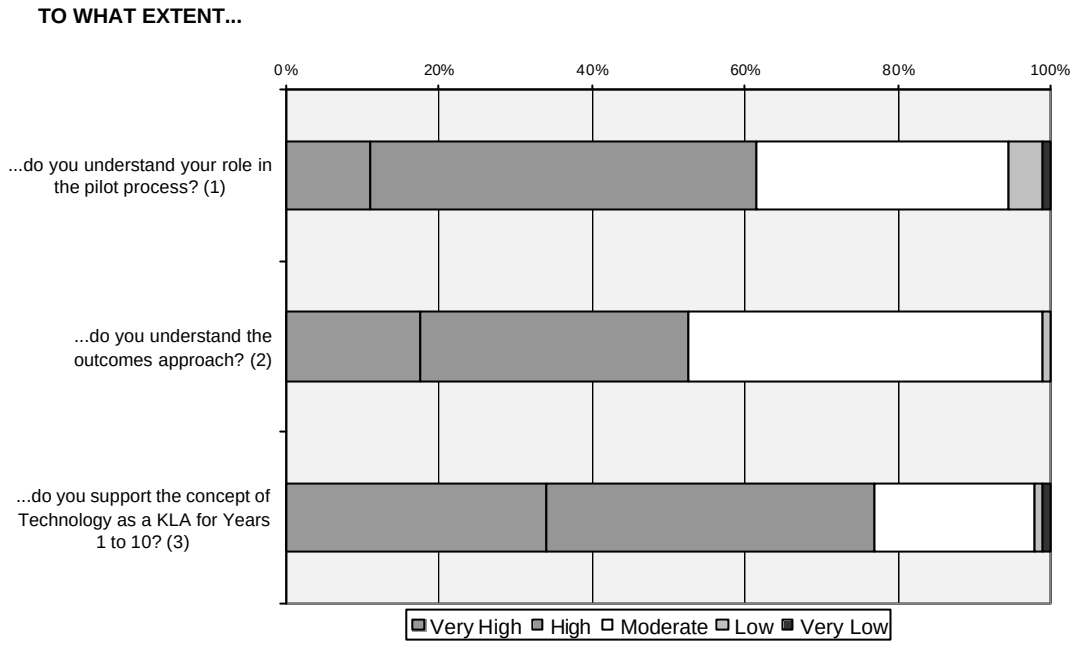
2.2 Survey

The survey included three questions related to progress of the pilot and a set of five questions on the effectiveness of the April conference for pilot teachers. These are shown in Displays 1 and 2 with the distribution of teachers' responses. The results for the items on the April conference are shown only for those teachers who attended.

Displays 1 and 2 show that:

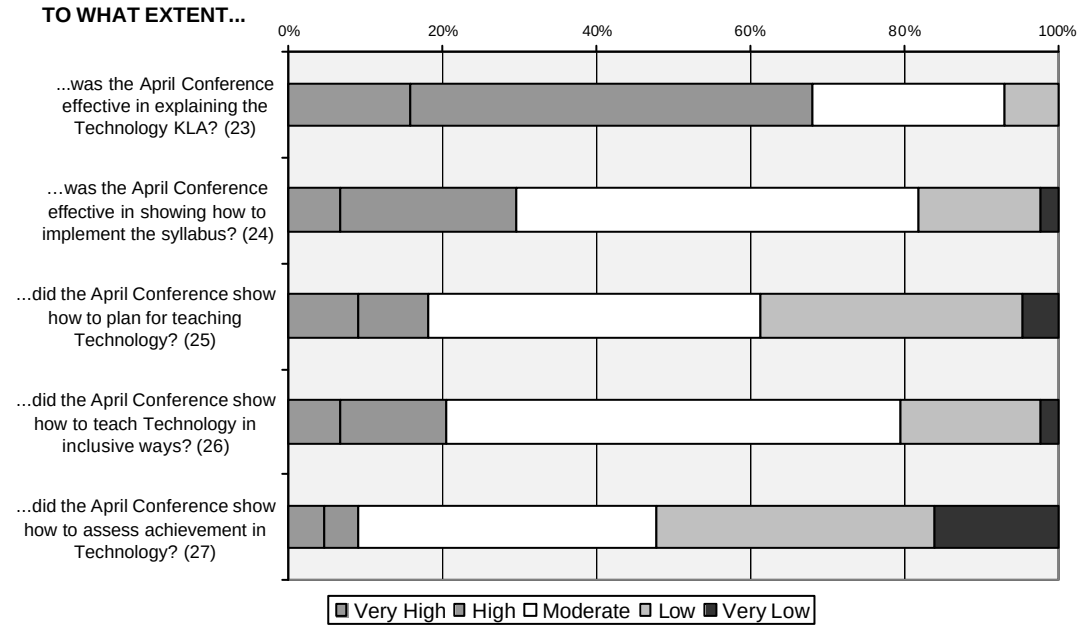
- The April conference for pilot teachers was:
  - Highly effective in explaining the Technology key learning area
  - Moderately effective in showing how to implement the syllabus, plan for teaching Technology KLA and teach Technology KLA in inclusive ways
  - Unsuccessful in showing how to assess achievement in Technology KLA
- Pilot teachers had moderate to high levels of understanding of:
  - Their role in the pilot process
  - The outcomes approach
- Pilot teachers showed high to very high levels of support for the concept of Technology as a key learning area for Years 1 to 10.

Display 1: Responses to Survey Items 1-3 (N=92)



Display 2: Responses to Survey Items 23-27 (April Conference) (N=52)

[Note: Non-attendees at conference excluded]



Appendix 4, Charts 4 and 5, show the mean scores on each item according to attendance at the April conference (attended or did not attend) and level taught (primary or secondary). For the most part, the ratings of the draft syllabus and elaborations are virtually the same for those who attended the April conference and those who did not. Further analysis (summarised in Appendix 5) reveals significant differences between the two groups on only two items, namely the teachers' ratings of the extent to which they understand their role in the pilot process and the extent to which they understand the outcomes approach.

It is not surprising that conference attendees gave the higher ratings for understanding of their role as pilot teachers. It may be surprising that they gave lower ratings for understanding the outcomes approach. Possibly the conference either confused them or alerted them to subtleties that the non-attendees were not aware of.

The overall result seems to indicate either that the teachers who did attend the conference gave the others a sound briefing on return to their schools or that the curriculum documents provide adequate briefing for teachers on the curriculum itself.

2.3 Summary and Conclusions

School administrators reported that positive messages were coming through from the pilot teachers. They saw the teachers as successfully handling a realistic task. Schools were benefiting by gaining familiarity with new developments and being able to influence them.

High levels of enthusiasm for the draft curriculum showed through in teachers' responses in interviews. The teachers were generally appreciative of the April conference and the efforts of the Project Team to date in the pilot process. Most were satisfied with the progress of the pilot in their schools. Almost all of the teachers who had attended the conference had developed units. Many were pleased with their units and the students' response to them. Some reported a slow start with their piloting because of time pressures.

Some of the secondary teachers pointed to problems they were having with assessment and reporting of students' achievement.

The pilot teachers strongly supported the concept of Technology as a key learning area in a core curriculum for Years 1 to 10. Most reported high levels of understanding of the concept of the key learning area. A significant number of comments, particularly primary teachers', revealed a widely held belief that the Technology KLA would equip children with appropriate and useful knowledge and skills for the technological society in which they live.

The survey revealed that the April conference for pilot teachers was highly effective in explaining the Technology KLA and moderately effective in most other aspects. The conference had limited effectiveness in showing teachers how to assess achievement in Technology KLA. Successful progress of the pilot was indicated by moderate to high levels of understanding of the outcomes approach and the pilot teachers' role in the pilot process.

The survey results supported the interview findings of high to very high levels of support for the concept of Technology as a key learning area for Years 1 to 10.

Attendance at the conference seemed to have only small influence on the pilot teachers' opinions of the draft syllabus document indicating that those who did attend gave the others a sound briefing on return to their schools or that the curriculum documents themselves provide adequate briefing on the curriculum.

We conclude that:

1. By the end of Term Two, 2000, the pilot was progressing well in most of the pilot schools.
2. The concept of Technology as a key learning area in a core curriculum for Years 1 to 10 has high levels of support among teachers and administrators in the pilot 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?

This question was addressed in detail in the first evaluation report (January 2000). For the present report, additional information is provided in terms of the opinions of the pilot teachers expressed through questions on the survey and the general interview.

3.1 Interviews

3.1.1 School Administrator Interviews

School administrators were asked "What are your thoughts about the draft curriculum?". Some were not familiar with it, but those who were made approving comments. For example:

- *I haven't had a good look at the documentation but classroom practice is very impressive. It's re-focussing us on Technology as opposed to narrow Information Technology.*
- *In terms of its layout and my familiarity with the other KLAs it is constructed pretty well.*

3.1.2 General Interviews

The pilot teachers were asked to rate the draft syllabus in general terms. Those who had participated in the trial were also asked to compare the pilot version with the trial version. All of the interviewees were asked to rate the effectiveness of the four strands as organisers in the draft syllabus and the appropriateness of the four elements of the strand, Technology Practice.

3.1.2.1 Interview question: In general terms, how do you rate the pilot version of the Technology syllabus-in-development?

The ratings were mostly high:

Very High: 2	High: 20	Moderate: 7	Low: 2	Very Low: 0

Six of the interviewees did not rate this item.

A frequent comment was that the draft syllabus was well set out in an easy to follow format:

- *Layout good to work with, simple to follow.*
- *It is easy to use. It gives a good understanding of what technology is about.*
- *I like it a lot compared to science and other syllabus documents that are current. It is very well set out and easy to understand. Good category names.*
- *It is fairly easy to follow. It is a similar format to SOSE and Science and that makes it easier to follow.*

- *I find it quite an easy document to work with. There is not a lot that is different from the SOSE and Science and that makes it easy to work with.*
- *The more I use it, the more workable and user friendly it becomes.*

Some made special mention of the outcomes and elaborations:

- *The elaborations are really good. It gives a lot of information about the outcomes and how to achieve them.*
- *I still don't understand some of the outcomes yet - they are too tightly packed. Sometimes it seems you have to be a real expert to unpack an outcome.*
- *I liked the elaborations.*
- *The elaborations are helpful and practical - we need more.*
- *The syllabus itself we don't use as much as we use the outcomes and elaborations.*
- *The outcomes and elaborations are great but I rate the syllabus low.*

Very few of the teachers made any critical comments:

- *It is a good document. The only weak point is in assessment. This aspect is very open and there are no concrete guidelines or standards.*
- *There is a need to wade through the jargon and discuss it with others. The Level Statements are difficult to grasp.*
- *They wasted a lot of paper to say a little. I think it would sit in a drawer and never come out.*

A few secondary teachers had difficulty with the levels, mainly because the area is new, and the students hadn't encountered the KLA at primary school:

- *I am not reaching the levels, maybe because it is not done in primary.*
- *It's easy to follow but the levels are far too high for our kids. I would also like a big chart to see all the outcomes on one page.*

3.1.2.2 Interview question: How does the pilot version compare with the trial version?

All of the pilot teachers who had participated in the trial phase agreed that the pilot version of the syllabus was an improvement over the trial version.

Some saw little difference:

- *It is much the same - there is not a great deal of difference, but I am not a great reader.*
- *It's pretty similar. There are more elaborations.*
- *Not a lot of difference - only a few words. It didn't affect us in our planning.*

Some noted areas of improvement:

- *Easy to use, much improved. Bound booklets imply more permanency and stability. It fits on my bookshelf.*
- *This one allows me to implement whatever theme or integrating unit I am using - what the children are interested in. The old one was more prescriptive. There is still a lot of good stuff in the old one though.*
- *It has improved. The Elaborations and Outcomes make it better.*

One saw improvement but expressed concern over "ideation" in the Technology Practice elements.

- *They have changed to "Ideation" but I worry when we introduce new language that is seen as jargon and not understood instantly. "Devising" is more user friendly English.*

3.1.2.3 Interview question: How appropriate are the four elements of Technology Practice?

Most ratings were high or very high, indicating high levels of approval of the four elements (ideation, production, evaluation and investigation).

Very High: 14	High: 12	Moderate: 2	Low: 0	Very Low: 1

Eight did not rate this item.

Most of the teachers were happy with the four elements because they were logical or because they reflected past practice:

- *They are great. It is similar to what we used to always do. It adds in student evaluation of their own work, which is good.*
- *It is easy to sit down with and choose what you are going to work on.*
- *From manual arts point of view that is exactly how we generally make the projects.*
- *Using and thinking these elements transfers easily to students and other KLAs (and even real life).*
- *Simple process for students to work through – allows them to see where they're going.*
- *They're highly appropriate. It's made clear you can start anywhere in the four strands when you start planning.*

Responses to the term “Ideation” were mixed. The term provoked negative reaction from some of the teachers who considered it to be jargonistic. Others approved:

- *I like these a lot. Ideation is a weird word but the idea is all right. It makes sense to kids when you explain it though.*
- *I like that new word ideation. It is good. It carries the meaning "ideas".*
- *These are great. Ideation is an excellent term.*
- *Ideation is a new word but a practice we have been engaging in for some time. The word is OK.*
- *Get rid of ideation and use one that people are more familiar with.*
- *I don't think that when you use words like that you are portraying a practical situation. I don't like ideation too much but I am getting used to it. It is not a word in common use – another piece of jargon.*
- *I would probably go back to devising rather than ideation. It is a word that is not in common use. Using an uncommon word is not the solution.*
- *Investigation is easy to do. Ideation is more difficult. The kids have difficulty suggesting ideas because they are not used to being asked. I don't really know what the actual term ideation means.*

3.1.2.4 Interview question: How effective are the four strands as a way of organising the KLA?

Ratings were mostly high:

Very High: 6	High: 21	Moderate: 4	Low: 0	Very Low: 0

Six teachers did not comment on this item.

Teachers rated the four strands highly for a variety of reasons. Some believed it enhanced the curriculum:

- *It covers all aspects of giving the student a holistic education.*
- *Very effective especially since Technology covers a wide range of the curriculum in a school. People can pick up various aspects.*

- *They are good. It seems to get everything I want to do in. It makes me think sideways. I have to expand the idea because of them and I am quite happy to do that. It adds breadth to what I am doing.*
- *A broad-based approach. They help to overcome the "Information Technology only" perception.*
- *It makes you think about the different elements of Technology.*

Most teachers found the four strands easy to put into practice.

- *The strands match pretty well the KLA.*
- *The strands are a good way to organise the KLA.*
- *It is easy to pinpoint what you are going to work on.*
- *They are excellent. Easy to understand with good words that everybody knows.*
- *It is a good way of organising. At first I was totally confused but once you get into it, it is quite good. Explanation by the project team helped.*

A few remarked on the usefulness of the strands for planning and assessment.

- *Easy to plot progress. Allow you to separate assessment items. A lot easier for marking.*
- *They are really clear and make planning much easier. Technology process especially is crucial to planning.*
- *Some overlap. Good for focussing for assessment purposes. It all integrates and helps management of planning and assessment.*

A few teachers had reservations about Systems and Technology Practice:

- *I am not sure about 'Systems'. I like the other ones. 'Systems' is maybe not a good title. My kids don't know what I am talking about when I use the word.*
- *'Systems' is still an area that is under debate – what to include.*
- *The term Technology Practice is a bit hard to understand. It doesn't, as a term, carry its meaning.*

3.1.2.5 General comments

Two items on the general interview allowed teachers to make general comments on any aspect. The first item asked for "messages" for the project team, the evaluator or the Council. The final item asked for "any other comments".

One isolated comment from a secondary school touched on the general direction of the draft curriculum, questioning its relevance to work preparation:

- *The relevance in the majority of work places is not high. Designing and planning is not what generally goes on in the work place, it is generally following instructions. What do employers want – designers or workers?*

3.2 Survey

The survey included two items relevant to the present focus question:

- To what extent does the draft syllabus represent a good direction for a 1-10 Technology KLA curriculum?
- To what extent do the four strands provide an effective way of organising the KLA?

The responses, shown in Display 3, indicate good support for the general direction of the draft curriculum and for the four strands. A majority of the teachers gave high or very high ratings to the two items. Low or very low ratings were rare.

Mean scores for primary and secondary and for conference attendees and non-attendees are shown in Appendix 4, Charts 4 and 5. No differences are apparent.

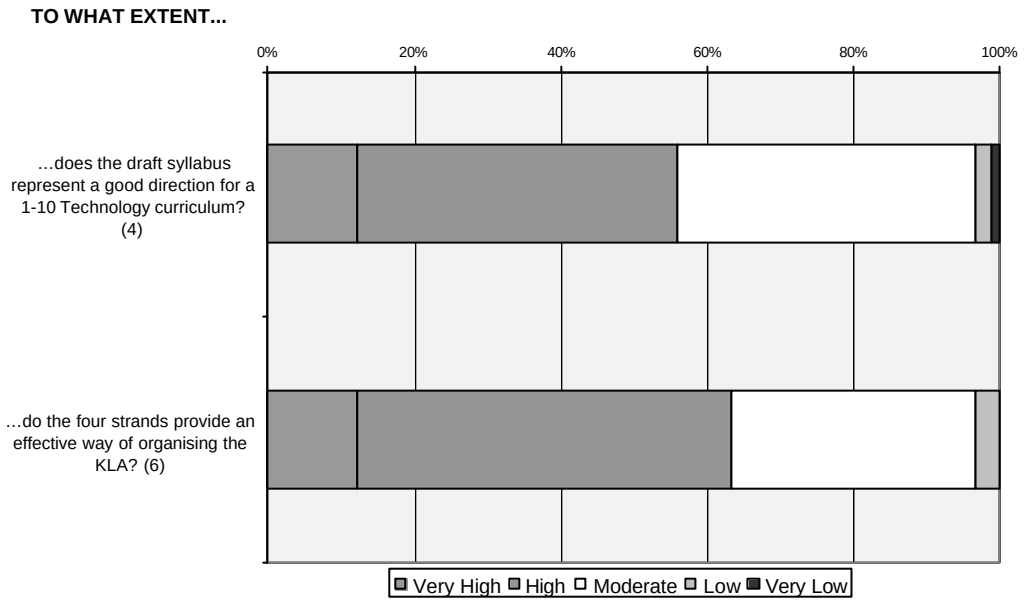
3.3 Summary and Conclusions

The interviews revealed that in general terms, the pilot version of the Technology KLA syllabus-in-development was rated highly by the pilot teachers.

The draft syllabus was seen as well set out in an easy to follow format. Many especially liked the outcomes and elaborations.

Those teachers who had participated in the trial phase agreed that the pilot version of the syllabus was an improvement over the trial version, although many saw little difference.

Display 3: Responses to Survey Items 4 & 6 (N=92)



Teachers rated the four strands highly because they:

- Enhanced the curriculum
- Were easy to put into practice
- Were useful for planning and assessment

The four elements of the Technology Practice strand (ideation, production, evaluation and investigation) received high levels of approval from the pilot teachers because they were logical or because they reflected past practice. Responses to the term “Ideation” were mixed, with some teachers supportive, others not.

The survey results show high levels of support for the general direction of the draft curriculum and approval of the four strands.

We conclude that:

3. The general direction of the draft syllabus has high levels of support among the pilot teachers.
4. Teachers generally consider the four strands – Technology Practice, Information, Materials, Systems – to be effective organisers of the syllabus.

4 Workability of The Draft Curriculum Documents for Teachers

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

Evaluation under this heading concentrated mainly on the CD-ROM and the elaborations document.

The CD 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 the user's specifications about strands, levels, content, outcomes and timing.

The elaborations document (Years 1 to 10 Draft Core Learning Outcomes with Elaborations for Pilot Schools) expanded upon the core learning outcomes from the draft syllabus. 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.

The general interview included a question on the effectiveness of the elaborations, and a series of questions on the CD, one of which was directly related to translating the draft curriculum into practice. The survey included three items on the draft syllabus, including reference to the rationale, the level statements, the core learning outcomes and the elaborations. In addition, one of the six CD-related survey items was concerned with translating the draft curriculum into practice.

4.1 Interviews

4.1.1 General Interviews

4.1.1.1 Interview question: How effective for teachers are the Elaborations?

The ratings were mostly high or very high:

Very High: 10	High: 15	Moderate: 3	Low: 1	Very Low: 0

Eight interviewees declined to rate this item.

Most liked the elaborations because they helped teachers to understand other parts of the syllabus, or saved time in planning:

- *These were extremely important to me originally to understand the outcomes – practical examples. Now I don't need them so much.*
- *These are good because they give you an idea of what the outcomes mean.*
- *Very, very helpful. They will save a lot of time for the teacher.*
- *They are excellent - the most useful part of the materials.*
- *Real-life content appreciated.*
- *I like the examples - becoming more comfortable as I experience them.*
- *Examples make it all less daunting. I was very confused at the beginning.*
- *This supports what the whole syllabus is about. The elaborations explain the outcomes for teachers.*

- *When teachers have different perspectives of an outcome, the elaborations make it clear what is expected.*
- *I tend to work back from the outcomes. The elaborations help me to clarify how I can focus on the technology aspect of what I am doing.*
- *I have used this document a lot. There is a good variety of options and they really give you good ideas of how to make it work.*
- *Most of the staff has commented that it has definitely helped with ideas.*

A few hadn't yet worked with the elaborations, or hadn't found them helpful:

- *Useful in some ways, but they haven't really helped me much.*
- *I'm not familiar enough to comment yet.*
- *When I looked at these, I didn't feel I could put these objectives into practice. I don't have the time to do this. I tried level 4 and could not see having the time to do things like observing in the workplace. It may be because I am new to it.*
- *I haven't got into elaborations yet. I work straight from the outcomes.*
- *I find the elaborations are a little bit confusing. Sometimes if I just look at the outcomes I am OK, but when I go to the elaborations I am not sure of exactly what they want. May be too much there.*

4.1.1.2 Interview question: To what extent can the CD-ROM help teachers to translate the Technology KLA into practice?

Ratings were mostly moderate or high:

Very High: 4	High: 8	Moderate: 9	Low: 2	Very Low: 0

Fourteen teachers did not rate this item. Some had not accessed the CD at the time of the interview. Some had access only to Macintosh computers and the CD was not Macintosh compatible at that time. Some had little or no access to any computer, or at least one with a CD drive. Others were not confident with computers.

Most of the teachers endorsed the planning wizard in the CD as an aid to translating the curriculum into practice:

- *The wizard definitely helps. It is more motivating to teachers to have this tool to plan.*
- *It does in the planning aspect. It makes it more tangible for you and easier to work out how you would do it in the classroom.*
- *The planning wizard is going to help teachers.*
- *It will help a reasonable amount because the plan generated is so simple it takes the guesswork out of matching learning outcomes to the teaching activities.*

Even the teachers who gave lower ratings noted the potential of the planning wizard:

- *If the Wizard works (mine didn't), planning assessment items would be very easy.*
- *Only because of its facility for planning.*
- *It does help you to get the focus right (the planning format) but you have to take it further.*

Some still preferred other ways:

- *It is much better to sit down and talk to someone who really knows what they are doing.*
- *Easier to work with paper materials.*

One teacher made this comment:

- *So much information can go on CD for us to access - limited only by the willingness of teachers to use it.*

4.1.1.3 Interview question: What kind of support would make the CD-ROM usable for teachers?

The answers to this question centred around the need to support teachers who were not familiar with computers, incompatibility with Macintosh computers and the need for help with technical problems.

Those focusing on teacher support said:

- *Basically it is a matter of improving your computer skills. Many staff don't want to or have the time. They much prefer picking up the printed materials.*
- *A tutorial for using the CD-ROM would be good.*
- *Some tutorials that show how to use it would help. This could be in the CD or given as hard copy.*
- *They need a document on how to load and use the CD.*
- *Sometimes just the CD alone is difficult to get much out of especially for those who are not computer literate.*

Some made suggestions to improve the CD or support materials:

- *Make it run independent of the WWW, but keep links for when connected.*
- *Ensure instructions for installing and running are clear.*
- *Make the navigation easier.*
- *A Contents List somewhere - explaining what all the files are - it's not really easy to navigate at present.*

Some advocated direct support:

- *A Help Number (telephone).*
- *It would be great to have someone at the school who could troubleshoot for us .*
- *Technical support to make it run well.*

4.2 Survey

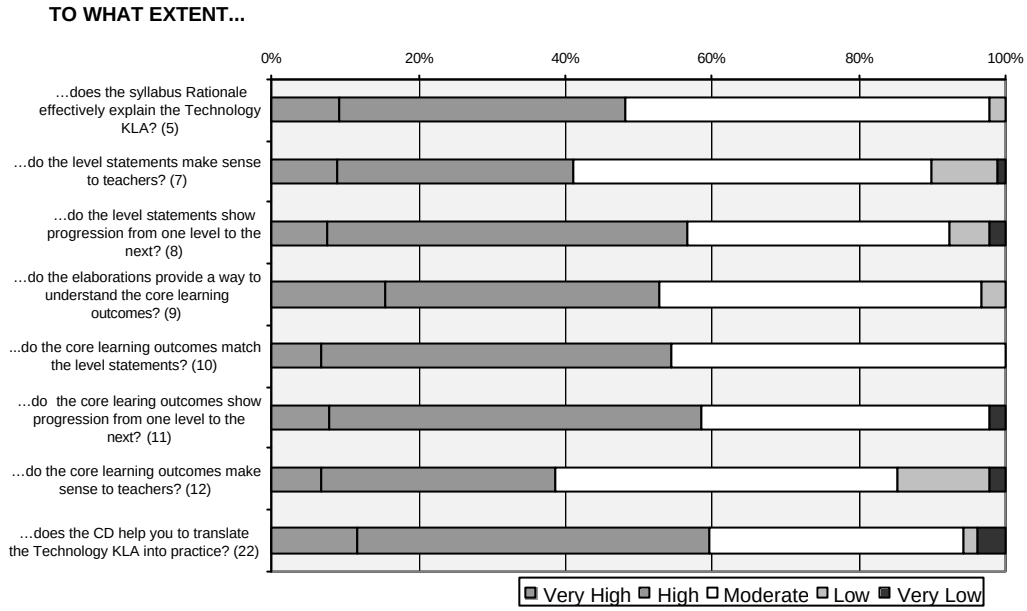
Eight survey items relate to the workability of various aspects of the draft materials for teachers, including the rationale, the level statements, the core learning outcomes, the elaborations and the CD as an aid to translate the curriculum into practice. Display 4 summarises the survey results for these items.

The results were mostly moderate or high ratings on all aspects, with few low or very low ratings. Most of the pilot teachers found the various components to be effective. The level statements and core learning outcomes were seen to make sense to teachers. The outcomes were seen to match the level statements and both were seen to show progression from one level to the next.

This result indicates that in the opinion of the pilot teachers, the various components of the curriculum materials are basically workable for teachers and effective in explaining the key learning area to them. There is basic acceptance and approval. This finding is probably acceptable at this stage of development, but indicates that more refinement is necessary.

Appendix 4, Chart 5 shows the mean scores for each survey question separately for primary and secondary teachers, revealing no significant differences.

Display 4: Responses to Survey Items 5, 7-12, (N=92) and 22 (N=52)



Appendix 4, Chart 4, shows the survey item means separately for those who attended the conference and those who did not. The largest difference is seen in item 9: "To what extent do the elaborations provide a way to understand the core learning outcomes?". This may indicate that the conference provided an explanation of the elaborations and how to use them that does not come through in the printed document or CD. The role and use of the elaborations may need to be emphasised in the initial in-service package.

Many of the write-in comments on the survey (12 of 31) were about the CD. Some were critical of the layout, some were concerned about access to appropriate hardware, some found it to be very useful:

- *Physical layout of CD rather cramped. Too much detail in too small a place. A lot of scrolling involved – very annoying.*
- *The CD works on PCs. A Mac school would have problems as we did.*
- *I found the CD to be very useful and it helped gain the full understanding of curriculum content. I have enjoyed implementing this program.*
- *I was a bit hesitant to be involved in this but after running through the CD I feel more confident in my approach and what is expected of me.*
- *I found the CD to be an excellent way of understanding the curriculum. It is clearer and less confusing than reading the document.*

4.3 Summary and Conclusions

Interviews showed that the teachers rated the elaborations as high to very high in effectiveness for teachers. The elaborations helped teachers to understand other parts of the syllabus and saved time in planning.

Some of the teachers had not yet explored the CD-ROM, in some cases because they had access to only Macintosh computers, in others because of lack of confidence with computers. A few had limited access to computers or none at all.

Those who had explored the CD rated it as moderately or highly effective in helping teachers to translate the draft curriculum into practice. The planning wizard in the CD was mentioned often by the teachers as a particularly helpful component.

This survey indicates that in the eyes of the pilot teachers, the various components of the curriculum materials are basically workable for teachers and effective in explaining the key learning area to them. There is basic acceptance and approval. This result is probably acceptable at this stage of development, but indicates that more refinement is necessary.

We conclude that:

5. The elaborations are highly effective in helping teachers to understand the syllabus and saving them time in the process of planning.
6. Those teachers who had explored the CD rated it as moderately or highly effective in helping them to translate the draft curriculum into practice.
7. The various components of the draft curriculum materials are basically workable for teachers and effective in explaining the key learning area to them, but more refinement is necessary.

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 and the survey.

5.1 Interviews

5.1.1 General Interviews

A series of interview questions dealt with various aspects of the CD.

5.1.1.1 Interview question: What is the potential of the CD-ROM for presenting the curriculum to teachers?

Most of the ratings were high or very high:

Very High: 11	High: 8	Moderate: 5	Low: 1	Very Low: 0

Twelve of the teachers did not give a rating on this item. Most of these had not yet explored the CD through lack of opportunity or confidence with computers.

Being a primary or secondary teacher or being a trial or pilot school made no difference to the ratings of teachers. The potential of the CD was acknowledged even when comments were made about possible limitations of the electronic format.

Teachers who rated the potential as high or very high made comments such as these:

- *It is brilliant - it saves on a lot of paper. It is a technology area so it is appropriate. It is more transportable than some of the other sets of books.*
- *It is an excellent way to click and go. Very timesaving.*
- *It is easy to use and it is all there.*
- *It will add some consistency with the program. It also allows us to know clearly what areas we are assessing.*

Many commented favourably on the planning wizard:

- *Everyone who has used the wizard has found it really easy to use, quick and effective. This draws you on into other parts of the CD.*
- *It makes it easy. You don't actually have to think about how to lay out your planning. The wizard does this for you. It is great. If you were not computer literate it would be difficult.*
- *I used the planning wizard for planning. I used it with the document beside me. It is user friendly, easy to navigate. If teachers can use a CD ROM it will be very useful. It's easy to link planning with the syllabus – just a click.*

Some teachers mentioned current limitations with Macintosh computers:

- *The potential is high but it didn't work for us because we are a Mac school.*
- *The planning wizard looks useful but we couldn't open it on our Macs.*

A frequent comment was that paper documents would still be needed:

- *Anyone not comfortable with information technology may find it difficult to access. I've looked at the CD but I need a hard copy for planning. It's not for everyone.*
- *Some teachers are still computer phobic. Some have different learning styles and the paper form will be needed for them.*
- *It gives you a quick look, but I would rather work from a hard copy. That is just my preference. Reading from a screen is a little much sometimes.*
- *It is good for me because I am very much involved in computers. Some of the other teachers here are not into computers and will not use it at this stage. Sometimes it is better to have it all in a book.*

5.1.1.2 Interview question: The CD-ROM provides a set of documents in compact form – to what extent does it do more than this?

Most of the ratings were high:

Very High: 6	High: 12	Moderate: 4	Low: 2	Very Low: 0

Thirteen of the teachers did not give a rating on this item:

Most of the teachers who had explored the CD recognised that it provided flexible ways to access the curriculum documents and tools to use in planning.

- *It breaks it down into little chunks. That is good. The front part of the book is a bit daunting. The CD doesn't have that problem.*
- *Great to use one instrument to learn about the syllabus and to plan units. I use it at school only in the classroom. I would like my own copy of the CD-ROM to take home.*
- *You can go further than just the documents - you can create your own documents.*
- *It gives you a format for your planning. Sometimes when you go into planning it helps you approach the task and not leave things out. It ensures you have everything in your planning.*
- *Allows me to browse through the syllabus without wading - I can just click on areas I want.*

The two teachers who gave low ratings said:

- *I can produce a unit of work but I think I am doing something wrong.*
- *All it is for is to see the documents.*

5.1.1.3 Interview question: To what extent does the CD-ROM allow you to work through the Technology materials in a way that suits you?

The ratings were evenly distributed from moderate to very high:

Very High: 6	High: 9	Moderate: 7	Low: 1	Very Low: 0

Fourteen of the teachers declined to give a rating on this item.

Many of the teachers preferred to work with paper materials although most rated the flexibility of the CD format as high or very high:

- *I prefer hard copies to work with.*
- *We use the paper materials because some of us don't have a great computer. It's much easier to use paper materials and plan cooperatively.*
- *I still prefer to have the printed document beside me. I can look backward and forward more conveniently with the paper document. I am computer literate and other teachers are less so and find it a pain in the neck.*
- *It depends what I'm looking for. Sometimes the paper is quicker. I wouldn't like to have just the CD-ROM.*
- *You have your different elements and you can choose where to start. Being web based you always have the back and forward buttons.*
- *I can pick and choose without wading. It's quick to "get it right."*

5.1.1.4 Interview question: To what extent can the CD-ROM enable teachers to gain a good understanding of the Technology curriculum?

Most of the ratings were moderate or high:

Very High: 1	High: 7	Moderate: 8	Low: 4	Very Low: 0

Seventeen teachers declined to rate this item.

Those teachers who gave moderate or low ratings saw no advantage over print formats for developing understanding of the curriculum:

- *I don’t think teachers would sit down that long and look at a screen to learn something; they would rather look at a book.*
- *I would prefer to have the printed version. It is easier to carry round with you as well.*
- *Most people would prefer to read the syllabus document.*
- *You can still go in and explore the curriculum but it's much easier to use the paper version.*
- *The CD does not give an advantage here. It is not any better or worse than a printed document for this purpose. My main use for the CD is the planning.*

Those who believed the CD-ROM could provide a good understanding of the curriculum referred to the ease of navigation through the materials:

- *The ease with which you can move around makes it easy to get the understanding.*
- *It allows you to jump from strand to strand and breaks the information down.*
- *Easy to navigate. It's all there.*

One teacher explained the result:

- *Some people learn better with computers, others don't. It is specific to the person.*

5.1.1.5 General comments

A couple of the secondary teachers used the invitation for "any other comments" to question whether the draft curriculum can meet the needs of all students:

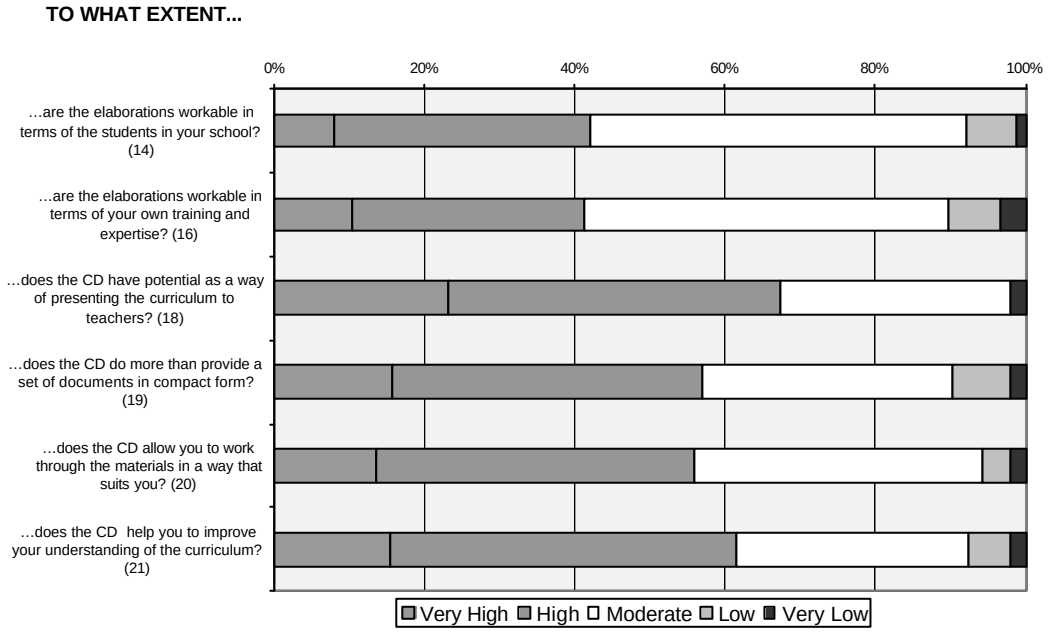
- *Students have a resistance to change because they look forward to the practical work that is being done now - the actual production. They don't like the early steps in the practice elements.*
- *Each student is not equally gifted with insight, foresight and natural talent.*

5.2 Survey

Six items on the survey are relevant to this focus question. Two related to the workability of the elaborations in terms of the students and in terms of teachers' own expertise. Four related to how well the CD matched teachers' needs. The distributions of responses are shown in Display 5. Note that items on the CD (18-21) include only those who indicated that they had explored the CD to at least a moderate extent.

Mostly, only moderate ratings were given to the extent to which the elaborations are

Display 5: Responses to Survey Items 14, 16, (N=92) and 18-21 (N=52)



workable in terms of:

- The students in their school
- Their own training and expertise

Higher ratings may have been expected here. The result raises questions about the workability of the elaborations for some students and teachers. At first sight the results may seem incompatible with conclusion 5 in Section 4.3, but that conclusion refers to the effectiveness of the elaborations in explaining the outcomes to teachers. The results for items 14 and 16 refer to the workability of the elaborations for students and teachers. The examples given in the elaborations may be effective in showing teachers what is meant by the outcomes and how to translate them into

practice, but some of the examples may be seen as difficult to manage in some classes or for some students. Some may be at the fringes of teachers' training and expertise. In other words, some teachers may not feel confident about interpreting or implementing some of the ideas in the elaborations. More information on this issue will be needed in the next phase of the evaluation.

The results in Appendix 4, Chart 5, and the analysis in Appendix 5 indicate that the ratings in relation to teacher training and expertise were lower for the primary teachers than the secondary.

Only 57% of the teachers indicated that they had explored the CD beyond a low extent. Reasons for not exploring the CD were evident from the interviews and are discussed in section 5.1.1.1 above. Most of the teachers who had explored the CD rated it as moderate to high in terms of:

- Potential as a way of presenting the curriculum to teachers
- Doing more than provide a set of documents in compact form
- Allowing them to work through the materials in a way that suits them
- Helping them to improve their understanding of the curriculum

These results are quite encouraging considering that the CD is in the very early stages of development.

5.3 Summary and Conclusions

In the survey, few teachers rated the elaborations as highly workable in terms of the students in their school or their own training and expertise. Some of the examples given in the elaborations may be seen as impractical for some students and some may be at the fringes of teachers' training and expertise. The result raises questions about the workability of the elaborations, and possibly the curriculum materials in general, that warrant further investigation in the next phase of the evaluation.

The interview and survey results showed that about two-fifths of the teachers had not explored the CD-ROM. Reasons given for not accessing the CD were lack of access to suitable hardware (Personal Computer with CD drive) or lack of confidence with computers.

Those who had explored the CD rated it as moderate to high in terms of:

- Potential for presenting the curriculum to teachers
- Doing more than provide a set of documents in compact form
- Allowing teachers to work through the materials in a way that suits them
- Helping them to gain a good understanding of the draft curriculum

Many commented favourably on the planning wizard.

These results are quite encouraging considering that the CD is in the very early stages of development.

No difference between primary and secondary teachers was apparent in ratings of the CD.

A frequent comment was that paper documents would still be needed. Many of the teachers preferred to work with paper materials although most rated the flexibility of the CD format as high or very high.

We conclude:

8. The CD-ROM format for curriculum material promises great advantages in providing teachers with effective and flexible ways to understand the curriculum and translate it into practice.
9. Many teachers, while valuing the advantages offered by the CD, would prefer to have print-on-paper materials available as well.
10. More data is needed on the workability of the elaborations considering students' needs and abilities as well as teachers' training and expertise.

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.

6.1 Interviews

6.1.1 General Interviews

One question in the general interviews called for "messages" for the project team, the evaluator or the Council. Another question asked "Do you wish to make any other comments?". Few of the teachers used either of these opportunities to raise resource, time or other feasibility issues. A few expressed concerns about fitting Technology KLA in to an already crowded curriculum:

- *We're only in the Pilot this term. When do we fit this into our crowded curriculum? It's a strain on the teachers.*
- *Really need to in-service staff well, or it won't be used. We have to "fit in" an already crowded curriculum.*
- *I'm just a little concerned about the time we have in the classroom available to teach technology. Adding another KLA to our already crowded curriculum will be difficult for the teacher. It just takes so much integration.*

Some of the teachers talked about time and organisational problems associated with the general teaching approach underlying the draft curriculum:

- *I find that there was a lot more organisation and time in class with kids doing different things. We have to deal with safety issues and help the kids with their ideas. Helping kids with a range of projects at the same time is very difficult to organise and manage.*
- *Class numbers do not allow for individual attention and assistance. Cost and availability of materials is a concern for us. The individual bits of material for projects will be hard to arrange.*
- *Time is always a problem for teachers. New curricula come out and you just run out of time. There are always the necessary basics that have to be done then the rest. When the time pressure is on, the first thing to go is something like this.*
- *Having to be aware that other KLAs are receiving enough attention is a stress for me.*
- *The record keeping for students across different subject areas in secondary will be a challenge.*

6.2 Survey

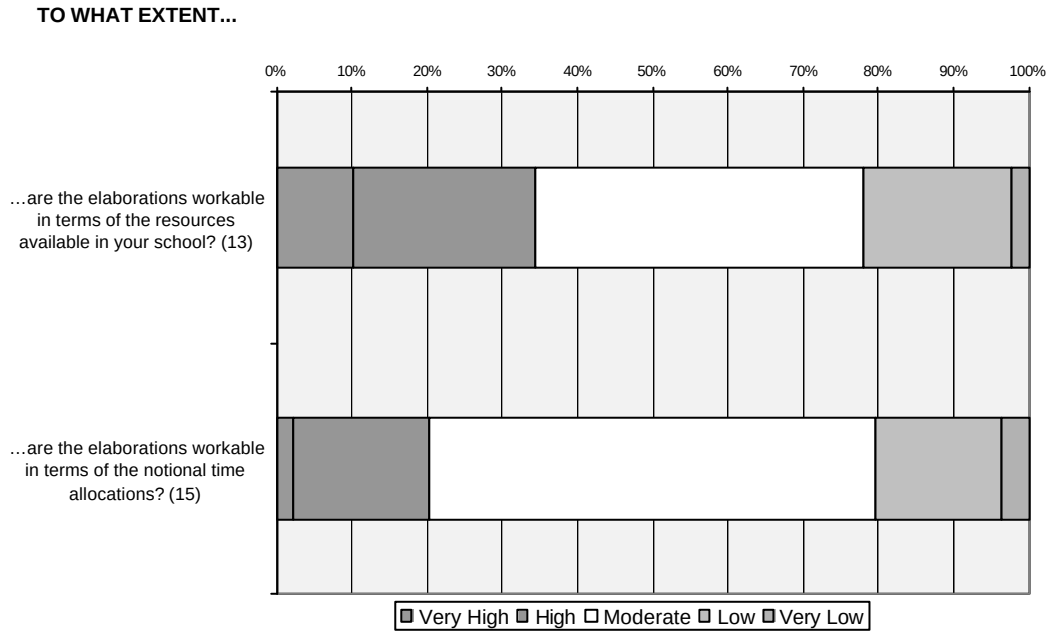
Two survey items relate to this focus question. Both asked teachers to rate the workability of the elaborations, one in terms of resources available in the school, the other in terms of the notional time allocations. The response distributions are shown in Display 6.

Display 6 shows that the teachers generally rated the draft curriculum as moderately workable in terms of resources and time available.

Means for these two items are shown separately for primary and secondary teachers in Appendix 4, Chart 5. Small, apparent differences occur for both items between primary and secondary. The draft curriculum was rated more highly workable by the secondary teachers. This is probably to be expected considering the array of existing technology-related subjects in the secondary curriculum of most schools.

The survey results on these two items suggest doubts on the part of some teachers, especially primary teachers, about the feasibility of the draft curriculum considering the resources and time that may be available to Technology KLA. Initial in-service materials may need to focus on the time and resources issues for primary teachers.

Display 6: Responses to Survey Items 13 and 15 (N=92)



6.3 Summary and Conclusions

In open-ended sections of the interview, some teachers expressed concerns about fitting Technology KLA into an already crowded curriculum. Some raised time and organisational problems associated with the general teaching approach underlying the draft curriculum.

The survey results reveal doubts on the part of some teachers, especially primary teachers, about the feasibility of the draft curriculum considering the resources and time that may be available to Technology KLA. Initial in-service materials may need to focus on the time and resources issues.

We conclude that:

11. Some of the pilot teachers have doubts about the feasibility of the draft curriculum considering the resources and time that may be available to Technology KLA. Initial in-service materials may need to focus on time and resources issues.

7 Improvement of Draft Curriculum Documents

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

7.1 Interviews

7.1.1 General Interviews

In the general interviews, pilot teachers were asked "What topics will be essential for the initial in-service package?".

7.1.1.1 Interview question: What topics will be essential for the initial in-service package?

The most common type of suggestion was for specific examples of units, plans, programs etc:

- *There should be some examples of programs that have run, although this is difficult at this stage. The examples need to show clearly what the outcomes were.*
- *Need to see results of real projects and real students at appropriate levels.*
- *Examples of what works.*
- *Some examples of successful practice.*
- *Case studies - examples of Lesson plans etc.*
- *Examples of units. The planning format on the web page will be useful when it works.*

Many called for guidance on how to integrate or link with other key learning areas:

- *It would be nice to see a video on integration going from planning through to classroom activity.*
- *How can I integrate with other KLAs?*
- *Show links with other KLAs.*
- *Incorporating technology across the curriculum - how to promote that concept.*
- *How to integrate it into the school - lots of models.*
- *How to integrate the KLA into other subjects.*

Some saw a need to explain the outcomes and how to apply them to planning and teaching:

- *Go through the outcomes and focus on the key words in the outcomes. You need someone who understands the terms well. These need to be spelled out really clearly for us.*
- *Teachers really need to get information on what outcomes are in general terms. At the last seminar the discussion on outcomes was not at the depth it should have been.*
- *Outcomes, four strands and how they equate to year levels.*

Others called for specific guidance on planning:

- *You need guidance on how to use the document for planning. Once you have done one KLA the others are easier to follow.*
- *Planning formats.*

- *Aspects of planning.*
- *How to plan using the Wizard.*

Guidance on obtaining and managing resources was suggested by some teachers:

- *Where can I get cheap resources?*
- *How to teach technology with minimal resources NB - it has to be a "hands on" process - teachers do it.*
- *How to cope with the organisational aspects - resources.*

The need to develop the concept of Technology as a key learning area was emphasised by some:

- *They will really have to stress that it is not computers otherwise some teachers will not want to know about it.*
- *Give lots of examples to show them what Technology is.*
- *Coming to terms with just what this Technology syllabus is all about. NOT Information Technology!*
- *It's important for teachers to understand what is Technology. It is not just computer work.*

Assessment was a priority for some:

- *They do need to provide guidance on assessment.*
- *Assessment worries me. In-service needs to focus on that in all KLAs.*
- *Give practical ideas on assessment and how to go about it. A lot of us are really having trouble with this assessment thing.*
- *Sample assessment items.*

7.2 Summary and Conclusions

The responses of the teachers indicate that the curriculum materials, particularly the CD-ROM, should provide information, guidance, explanation and support in the following ways:

- Specific examples of teaching units, plans, programs etc.
- Guidance on how to integrate or link with other key learning areas
- Explanation of core learning outcomes and how to apply them to planning and teaching
- Specific guidance on planning
- Guidance on obtaining and managing resources
- Development of the concept of Technology as a key learning area
- Assessment of students' achievement

We conclude that:

12. The support materials for the curriculum should include abundant, specific examples on translating core learning outcomes into school and classroom practice, clear explanation of the concept of Technology as a key learning area and guidance on obtaining and managing resources for teaching.

8 Concluding Comments

The first phase of the pilot has been successful in explaining the draft syllabus to teachers and showing them how to implement planning and teaching processes that can assist students to demonstrate the core learning outcomes.

The results indicate that most of the schools were making good progress with the pilot process. The teachers believed that they had a good understanding of what Technology KLA entails and most supported the general direction of the draft curriculum. Most of the pilot teachers were highly committed to the concept of Technology as a key learning area for Years 1 to 10.

The draft syllabus-in-development was basically sound in its organisation by strands and set out in a clear manner. Most of the pilot teachers found the various components to be effective. The level statements and core learning outcomes made sense to most teachers. The outcomes were seen to match the level statements and both were seen to show progression from one level to the next.

The presentation of curriculum materials in the CD-ROM format was a significant feature of the pilot process. At the time of the data collection, many of the teachers (around two out of five) had not explored the CD. Lack of access to suitable hardware and inexperience with computers were the two main reasons. Those who had explored the CD were mixed in their reactions: Most applauded the planning wizard. Some were critical of the layout in the pages. Many praised the CD for its flexibility and its potential to help teachers understand the curriculum. Most indicated that print-on-paper materials would still be needed.

There were some indications that adequate resources and time may not be available. Further exploration of this possibility will be necessary in the next phase of the evaluation. More data will also be needed on the workability of the draft curriculum materials, particularly the elaborations, in terms of students' and teachers' needs.

In general terms, support materials will need to provide plenty of examples of planning and teaching to assist teachers to understand the core learning outcomes and be able to apply them in their schools and classrooms.

Appendix 1: Interview Questions

This interview is for teachers taking part in the pilot phase of the Years 1 to 10 Technology KLA curriculum development project. Interviews will be conducted in pilot schools during Term Two 2000.
Most questions require a rating (indicated by [R]) and brief comment. Some require a comment only. The scale for ratings is:

Very Low	Low	Moderate	High	Very High

Our reports will not show the source of any ratings or comments. We will report your ratings and comments but we won't identify which school or person they came from.

Part 1: Messages
1. What messages do you have for the Project Team, the Evaluator or the Queensland School Curriculum Council?
Part 2: Progress
2. What progress are you making with the pilot in your setting?
Part 3: The Syllabus-in-development (Pilot Draft)
3. In general terms, how do you rate the pilot version of the Technology syllabus-in-development? [R]
3a. [Trial teachers only] How does the pilot version compare with the trial version?
4. How effective are the four strands as a way of organising the KLA? [R]
5. How appropriate are the four elements of Technology Practice (ideation, production, evaluation and investigation)? [R]
6. How effective for teachers are the Elaborations? [R]
Part 4: CD-ROM
7. What is the potential of the CD-ROM for presenting the curriculum to teachers? [R]
8. The CD-ROM provides a set of documents in compact form – to what extent does it do more than this? [R]
9. To what extent does the CD-ROM allow you to work through the Technology materials in a way that suits you? [R]
10. To what extent can the CD-ROM enable teachers to gain a good understanding of the Technology curriculum? [R]
11. To what extent can the CD-ROM help teachers to translate the Technology KLA into practice? [R]
12. What kinds of support would make the CD-ROM usable for teachers?
Part 5: General Issues
13. To what extent do you support the concept of a Technology KLA within a Years 1 to 10 core curriculum? [R]
14. How well do you feel you have a grasp of the concept of Technology as a KLA? [R]
15. What topics will be essential for the initial in-service package for teachers?
16. Do you wish to make any other comments?

Appendix 2: Survey Questionnaire

Reproduced below are the instructions and questions from the survey of pilot teachers.

Instructions:

EdData is conducting this survey as part of the external evaluation of the Years 1 to 10 curriculum in Technology that is being piloted in your school under the auspices of the Queensland School Curriculum Council.

This survey provides you with an opportunity to express your opinions on the developing curriculum.
The main part of the survey asks you to rate various aspects of the Pilot process and the Technology curriculum-in-development. Each of these items should be prefixed by "To what extent …".
The rating scale is

Very Low – Low – Moderate – High – Very High

Place a tick in the box that corresponds to your rating. If you do not have an opinion on any item just leave that one blank and go on to the next.

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 results of the survey via the contact person in your school.
- Please fill out and return the survey as soon as possible using the reply paid envelope provided.
- We need your return. The pilot is set up to include a wide range of school types, so everybody's opinions, based on their particular situations and experiences, are essential.

Background Questions:

Please start by giving us some background information:

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

ÿ Years 1-3 ÿ Years 4-7 ÿ Years 8-10

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

Survey Items:

Please rate the following aspects of the pilot process and the Technology curriculum-in-development:

	TO WHAT EXTENT…	**Very Low**	**Low**	**Moderate**	**High**	**Very High**
1	…do you understand your role in the pilot process?	ÿ	ÿ	ÿ	ÿ	ÿ
2	…do you understand the outcomes approach?	ÿ	ÿ	ÿ	ÿ	ÿ
3	…do you support the concept of Technology as a KLA for Years 1 to 10?	ÿ	ÿ	ÿ	ÿ	ÿ
4	…does the draft syllabus represent a good direction for a 1-10 Technology curriculum?	ÿ	ÿ	ÿ	ÿ	ÿ
5	…does the Syllabus Rationale effectively explain the Technology KLA?	ÿ	ÿ	ÿ	ÿ	ÿ
6	…do the four strands provide an effective way of organising the KLA?	ÿ	ÿ	ÿ	ÿ	ÿ

	TO WHAT EXTENT…	Very Low	Low	Moderate	High	Very High
7	…do the level statements make sense to teachers?	ÿ	ÿ	ÿ	ÿ	ÿ
8	…do the level statements show progression from one level to the next?	ÿ	ÿ	ÿ	ÿ	ÿ
9	…do the elaborations provide a way to understand the core learning outcomes?	ÿ	ÿ	ÿ	ÿ	ÿ
10	…do the core learning outcomes match the level statements?	ÿ	ÿ	ÿ	ÿ	ÿ
11	…do the core learning outcomes show progression from one level to the next?	ÿ	ÿ	ÿ	ÿ	ÿ
12	…do the core learning outcomes make sense to teachers?	ÿ	ÿ	ÿ	ÿ	ÿ
13	…are the elaborations workable in terms of the resources available in your school?	ÿ	ÿ	ÿ	ÿ	ÿ
14	…are the elaborations workable in terms of the students in your school?	ÿ	ÿ	ÿ	ÿ	ÿ
15	…are the elaborations workable in terms of the notional time allocations?	ÿ	ÿ	ÿ	ÿ	ÿ
16	…are the elaborations workable in terms of your own training and expertise?	ÿ	ÿ	ÿ	ÿ	ÿ
17	…have you explored the CD?	ÿ	ÿ	ÿ	ÿ	ÿ
18	…does the CD have potential as a way of presenting the curriculum to teachers?	ÿ	ÿ	ÿ	ÿ	ÿ
19	…does the CD do more than provide a set of documents in compact form?	ÿ	ÿ	ÿ	ÿ	ÿ
20	…does the CD allow you to work through the materials in a way that suits you?	ÿ	ÿ	ÿ	ÿ	ÿ
21	…does the CD help you to improve your understanding of the curriculum?	ÿ	ÿ	ÿ	ÿ	ÿ
22	…does the CD help you to translate the Technology KLA into practice?	ÿ	ÿ	ÿ	ÿ	ÿ
23	…was the April Conference effective in explaining the Technology KLA?	ÿ	ÿ	ÿ	ÿ	ÿ
24	…was the April Conference effective in showing how to implement the syllabus?	ÿ	ÿ	ÿ	ÿ	ÿ
25	…did the April Conference show how to plan for teaching Technology?	ÿ	ÿ	ÿ	ÿ	ÿ
26	…did the April Conference show how to teach Technology in inclusive ways?	ÿ	ÿ	ÿ	ÿ	ÿ
27	…did the April Conference show how to assess achievement in Technology?	ÿ	ÿ	ÿ	ÿ	ÿ

Appendix 3: Survey Respondents

The survey was sent to all pilot teachers through the nominated contact person in each of the pilot schools.

The returns were distributed according to Year level of the teachers' pilot classes as shown below:

Year levels of pilot classes	**Number of teachers**
Years 1-3	27
Years 4-7	29
Years 1-7	6
Years 8-10	23
Years 1-10	0
Not shown/Special	7

For some of the analysis, separate results were shown for primary only (*N*=62) and secondary only (*N*=23).

Distribution by school sector was:

Sector	**Number of teachers**
Government	38
Catholic	23
Other independent	24
Not shown	7

Distribution by attendance at the April Conference for Pilot Teachers was:

Attendance	**Number of teachers**
Yes	44
No	40
Not shown	8

Distribution of primary and secondary teachers by attendance at conference:

	Conference attendance			
Level taught	**Yes**	**No**	Not shown	Totals
Primary only	28	30	4	62
Secondary only	14	9		23
Other or no response	2	1	4	7
Totals	44	40	8	92

Appendix 4: Survey Results

Chart 1: Distribution of Responses on Survey – Draft Syllabus and Elaborations

Chart 2: Distribution of Responses on Survey – CD-ROM

Chart 3: Distribution of Responses on Survey – April Conference

Chart 4: Mean Scores for Conference Attendees and Non-Attendees – Draft Syllabus and Elaborations

Chart 5: Mean Scores for Primary and Secondary Teachers – Draft Syllabus and Elaborations

Chart 1: Distribution of Responses on Survey – Draft Syllabus and Elaborations (N=92)

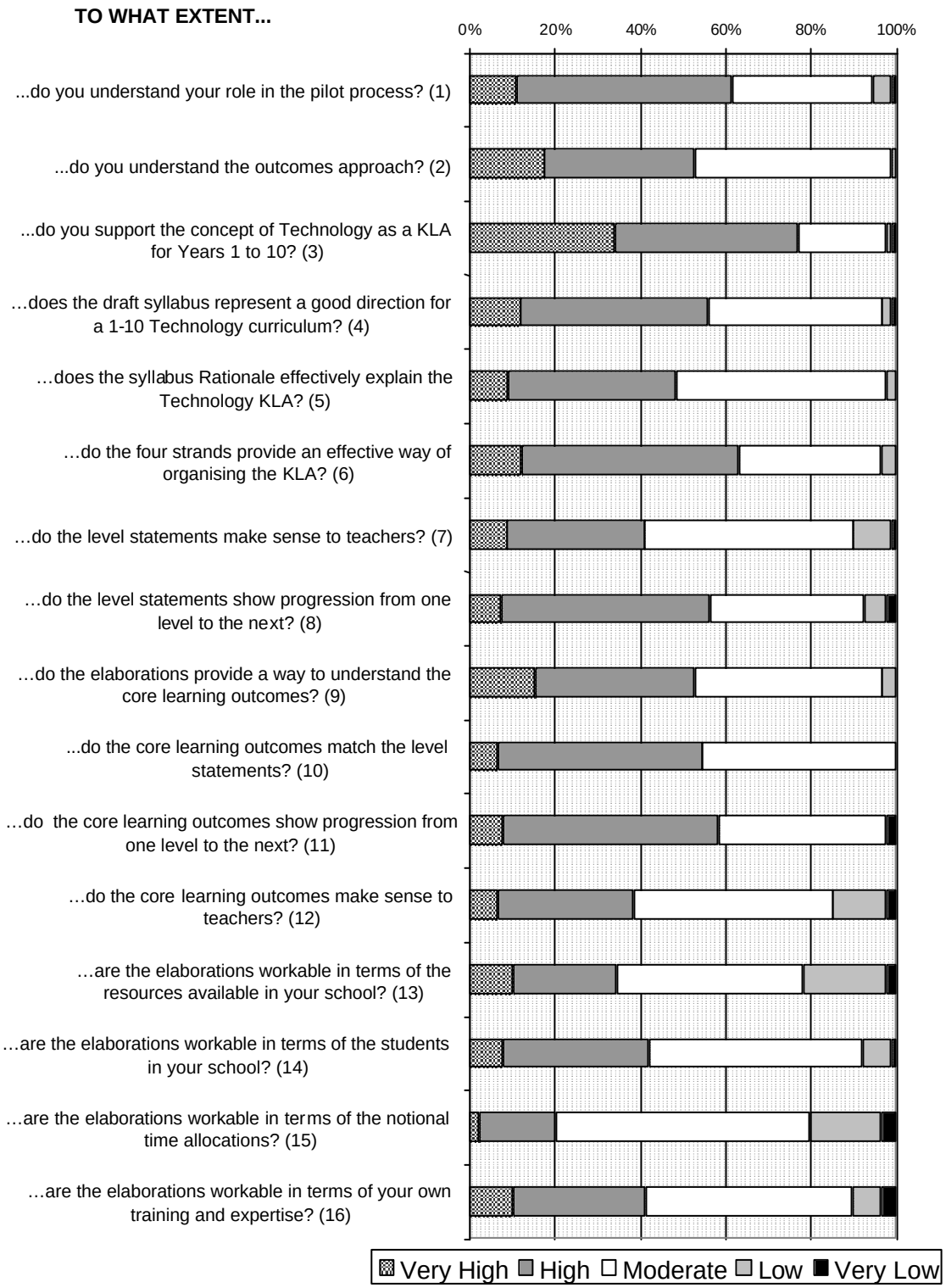


Chart 2: Distribution of Responses on Survey – CD-ROM (N=52)

Note: Chart includes only those who indicated having explored the CD to at least a moderate extent.

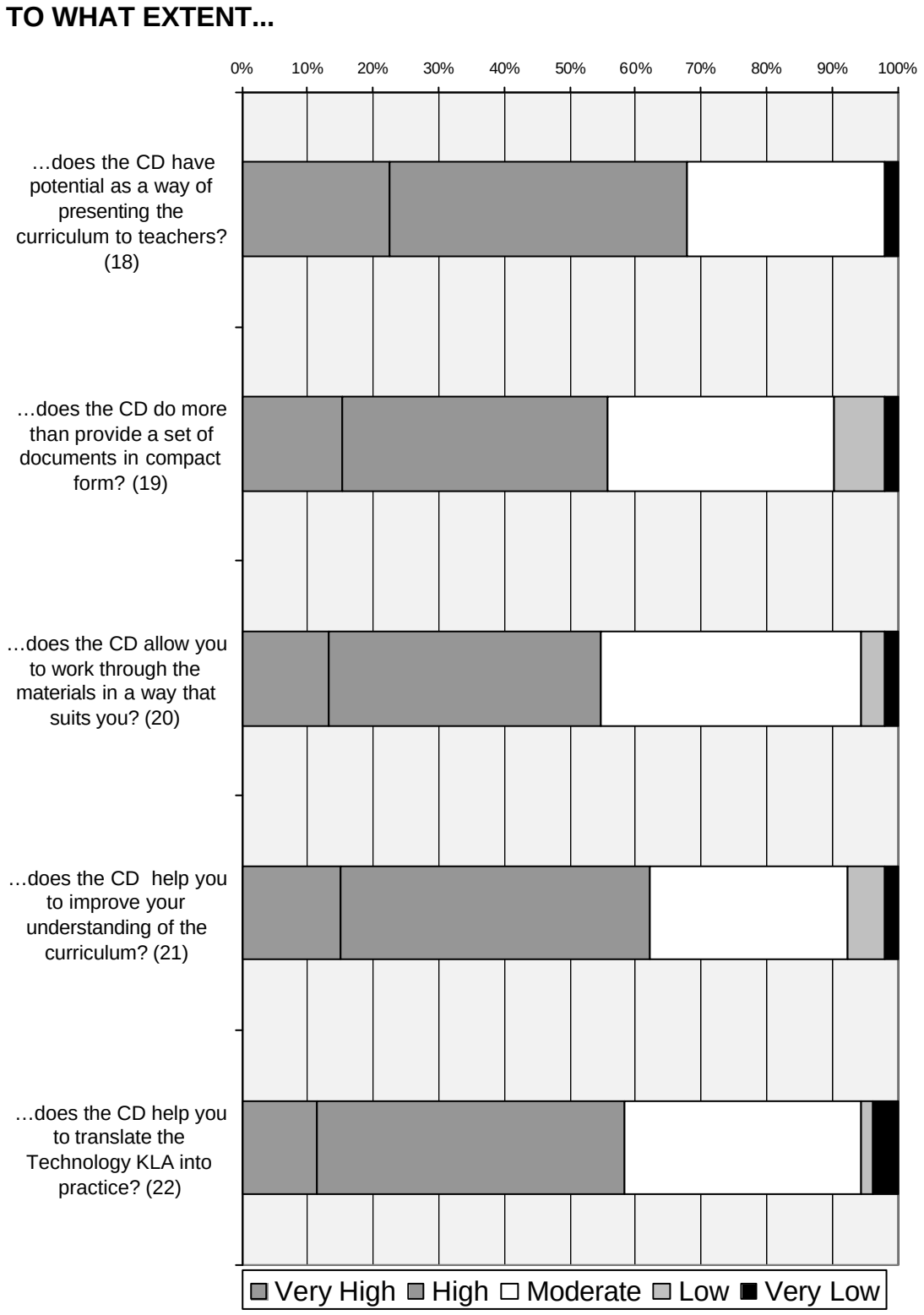


Chart 3: Distribution of Responses on Survey – April Conference (N=44)

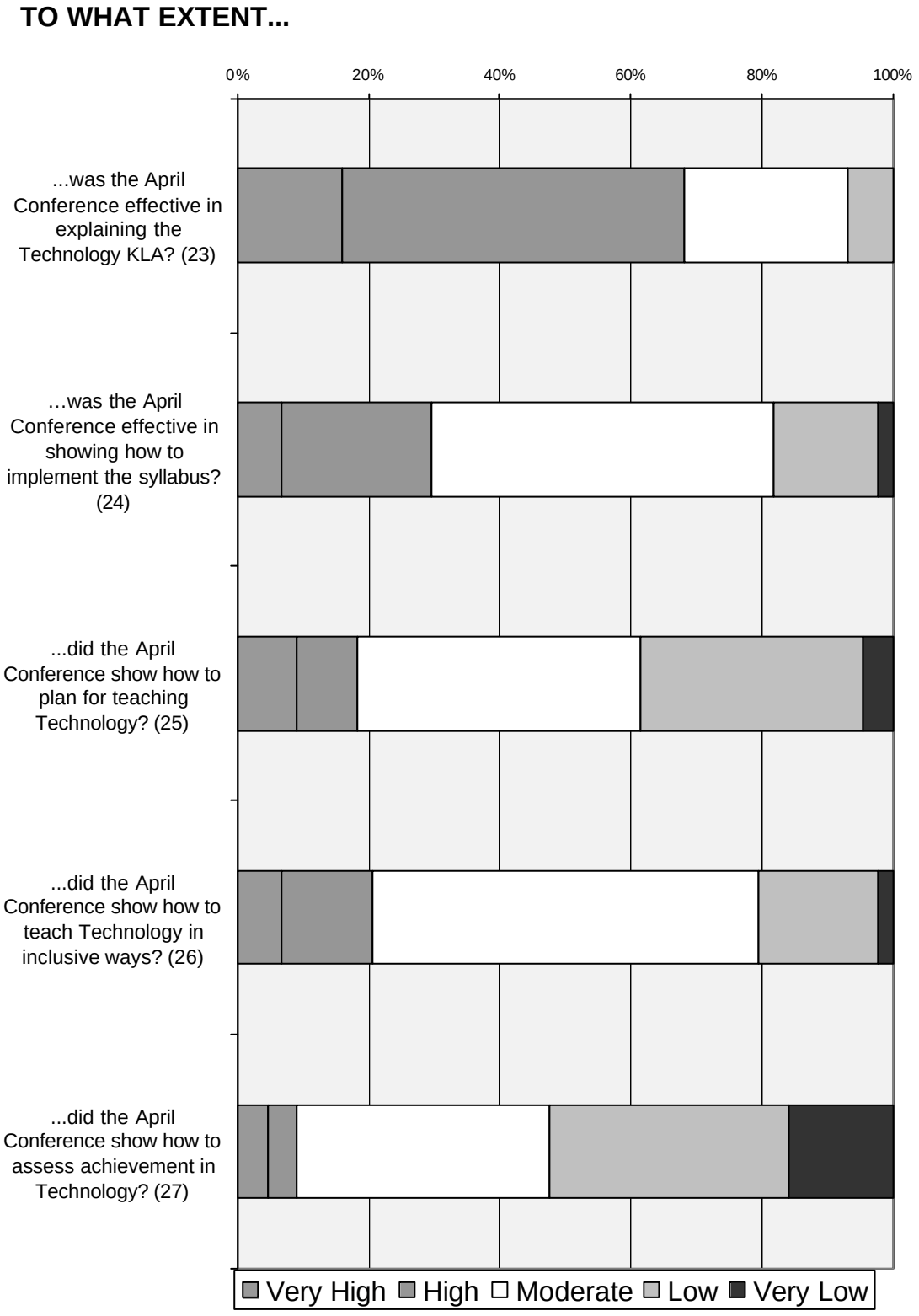


Chart 4: Mean Scores for Conference Attendees (N=44) and Non-Attendees (N=40) – Draft Syllabus and Elaborations

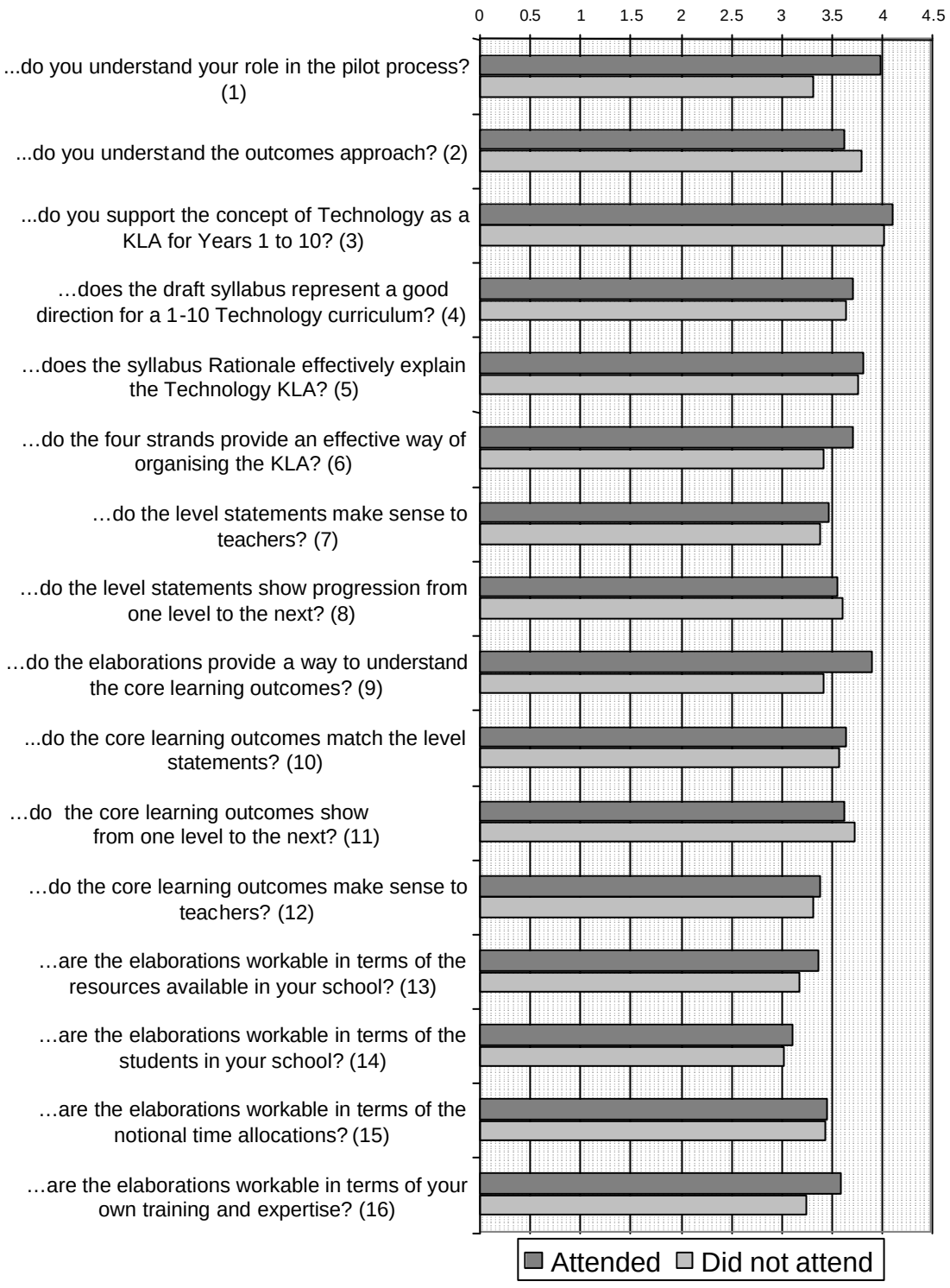
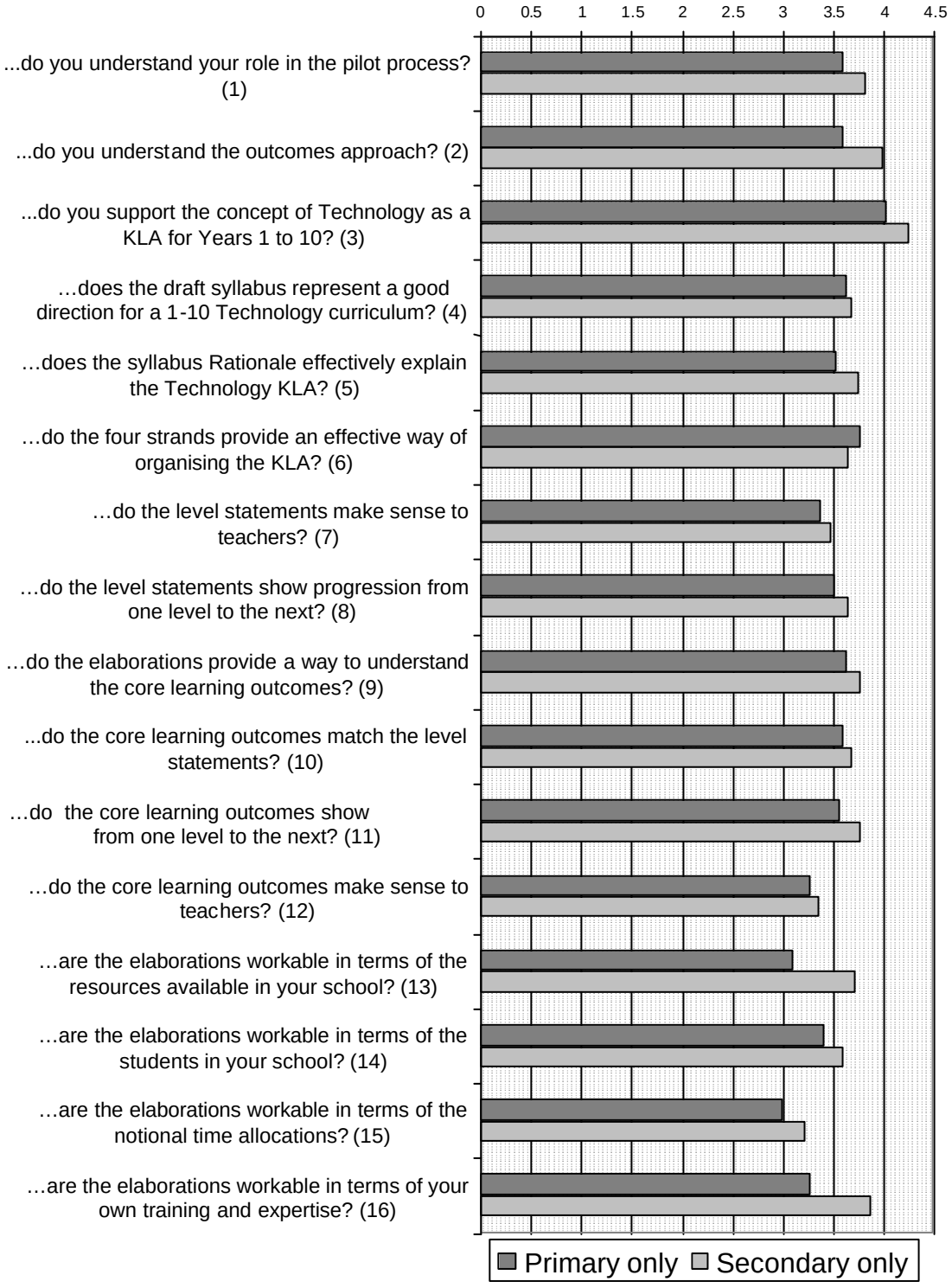


Chart 5: Mean Scores for Primary Teachers (N=62) and Secondary Teachers (N=23) – Draft Syllabus and Elaborations



Appendix 5: Analysis of Survey Items by Primary/Secondary and Conference Attendance

Exploratory analysis of differences on survey items was undertaken using MANOVA procedures.

Items were considered in three groups for the analysis:

- The first group consisted of items 1 to 4, all dealing with the pilot process in general.
- The second group consisted of items 5 to 12, all dealing with various aspects of the draft syllabus-in-development.
- The third group consisted of items 13 to 16, all dealing with the draft elaborations.

Two independent variables were defined:

- PRIMSEC – this variable has two values, 1 for those teachers who indicated teaching primary levels only, and 2 for those who indicated teaching secondary levels only.
- CONFRNCE – this variable has two values: 1 for those who indicated attending the April Conference, and 2 for those who indicated not attending.

The analysis procedure was to enter a group of items into the Manova as a set of dependent variables, with PRIMSEC and CONFRNCE as independent variables. The analysis tested all items in the group simultaneously for three effects: PRIMSEC, CONFRNCE and interaction between the two. Where significant effects were found, subsequent testing of significance of the effect on individual items was done.

We note from Appendix 3 that only 9 of the secondary teachers did not attend the conference, so the results need to be interpreted with care and taken as indications only.

The results are summarised in a series of tables below, which indicate that:

1. The differences on items 1 and 2 for the variable CONFRNCE are statistically significant. Conference attendees indicate higher ratings for their understanding of their role in the pilot process. Conference non-attendees indicate higher ratings for their understanding of the outcomes approach.
2. The MANOVA for items 13-16 reveals an effect for the variable PRIMSEC, if significance at $p<0.07$ is accepted. Normally, p-levels of 0.05 or less are required, but in this exploratory analysis, it is reasonable to accept the higher p-level. Subsequent analysis then indicates significant differences on PRIMSEC for items 13 and 16. The secondary teachers rated workability of the elaborations higher than the primary teachers (taking conference attendance into account).

Results are summarised in the tables below.

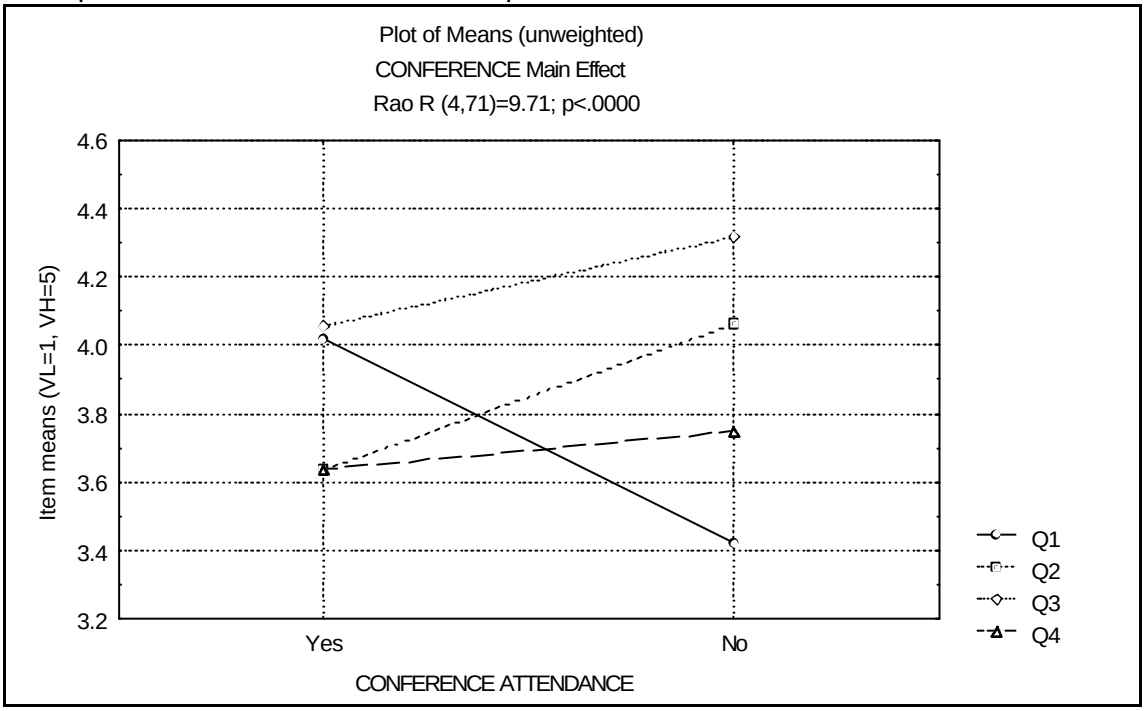
Summary of all Effects, items 1-4

1-CONFRNCE, 2-PRIMSEC					
Effect	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	.646284	9.714718	4	71	.000003
2	.900222	1.967350	4	71	.108812
12	.944463	1.043752	4	71	.390885

Subsequent analysis:

MAIN EFFECT: CONFRNCE				
Item	Mean sqr Effect	Mean sqr Error	F(df=1,74)	p-level
Q1	5.600899	.525669	10.65481	.001664
Q2	2.851283	.565583	5.04131	.027737
Q3	1.058537	.724743	1.46057	.230687
Q4	.191141	.657104	.29088	.591274

The plot below shows the effects for questions 1 and 2



Summary of all Effects; items 5-12

1-CONFRNCE, 2-PRIMSEC					
Effect	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	.851220	1.332729	8	61	.244821
2	.948353	.415251	8	61	.907481
12	.877430	1.065149	8	61	.399200

Summary of all Effects; Items 13-16

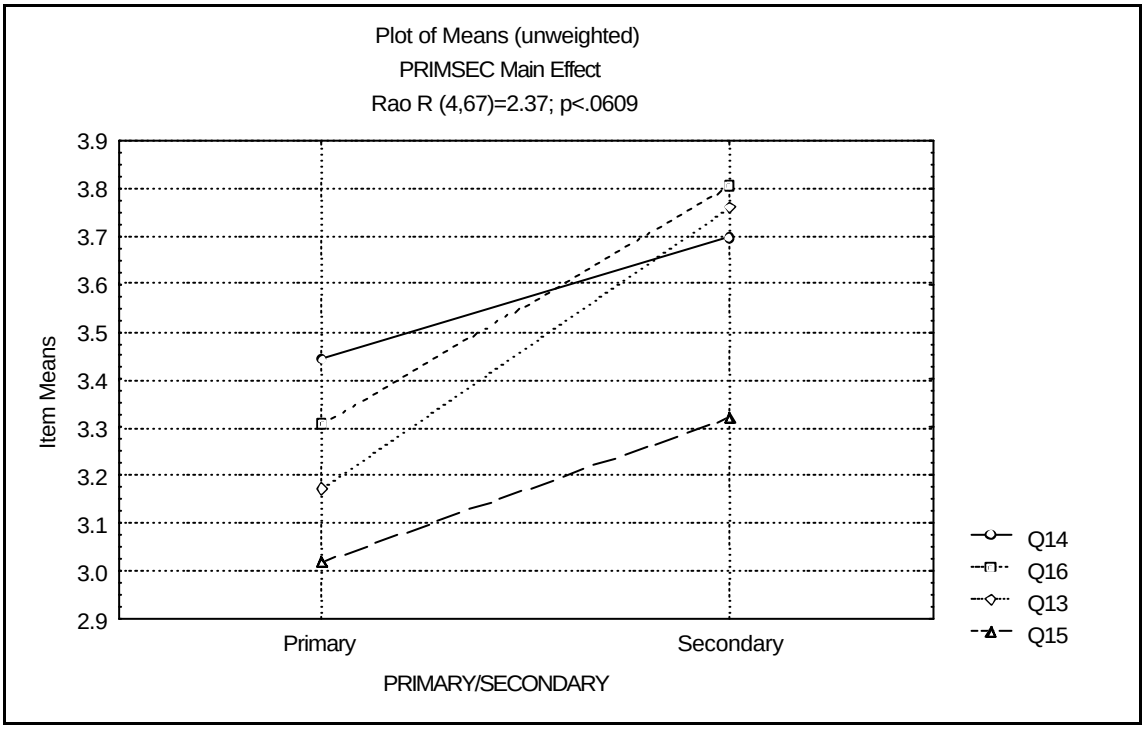
1-CONFRNCE, 2-PRIMSEC					
Effect	Wilks' Lambda	Rao's R	df 1	df 2	p-level
1	.965495	.598618	4	67	.664900
2	.875922	2.372715	4	67	.060947
12	.965855	.592142	4	67	.669497

Effect 2 approaches significance. Subsequent analysis for the PRIMSEC effect reveals:

Subsequent analysis:

MAIN EFFECT: PRIMSEC Items 13-16 1-CONFRNCE, 2-PRIMSEC				
Item	Mean sqr Effect	Mean sqr Error	F(df=1, 70)	p-level
Q13	5.022427	.733693	6.845406	.010879
Q14	.944972	.476688	1.982372	.163566
Q15	1.336352	.460204	2.903825	.092805
Q16	3.598238	.558006	6.448383	.013329

The plot below shows the direction of differences on this set of items:



Evaluation and Review Report Series

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

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