

**MAKING CONNECTIONS:
EDUCATORS' USE OF RESEARCH TO
INFORM THEIR PRACTICE**

FINAL REPORT

Sally Boyd and Anna Chalmers

New Zealand Council for Educational Research



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Te Rūnanga o Aotearoa mō te Rangahau i te Mātauranga
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BACKGROUND TO THE STUDY

Introduction

This project examines relationships between research and teaching by studying educators' (mainly teachers) access to, and use of, research and theory. The study focuses on identifying barriers to educators' use of educational theory and research findings. This report utilises data collected in 1999 from observations at professional development courses, interviews with the providers of these courses, and questionnaires for educators who were the course participants. It also utilises data collected in 2000 from follow-up telephone interviews with course participants.

Aims of this Study

The aims of this study were to:

- explore access to, and use of, educational theory and research findings, related to specific professional development courses, by teachers and principals who were participating in such courses; and
- identify any barriers to participants' take-up of such educational research findings and theory for their teaching, and the extent of their use of the research findings and theory.

(This study does not aim to comment on the efficacy of the presentations or the material presented on the courses.)

Sampling

Selecting Courses

Three criteria were developed for considering possible courses to include in the study. These were:

- the relationship of the course to the essential skills of the New Zealand Curriculum Framework (Ministry of Education, 1993). It was decided to focus on the essential skills rather than curriculum areas to encompass a wider perspective;
- the likelihood that the course was grounded, at least to some extent, in theory and/or research; or
- the topical or current nature of the subject area or the current level of educators' interest.

Suitable courses were identified through discussions with colleagues, and perusal of the Education Gazette and institution handbooks. Type of provider, methods of course delivery, and geographical location were taken into account to widen the sample range of courses.

Seven courses were selected from those available within the time frames for the study. These courses were concerned with thinking skills, multiple intelligences, future problem solving, or information skills, including Information and Communication Technologies

(ICT). Apart from the course on multiple intelligences, which related generally to the essential skills, these courses supported the essential skills of problem-solving or information skills¹. The course on thinking skills was cancelled a few weeks before it was due to begin in May 1999. By that stage it was not possible to substitute another course.

The six courses studied were provided or funded by commercial providers, colleges of education, or the Ministry of Education. All courses were located in main urban areas, although participants came from minor urban and rural areas as well. Five courses were in the North Island; one in the upper North Island, one in the central North Island, and three in the lower North Island. The sixth course was in the central South Island. The courses were:

- an in-house whole school development provided by a commercial provider;
- an in-house whole school development provided by a college of education;
- a one-day workshop for principals provided by a private provider with Ministry of Education contract funding;
- a six-month distance learning course for teachers provided by a college of education;
- a block course of one week provided by a commercial provider; in which educators visited a range of schools; and
- a one-day workshop for teachers funded and provided by a private provider.

Selecting Course Participants

Of the total course participants, the vast majority (142) were educators. These educators were mainly teachers but some were principals and other school administrators. All educators were invited to take part in the study.

Development of the Instruments

The research instruments comprised a baseline questionnaire for course participants and one or two telephone interviews with participants at different points in the study; an interview with the course provider; observations of the course by a researcher; and an examination of course materials.

The baseline questionnaire for course participants and the course provider interview schedule were developed following selective study of relevant literature. They were confirmed following review by a senior educator, and trialling. The trialling took place in a main urban area using face-to-face interviews with a small number of teachers who were working in the area of thinking skills, future problem solving and information skills, and with a small number of providers. Trialling with providers was restricted to ICT courses, as the only multiple intelligence and future problem-solving courses identified were included in the main study.

Specifically, the baseline questionnaire was piloted with a teacher who had recently attended ICT professional development, and a teacher who had extensive experience in professional development in future problem solving and in thinking skills. This teacher also had the leadership role in developing and teaching both programmes at the primary school where he was deputy principal.

¹ *The New Zealand Curriculum Framework* (1993), pp. 18–19.

The provider interviews were piloted with a private provider who was facilitating a whole school development in ICT, and a college of education advisor who was leading ICT development in schools working in clusters at the time of the study.

The observations related to the complete course, but focused in particular on the theory and/or research aspects. A number of questions were formulated for use in observing and recording these aspects. These were:

- which area/s does the research and/or theory cover?
- how has the research and/or theory been obtained and presented?
- to what extent is the research and theory explicit or implicit, and central or peripheral to the course? and
- who is the research and/or theory presented by?

The research and/or theory presented on the course was reviewed by the researchers using a construct developed by Kennedy (1997) in her work on linkages between research and practice in the USA, namely:

- is the research and/or theory authoritative?
- is the research and/or theory relevant to practice?
- does the research address teachers' questions and constraints?
- is the research and/or theory accessible?
- are the findings presented in a comprehensible way?
- do teachers have easy access to these findings when they need them? and
- are teachers encouraged to adopt and/or adapt theory and research findings?

In addition, research content was reviewed to assess whether it was referenced to the original source, and this element was included in the researchers' working definition of "authoritative".

The questionnaires for the follow-up telephone interviews with course participants were developed from the baseline questionnaire.

Data Collection

Course Participants

Participants were posted, or handed at the course, an introductory letter informing them about the research project, a consent form, and a baseline questionnaire (Appendix 1), with a request that the questionnaire be completed before the course, or in some cases, as soon after the course as possible. The introductory letter advised course participants of follow-up interviews to be administered by telephone, possibly one soon after the course finished, and the other at a later date.

Approximately a fortnight after the completion of each information skills course or ICT-related course, a sample of educators completed a post-course telephone interview.

Approximately one year later follow-up telephone interviews were conducted with participants for each of the six case studies. A sub-sample of original participants, in the case of larger samples, and all original participants, in the case of smaller samples, were contacted and a telephone interview was conducted (Appendix 2). This interview asked the educators whether they had had the opportunity to action their plans regarding the course

topic; what, if any, new information they had received on the topic and whether their beliefs about this topic had changed over time.

Course Providers

An interview schedule was developed for course providers (Appendix 3). Providers were interviewed by telephone or in person about the development of the course, the research and theory from which the course was developed, and the main concepts and teaching tools they expected participants to gain following attendance at the course.

Observations

A researcher attended group sessions as a participant-observer for the five courses which held such sessions, to obtain an overview of the course content, the methods of presentation, and the place of research and theory within the course. For one course, which took place over an extended time period, the researcher attended the two introductory sessions.

Examination of Course Materials

The researchers obtained the course materials and used these to extend and document their understanding of the nature of the courses, in particular the research and theory aspects.

Response Rates

Response rates for the participants' baseline questionnaires varied from 100 percent for one course (8 out of 8) to 33 percent (19 out of 57) for another. Overall, 71 participants responded out of a possible 142, giving a response rate of 50 percent. All course providers, or in one case the course developer, were interviewed and face-to-face sessions for participants were observed for all courses which held them (the exception was the distance education course). For the initial follow-up for the information skills or ICT-related course, either all or a sub-sample of the original sample took part to make a total of 27 respondents. Approximately one year later 38 of the original sample of 71 responded to the follow-up telephone interview. These respondents represented all or nearly all of the original participants for five of the case studies, and a sub-sample of seven from the original sample for the sixth course. In this case, these seven people represented a little under a third of the original sample. It was decided to create this sub-sample to keep the numbers of participants for the follow-up work similar for each case. There were no refusals to participate in the follow-up interviews, but there were three substitutions to the sub-sample to cover people who had withdrawn from the course before the end, or who had moved and could not be traced easily.

Analysis

Case studies were used as the research method. However, most questions in the participants' baseline questionnaires were coded and entered into a SAS data-set and frequencies obtained. This was done to identify and examine differences within and between aspects of the courses, as reported by participants.

Transcripts of the provider interviews were analysed for themes using the main questions as the guide. Observation notes were examined and, in particular, responses to the key questions described above were documented.

The follow-up telephone interviews survey forms were analysed by themes for frequencies, patterns and exceptions.

Reporting

Each professional development course is written up as an individual case to include information from the provider interview, the baseline questionnaire with course participants, observation notes, the examination of course materials, and the follow-up interviews with participants. The general areas covered are:

- course development and the main ideas and themes of the course;
- the research and theory surrounding the course and the provider's role in presenting research; and
- factors assisting and hindering teachers in using the course content, including the research and theory.

The six case reports are:

- Future Problem Solving New Zealand;
- Multiple Intelligences;
- Whole School Information Technology Professional Development (ITPD);
- Infolink: Information Literacy Skills;
- Principals First Information and Communication Technologies (ICT) Workshop; and
- Apple Education Bus Tour.

CASE 1: FUTURE PROBLEM SOLVING NEW ZEALAND

The Programme

Future Problem Solving New Zealand is a year long programme where students work in teams supported by a future problem-solving programme (FPSP) coach. The students learn, and apply a six-step problem-solving process:

- brainstorming topic-related challenges;
- identifying an underlying problem;
- brainstorming potential solutions to the problem;
- developing criteria to judge solutions;
- evaluating all solutions to develop the best solution; and
- describing the best solution to develop an action plan.

The programme culminates in a competition with participating schools using the last topic studied. One of the aims of the programme is to provide students with tools to tackle problems they will meet throughout their lives. The programme was founded in the United States in 1974.² It was introduced to New Zealand in 1990, and New Zealand became an affiliate in 1994.

The New Zealand programme goals for students are to:

- develop an active interest in the future;
- encourage creative thinking;
- develop critical and analytical thought;
- strengthen oral and written communication skills;
- develop research techniques; and
- work cooperatively in teams.

In terms of the New Zealand curriculum, FPSP is regarded as cross-curricula, having closer links with social studies, science, English, and ICT than with other subjects. The community problem-solving programme (an aspect of FPSP) can become part of the technology curriculum.

One-day training workshops for coaches (who are usually primary or secondary teachers) are held once a year. These take place in Auckland, Wellington, and Christchurch. For this study, the researcher was a participant at the training workshop held in March 1999.

Research and Theoretical Background

The FPSP has a very strong theoretical background. It is developed from the work of the founder, Dr E. Paul Torrance of the University of Georgia, who created the programme as a curriculum project for Clark High School in Athens, Georgia in 1974.

² <http://www.fpsp.org>

Dr Torrance based FPSP on the Creative Problem-solving Process developed by Alex Osborn and described in his book *Applied Imagination* (1953), and on the work of Sidney Parnes who formalised creative problem-solving as a process framework in business and in education in 1967. During the 1990s there has been collaboration with the Center for Creative Learning Inc., Saratoga, Florida, and in particular its President Dr Donald Treffinger, to develop training materials for trainers, coaches, and students. Dr Treffinger is the author of a number of books on creative problem-solving, nurturing creativity, and productive thinking.³

The New Zealand national director had drawn on the work of Treffinger, Joan Dalton⁴, Tony Ryan⁵, Edward de Bono⁶, Jim Bellanca⁷, and Robin Fogarty⁸ as she developed the coaches' workshops. Joan Dalton's work on cooperative learning had inspired the national director from the time of her 1992 ANZAC Fellowship, which enabled her to spend time in Australian schools looking at programmes for gifted and talented students. The works of Tony Ryan, Edward de Bono, and Jim Bellanca on thinking skills and teaching thinking, and Robin Fogarty, on the intelligent-friendly classroom and different learning styles, were also inspirational. The director developed some activities for the coaches' workshops from "a huge number of practical activities and strategies to pick the eyes out of", such as those from the work of Dr Anne B. Crabbe⁹, made available at the 1989 World Conference on Gifted Children, which the director attended.

However, the primary resource for the coaches' workshops was the course materials provided by the FPSP parent body in the United States. These materials incorporated the work of E. Paul Torrance and the other FPSP theorists already referred to.

The Training Workshops

Development

The training workshops for coaches were first run in 1996. This was a requirement of New Zealand becoming affiliated with the United States programme. The workshops were developed by the national director following her training in the United States on how to use the American coaches' training guide. She subsequently adapted this guide for New Zealand teachers who were thought to prefer a less prescriptive approach.

Delivery

The national director used a range of methods to transfer information and skills to participants. These methods included presenting and discussing using visual aids, practical

³ <http://www.creativelearning.com/bibliography.htm>

⁴ Dalton, J. (1985) *Adventures in thinking*.

⁵ http://www.headfirst.com.au/html/tony_ryan.html

⁶ <http://www.edwdebono.com/>

⁷ <http://www.skylightedu.com/edmaterials/auindex.html>

⁸ *Ibid.*

⁹ e.g., *New directions in creativity research* (n.d.).

tasks, feedback, tutoring, and modelling based on the problem-solving process itself. Although no follow-up sessions were available after the workshop, the director encouraged participants to establish local cluster groups to provide continuing support for one another. The director set up a session at the end of the workshop for this purpose.

The National Director

The FPSP national director interviewed for this study was a trained teacher with a Bachelor of Education degree who is studying for her Masters degree at the time of the interview. She had also undertaken “training for trainers” in the United States.

Director’s Access to Current Information

The director kept up-to-date with new information relating to future problem solving in a number of ways. Her personal contacts in the United States, two magazines she subscribed to¹⁰ and books she purchased (which she knew about from her other reading, her personal contacts and her position as a technology education advisor) were particularly important.

The director described the process she used to integrate new information into her knowledge base:

I read around and around and around something and all of a sudden I realise I’m not reading anything new any more. Then I know I’ve got the big picture and it’s time to move on to something else. I make connections to a related area and move on to that one.

The director currently obtained information about new educational research and theory from most of the items on the checklist, which the interviewer read out. She used:

- professional reading;
- courses;
- conferences;
- study for a higher qualification;
- school advisors;
- the World Wide Web;
- e-mail or listserv discussions or communications;
- informal discussions with colleagues at her workplace;
- informal discussions with colleagues at their workplace;
- informal discussions with colleagues at other workplaces;
- formal training or ideas swapping at her workplace;
- professional network groups such as an informal New Zealand senior FPS coaches network group; and
- the media.

¹⁰ *Focus and The Futurist.*

The main barriers which hindered her greater use of research and theory in the workshops were preparation time, as running the coaches' workshops was not her main job, and delivery time as the workshops were only one day. (To overcome the second barrier, she provided research and theoretical material as handouts for participants to read after the workshop. This is discussed in more detail below). Also, the director would have liked to go beyond using existing research to producing more resources for others to use.

In response to a question asking her to think of an area she would like to know more about and how she would obtain information on this, the director selected "teaching future skills—how do we teach children the skills they will need to live in the future?"

This was an emerging area of investigation. In the first instance, the director said she would approach personal contacts she knew were working in this field and then ideally would do some research on this herself.

Main Themes and Ideas

The main ideas which the director wanted to convey to workshop participants were the six steps process for the FPSP (see above). She also wanted to motivate the teachers to make changes in their own teaching so as to be able to use the process with their students. The main teaching tools she wanted to get across were the use of creative thinking to "generate lots of ideas, and as many unique and original ideas as you can" and the use of critical thinking skills to "sift and analysis the ideas".

Intended Impact of the Workshop on the Teachers' Beliefs about Teaching and Learning

The director felt, and said some research in the United States had shown this, that where teachers participated in the workshop because their school principal had wanted them to, there tended to be a high drop out of the FPSP at the end of the first year. If they were there because they had initiated their own involvement, they tended to stick with the programme. She said she knew that in one day it was not possible to make any great impact:

I hope the participants will have become curious enough as a result of the course to want to make changes. I want people not just take these things up as in "here are some tools that we could use and we'll go away and use them, and we'll follow the rules totally", because that's just a novice's way of doing it, but that's what we all do at first. I want them to move from being a novice, and adopting them, to being an expert by internalising these things and then being able to use them in innovative ways and say [to themselves] I can adapt these things.

Factors that Assist Teachers in Internalising and Using the Course Content

The director felt the hands-on approach involving modelling helped with internalising and use:

One of the big things is having them do the problem-solving activities in groups, like teams of students, at the workshop. You can sit and listen forever

and a day but to actually do parts of the programme in groups at the workshop, just like the students will be doing, works well. And when you go away and teach it to others you learn even more.

Barriers to Participants' Future Use of Material

The director saw three main barriers: time, money, and school culture:

Future problem solving is not part of the compulsory curriculum in schools so when teachers are totally overloaded with the curriculum and something has given they tend to drop this because it is optional.

She said the cost is only \$100 per team per year (i.e., \$20 per student), but felt this could be a barrier, for instance, in a decile 1 school.

With regard to school culture, she said:

In terms of school culture, most of our senior teams come from girls' schools, and in particular private girls' schools. When we do get boys' schools on the programme, apart from two which have been with the programme for some time, they tend to drop out. Perhaps it has something to do with the emphasis on sport in boys' schools.

The Role of the Director in Presenting Research and Theory

At the workshop the director provided approximately 20 handouts to participants covering the research, theory, evaluation, and practice of the FPSP. The intention was that participants would read these in their own time. In a one-day course there was only time to refer explicitly to the practical handouts which supported programme activities, and were used by participants in group work during the day. There were no course materials provided prior to the workshop, but some participants had already purchased the coaches' guide. Others would purchase this after the workshop. In addition, the co-ordinator provided a display of approximately 20 books on future problem solving, thinking skills, and creative learning for participants to browse during breaks.

Research and Theory: Implicit or Explicit?

The FPSP was explicitly grounded in its theoretical base. At the workshop, the presenter made this base quite clear. She provided handouts and references which described and discussed the theory and its applications. In addition, workshop participants practised using the six steps of the programme as they undertook problem-solving activities in small groups.

The Participants

Seven of the 15 workshop participants completed the initial questionnaire and the follow-up telephone interview approximately one year later. Four teachers were from primary or intermediate schools, one from a composite school and two from secondary schools. They had taught for between 1 and 20 years, with the average being 8 years.

Interest in the Workshop

Respondents were asked why they had enrolled in the workshop and could select as many reasons as applied from a list. Only one chose one reason—that she/he had responsibility for this area at school. The other six all selected personal interest. In addition, five of these wanted to up-skill in this area; four wanted to obtain information to start a development at their school; three wanted to meet a particular need at their school; two were encouraged by staff at their school, and two had responsibility for this area at their school.

For three teachers, their initial interest had been triggered by their involvement in programmes for gifted and talented students. Another teacher felt it matched his/her philosophy. Several obtained information initially from colleagues, teachers' colleges, or the media and followed this up. Six teachers had currently obtained information on future problem solving from the national office of the New Zealand FPSP. Two participants had undertaken professional development in the area previously.

Knowledge and Beliefs

Most teachers rated themselves as having “some familiarity” or “being familiar” with this area. Only one was unfamiliar. Similarly, most teachers thought that their current level of understanding of the knowledge base behind the paper was “not very comprehensive”.

The seven teachers all said they had a personal philosophy or set of beliefs about teaching future problem solving. All commented on the need for children to have the opportunity to learn how to solve problems, think creatively and analytically and/or develop a love of learning.

All teachers reported that they reflected at least sometimes on their personal philosophy or set of beliefs about teaching. This led all to change their beliefs about teaching at least occasionally.

The experiences and sources of information which influenced more than two teachers to alter their beliefs were:

- experiences with students (7);
- professional reading (7);
- external courses or professional development (7);
- informal discussions with colleagues at own school (6);
- classroom experiences with lesson content (5);
- observation of others' teaching (4);
- mentors (4);
- study for a higher qualification (3); and
- informal discussions with colleagues at other schools (3).

In thinking about what they wanted to get out of the course, the teachers wished to gain a greater understanding of the FPSP to use the programme, or skills from the programme, with students.

Approximately one year after the baseline questionnaire, the seven participants responded to a telephone interview about their access to research-based information and their use of information obtained from the course.

Six teachers said that attending the course had confirmed or extended their beliefs about future problem solving. Comments included “I came away a lot happier”, “the course gave a new lease of life”, “the course highlighted the importance of the thinking process”, “the course reinforced that this is an opportunity to extend able students”, and “the course reminded me of things I had failed to continue to create time for”.

Access to Information to Inform Teaching Practice

Only one teacher felt her pre-service college of education training had provided her with the knowledge or skills to access information on new educational research or theory. The other participants said they gained these skills through their university study, and teaching themselves on-the-job and by using the Internet.

For these teachers, access to new educational research findings came from professional reading for further study, external courses and publications received by their school including *set: Research Information for Teachers* and other publications from NZCER.

Five respondents said they often incorporated ideas from educational theories into their work, and the other two teachers said they sometimes did. Examples given were the use of theory on children’s readiness to learn; a whole-school approach to gifted education; behaviour management; and cooperative learning.

Teachers used a variety of ways to source information when it was required including finding appropriate courses to attend; talking to other teachers and using resources which had already been developed by colleagues. Four teachers said lack of time was the main barrier for them in accessing educational research findings and theory. One said lack of access to professional journals was her main barrier and two said *set* or other professional resources received by the school were not adequately circulated. Three teachers had undertaken further professional development in this area and two had plans to do so. Several had followed up with further professional reading in this area and retained an active interest in future problem solving.

Use of the Information from the Programme

Approximately one year after the course, five participants could recall the main aspects of the theory underpinning future problem solving. Currently, five had responsibilities for future problem solving at their school.

Most had shared information from the course with colleagues at school either by running a seminar, reporting at a staff meeting or talking informally with colleagues. Teachers saw future problem solving as providing opportunities to develop thinking skills, team work, brainstorming skills, analysis of ideas, lateral thinking, information processing skills, communication skills, and an opportunity for able students to be extended.

Factors that Assist New Developments and Change

Three teachers felt new ideas were often encouraged at their school, and three felt new ideas were sometimes encouraged. One felt this happened occasionally and one teacher didn’t know as she was new to the school and was employed part-time. The factors which the teachers identified as contributing most to this school culture of encouraging new ideas and teaching practices were collegiality of staff; an emphasis on whole school/syndicate/

department development; funds are available for professional development; and the role of the school principal (mentioned under the “other” category).

Factors that Hindered the Use of Knowledge and Skills

In the follow-up telephone interview, the teachers were asked to identify any barriers that might have prevented their use of the knowledge and skills they gained on the course. Four teachers said lack of time available. This included one comment on the crowded curriculum and another on the difficulty of getting children released for the programme. One teacher said a barrier was the fact that students were not keen to take part, and one teacher said it was difficult to get other staff to recognise the value of the programme.

Summary

For most of the seven participants, access to educational research and theory came from professional reading for further study, external courses, and information received by participants' schools. Three teachers felt they had inadequate access to such information. In two cases this was because professional resources were inadequately circulated at their schools, and in one case lack of access to professional journals was the main barrier. Extensive information covering the research, theory, evaluation, and practice of future problem solving was provided during the workshop. One year after the course, several teachers had followed up with further professional reading in the area. Most participants could recall main aspects of the theory underpinning future problem solving (described at the beginning of this chapter); and five of the seven teachers had responsibilities for future problem solving at their school.

CASE 2: MULTIPLE INTELLIGENCES IN THE CLASSROOM

The Course

Multiple Intelligences in the Classroom is a distance education course offered by the Christchurch College of Education. It is intended for practising teachers, and is offered as a course for the Higher and Advanced Diplomas of Teaching and Bachelor of Teaching and Learning (Upgrade for Teachers). The course takes place over six months during which time students are sent three study guides at six weekly intervals containing some 47 readings and 43 references in total. There is a written assignment for each study guide.

The focus of the first study guide is on contemporary theories on intelligences and their implications¹¹; the second is on developing practical applications of multiple intelligences¹²; and the third is on multiple intelligences, the New Zealand Curriculum Framework essential skills, and assessment¹³. The aim of the course is to improve teaching and learning in the classroom. Contemporary theories on intelligences are introduced and the intention is that participants will reflect on what these ideas can mean for their teaching and learning. The course has been designed to help the curriculum to be taught more effectively.

The information in this chapter is taken from the course which ran from February to July 1999, and draws on the telephone interview with one of the course developers¹⁴; the study guides; other published information about the course; and the questionnaires completed by participants at the time they received their first study guide (February 1999).

Research and Theoretical Background

Multiple Intelligences in the Classroom has an extensive theoretical background. The first study guide introduces the concept of intelligence and provides a number of readings and references to the work of prominent theorists (e.g., Gardner¹⁵ and Sternberg¹⁶) on what intelligence is. There are also papers on the definition and evaluation of the concept of theory and on building a personal theory through the use of reflection. The second study guide provides a number of papers by educationalists and others on the use of multiple intelligences in the classroom. The third guide presents papers on multiple intelligence approaches to assessment and the concept of thoughtful outcomes.

¹¹ Christchurch College of Education (1999). Contemporary theories and their implications.

¹² Christchurch College of Education (1999). Multiple intelligences: Developing practical intelligences.

¹³ Christchurch College of Education (1999). Multiple intelligences and the NZCF essential skills.

¹⁴ The course co-ordinator was on extended sick leave at the time of the data collection, and the other course developer was overseas and could not be contacted.

¹⁵ Gardner, H. (1993).

¹⁶ Sternberg, R. (1985).

Development

The course was first offered in 1998. It was developed using the work of the major overseas theorists on learning styles and intelligences, in particular the theories of multiple intelligences. The course developer who was interviewed developed the links to the New Zealand context, including the New Zealand Curriculum Framework, in particular the essential skills.

The Course Developer

The course developer interviewed for this study had trained as a primary school teacher and had worked as an advisor to schools. She had studied postgraduate papers through universities in the United States, had started a diploma in school management and had undertaken part of a Masters degree in teaching and learning.

Course Developer's Access to Current Information

The course developer kept up-to-date with new information relating to multiple intelligences through the web, libraries and e-mail contact with educationalists around the world. She indicated that she had obtained information about new educational research and theory from all of the items on the checklist the interviewer read out. She used:

- professional reading;
- the Education Gazette;
- courses;
- conferences;
- study for a higher qualification;
- school advisors;
- libraries (National Library, College of Education Library, and public library);
- databases (ERIC);
- the World Wide Web;
- e-mail or listserv discussions or communications;
- informal discussions with colleagues at her workplace;
- informal discussions with colleagues at their workplace;
- informal discussions with colleagues at other workplaces;
- formal training or ideas swapping at her workplace;
- teachers/visits to schools;
- professional network groups;
- curriculum contracts;
- cluster groups;
- education organisations;
- community groups/contacts/parents;
- mentors; and
- the media.

There were no barriers hindering her use of educational theory and practice—if she wanted to know something she went to the source. In thinking about a new area she would like to know more about and how she would obtain information on this, the course developer said she was interested in following up on the current thinking of multiple intelligences so she went to the “source of the spring”. She visited Howard Gardner and David Perkins at Harvard and attended an international conference on multiple intelligences and teaching for understanding held there in June 1999.

Main Themes and Ideas

The main themes and ideas, which she wanted to convey to course participants, were:

The teacher should assume nothing about the learner and the teacher should learn about the student from observation. Everyone can learn, people learn differently, respect the learner and trust the learner to show what they know. The learner has prior knowledge and this is very important. The learner has the right to the traditional body of knowledge and then they need to look to what they knew before, what they have been given from the traditional body of knowledge and actually to critique and look at things—not to take anything for granted but to make it their own.

She added her belief that:

There are more ways to do things than using pencil and paper; and rather than say to teachers this is the way to do something, you respect them as teachers and suggest they draw on their own strengths and reflect. I ask them to look at what they are doing, to see how it stacks up with this new knowledge, to trial things and see what happens and really think about the purpose of what they are doing.

Intended Impact of the Course on the Teachers’ Beliefs about Teaching and Learning

The course developer described her aspirations:

Basically this course is saying here is another way of looking at the world that you’re working in. I’m hoping the course participants will extend their understanding of themselves, their students, their teaching practice, and what is possible. The more they understand themselves and their students the better their teaching will be. If they trial things, trust themselves, persevere, and, as a consequence, widen their view they will be able to see a lot more potential within their students. If their students feel valued they will see a lot more potential within themselves and will show more of what they know. Many students don’t actually believe they have anything to offer. I’m hoping the teachers will look at being purposeful and aware of what they are doing so that children are engaged in thoughtful work rather than just busy work. The whole purpose of school should be thoughtful.

Factors that Assist Teachers in Internalising and Using the Course Content

The course developer emphasised the importance of trying course content out, doing it, experiencing it, and relating it to classroom contexts.

Barriers to Participants' Future Use of Material

The course developer thought an attitude of intent was important for implementation:

There's a difference between just attending something and intending. If a person decides to persist with something, they will find a way of doing it. So those who have got the intent to use it for their practice will get something out of it. Whereas those who just attend to complete the course and get a qualification out of it will put it in their bottom drawer.

The Role of the Course Developer in Presenting Research and Theory

As described in the research and theoretical background section, research and theory is presented explicitly in the content of the three study guides and is linked to practice and assessment. The course developer expressed her views on the need for stronger links generally between research and practice:

I think teachers need to be aware of research and theory and they also need to be critically reflective, to reflect on what they are doing and to critique it carefully. They need to ground what they are doing in theory which comes out of research because they are doing things all the time and sometimes they'll see things written on paper and they will say "oh that's what it is I'm doing". I'm very aware of the gap between research and practice. I would really like researchers to get in there and work with teachers to examine and record what teachers are doing. It would be a wonderful partnership. I would like to see researchers attached full-time to clusters of schools.

Research and Theory: Implicit or Explicit?

As discussed above, the theory of Multiple Intelligences is the work of Howard Gardner and others. Copies of articles on the theory and its applications by various authors, including Gardner, were explicitly provided in participants' work books.

The course focused on the consideration of this theoretical material and its applications in the context of participants' own classrooms.

The Participants

Nineteen of the 57 course participants completed the initial questionnaire (and a sub-sample of seven completed the follow-up interview approximately one year later). Eleven were from primary or intermediate schools, five from secondary schools, one was from a special school and two were not teaching. Those teaching had taught for between 1 and 25 years, with the average being 15 years.

Interest in the Course

Respondents were asked why they had enrolled in the course and could select as many reasons as applied from a list. Eighteen people selected “personal interest”; 14 said they wanted to upskill in this area; seven wanted to obtain information to start a development at their school; for six people it contributed to a formal qualification; for five people it was to meet a particular need at their school and for one it was part of the school’s development plan.

The main ways that teachers’ interest in multiple intelligences had initially been triggered were from other courses they had attended, notes on possible courses for study, and from other reading. Nine teachers currently obtained information on multiple intelligences. The main sources used were the World Wide Web, library searches, and books. Only one person had undertaken professional development in this area previously.

Knowledge and Beliefs

Most teachers had some familiarity with multiple intelligences. Only five were unfamiliar with the area. Two respondents felt their current level of understanding of the knowledge base behind multiple intelligences was comprehensive; the others felt their understanding was not comprehensive. Five teachers described their personal philosophy or set of beliefs concerning multiple intelligences in the classroom. They focused on different ways of learning and knowing and helping children to use these different ways.

All teachers reflected on their personal philosophy or set of beliefs about teaching. Nearly all did this often or sometimes. All teachers said they altered their philosophy at least occasionally.

In the course of their teaching, teachers said they altered their beliefs. The experiences and sources of information which influenced more than two teachers to alter their beliefs were:

- experiences with students (18);
- study for a higher qualification (18);
- external courses or professional development (17);
- professional reading (16);
- informal discussions with colleagues at own school (13);
- informal discussions with colleagues at other schools (13);
- formal in-school training or idea swapping sessions (11);
- advisors (10);
- classroom experiences with lesson content (9);
- observation of others’ teaching (9);
- professional network groups (5);
- curriculum contracts (5);
- community groups/contacts/parents (5); and
- education organisations (4).

In looking at what teachers wanted to get out of the course, generally they wanted to extend their knowledge about children’s learning to develop classroom programmes to better meet student needs.

Approximately one year after the baseline questionnaire, a sub-sample of seven participants from the original sample responded to a telephone interview about their access to research-based information, and their use of the information obtained from the course.

Teachers were asked how, if at all, the course had influenced their beliefs on teaching and learning in the area of multiple intelligences. All seven teachers said it had strengthened, reaffirmed or extended their understanding or knowledge of multiple intelligences.

Access to Information to Inform Teaching Practice

Only one teacher felt her pre-service college of education training had provided her with a good grounding in accessing information. The other teachers said they had gained these skills from their university study, in-service courses, and on-the-job experience. The teachers accessed new educational research findings through publications received by their school such as those from the Ministry of Education, and NZCER (including *set: Research Information for Teachers*). Those working in special education had access to a specialist information service.

All seven respondents said they often incorporated ideas from educational research and theory into their work. Examples given were children's learning styles; dynamic assessment; reading recovery techniques; cooperative learning; and thinking skills.

When they needed information, teachers mentioned that they turned to *set: Research Information for Teachers*; their college of education library; their local education centre; the Internet; and they sought out appropriate courses and facilitators.

Three teachers said lack of time was the main barrier for them in accessing educational research findings and theory. One teacher said the main barrier was the cost of accessing professional journals as there was no library service available where journals could be perused regularly to keep up-to-date. Another said learning to use the college of education online catalogue from her home computer had been the main barrier, but this had now been overcome and her access was good. Two teachers said geographical isolation meant there were few opportunities to talk with advisors and other experts. None of the teachers had undertaken further professional development in this area. However five intended to do so if the opportunity arose.

Use of the Information from the Course

Approximately one year after the course, the seven respondents could recall Howard Gardner's theory of multiple intelligences on which the course was based. Currently one teacher had responsibility for multiple intelligences at her school. Other teachers incorporated aspects of the theory into their work with students. Six participants had shared information from the course with colleagues at school. Methods used for information sharing included peer tutoring; providing handouts; running a seminar; one-to-one discussions; addressing a syndicate meeting and addressing a staff meeting. One participant planned to facilitate a discussion with staff to begin a process of whole school development for multiple intelligences.

Factors that Assist New Developments and Change

Six of the teachers felt the development of new ideas and teaching practices was often encouraged at their schools. One teacher felt this was encouraged occasionally. The factors which teachers identified as contributing most to this culture were:

- funds are available for professional development;
- non-teaching time is set aside for professional development or meetings;
- cooperative planning systems for discussing new ideas;
- collegiality of staff;
- emphasis on professional development; and
- an emphasis on whole school development.

Factors that Hindered the Use of Knowledge and Skills

Three teachers said that staff resistance to change was a barrier, while one teacher said lack of time and another said not being in a position to practice new ideas were the main barriers.

Two people said there were no barriers. One of these added that a lot of the course consisted of very simple ideas which didn't need additional resources for implementation.

Summary

Most of the 19 participants accessed new educational research findings through publications received by their school. One year later, no common barriers to access were identified by the sub-sample and all respondents could recall Gardner's theory of multiple intelligences. At the follow-up time, one teacher had responsibility for multiple intelligences at her school, while others incorporated aspects of the theory into their work with students.

CASE 3: WHOLE SCHOOL INFORMATION TECHNOLOGY PROFESSIONAL DEVELOPMENT

The Programme

The first information skills case study focused on a whole school *Information Technology Professional Development* (ITPD) in a primary school. This professional development was partially funded from the 1999 ITPD¹⁷ scheme and was provided by a facilitator from a private company specialising in ICT support and resourcing for the education sector.

In order to receive ITPD funding, the school put a proposal to the Ministry of Education which specified the school goals. The brief for the proposal was for the provider to assist staff to integrate ICT throughout the curriculum and to develop strategies to ensure computer equipment was cared for by students and staff. The provider and the school principal wrote the proposal. Once it was accepted, the content was confirmed by the school ICT committee.

The provider anticipated that the teachers participating in the ITPD would cover the spectrum from those experienced in using ICT to those who had little experience. Teachers at the school completed a needs analysis at the first ITPD session, which gave the provider baseline information on the teachers' current knowledge on integrating ICT into the curriculum. This information was used to tailor the information presented in further sessions. A number of sessions were presented by the provider over the course of the school year. The delivery of the ITPD sessions is outlined later in this chapter.

Research and Theoretical Background

The sessions the provider developed were based on a synthesis of information obtained from her training as a teacher, postgraduate study, professional reading on current research from an in-house library, weekly teleconferences with colleagues, and on-the-job experiences.

Development

In developing these ITPD sessions the provider drew on her company's work in this area since 1994. The current format of the sessions was developed from feedback received from an early contract in which staff from different schools had been brought together for workshops on ICT use in the classroom. The participants at these sessions had identified the need for a service which was tailored to the individual situation of the staff at each school, and the equipment available at that school. The provider considered whole school sessions were more effective:

¹⁷ The ITPD scheme is a funding scheme set up by the Ministry of Education. Schools apply for funding to manage their own ICT training and development. Schools are required to submit objectives and a plan to be assessed before funding is provided. When funded schools may contract outside providers to develop and deliver programmes.

. . . it's certainly better if the whole school is involved because it tends to allow the school to put an emphasis on it so they make it a priority. If it's just one or two people from each syndicate there tends not to be that flow-on effect.

The format of the sessions was developed from the provider's philosophy and gave teachers time to reflect on their practice. The provider described this philosophy as:

. . . teachers developing skills, and putting them into practice into the classroom . . . hands-on small sessions work best for this type of skill development. Repeated visits are important so that teachers have time to practise and to think about their learning and then have another go at it, or move on.

The content of the sessions were driven by the schools, for example:

. . . one school we recently worked with were looking at word processing across the school. The syndicates went away and wrote down the types of word processing skills they would like their students to have when they get to them, and the types of word processing skills they expect the students to have when they leave them. So we started at the top end of the school and matched to see if the expectations were met.

The sessions were limited to a small number of people at any one time to accommodate individual needs. A central core of information developed by the provider over time and revised to take account of the emergence of new ideas, experiences with other schools, the provider's professional reading and changes in technology was tailored to the needs of the school and individual staff members and then presented in the session.

Delivery

The provider and the school organised three sessions over one month. Before the first session, teachers were sent an outline of the session contents. Following these sessions the plan was for the provider to visit for another two sessions later in the year. The provider was available for additional queries from teachers or the principal between these sessions.

The first session was held after school. For the second two sessions teachers were released for attendance during the school day. The first session started with an overview to give the participants an idea of ICT tools they would be using in subsequent sessions and ways to integrate these tools within a unit of work. Further sessions focused on these tools in more detail.

The provider adjusted the sessions to the skill level of the participants. Although the provider could give two similar sessions to two groups of teachers on the same day, these sessions were not fixed and were tailored to the teachers' needs. The provider focused on encouraging the teachers to drive each session.

Modelling the approaches and skills desired in the classroom was the provider's main teaching method. She modelled risk-taking and problem-solving approaches to participants, because she considered that ICT skills could not be taught in a step-by-step fashion as the

technology teachers were required to use was changing so rapidly. The provider considered that teachers and students needed to learn the skills to solve their own problems. To do this, the provider used “prompting and pausing”, that is, giving participants time to think through solutions to their own questions rather than doing it for them.

In these sessions, the provider distributed two main types of handouts. The first listed skills, in categories of “starting out”, “intermediate”, and “expert”, that students could develop using each tool, for example, skills, such as inserting graphics, that students could develop using a word processor. The second type listed possible classroom activities using each general tool, for example, ways to incorporate the use of a word processor in working with new entrants.

Other methods of presentation included starting with a group discussion to find out what people had been doing in the classroom since the last session, hands-on tasks for the participants to attempt, a video, and small group exercises.

The Provider

The provider interviewed for this study was a trained teacher, with a Bachelor of Education and a postgraduate diploma in arts. She had attended ICT skills-based sessions as part of a business studies’ course, and had completed an Advanced Studies for Teachers (AST) paper on information technology in the classroom. The provider used professional reading and on-the-job experience to extend her facilitation skills.

Provider’s Access to Current Information

The provider’s main sources of information were the World Wide Web, listserv/s, colleagues, and professional reading. Two important information sources used by the provider were *From Now On: The Educational Technology Journal*¹⁸, and the *Infotech Weekly* supplement in the Dominion newspaper. The provider absorbed this information and considered it for integration in her sessions. Other sources of information included:

- professional development courses;
- conferences;
- teachers/visits to schools;
- professional network groups;
- curriculum contracts;
- education organisations; and
- the media.

The provider considered that she had adequate access to current research-based information. She noted that it could be difficult to find the time to fit in her own professional development.

¹⁸ <http://www.fno.org>

Main Themes and Ideas

The main themes and ideas that the provider wished to convey to participants were:

. . . that IT is a tool, that it can enhance teaching and learning, that it is something that can be managed, but it has to be planned for. That it opens doors, that students can get access to information from real sources, sources which are used by people in the community and the workforce . . . simple things like the telephone. That can actually improve the way that the students are getting access and using the information. That it is cross-curricular . . . that it is not just part of the technology curriculum.

Other ideas that the provider considered important were that the use of ICT was integrated throughout the curriculum, and that teachers thought about “how students are going to deal with knowledge and what IT can support that”.

The provider wanted participants to evaluate the classroom management strategies they currently used and to think how these strategies could be adapted to suit children using ICT:

I always ask them to go away and think about the discussion, read through the notes I’ve given them and commit themselves to some kind of strategy and that is certainly something I follow up. I always ask them “have you got a system in place?”

The provider also suggested examples of strategies that had worked in other schools for the teachers to adopt or adapt. This included a focus on making “students independent rather than dependent on the teachers”.

Intended Impact of the Sessions on Teachers’ Beliefs about Teaching and Learning

The provider anticipated that the material presented at the sessions would increase teachers’ personal confidence in using ICT, and therefore, they would start to use ICT for the dual purposes of administration and lesson planning. She also anticipated that the sessions would have an impact on the content of their lesson planning. She felt teachers would consider more explicitly how they could use ICT to enhance students’ learning. This could lead to changes in teaching style and philosophy as teachers considered how they taught and how they expected students to learn. For example, encouraging students to “discover” and “investigate”:

. . . if they encourage the students to inquire more and take risks more rather than the teacher being in the stand and deliver mode. I suppose it’s the pedagogy of learning . . . that will gradually change.

The provider suggested that the use of ICT could encourage participants to adopt a more student-driven teaching style with a focus on process rather than presentation:

There’s this real belief I think that because it comes out of the computer it’s got to be perfect and right. But it is neat seeing the process—“these were the questions we asked, how we modified them, this was the fax that we sent, this was the response we got . . .”

The provider considered that the initial group session, which focused on school-wide issues, would give participants a starting point to develop school-wide systems and strategies for the use of ICT for administration and in the classroom. To overcome this impetus being lost between sessions, she suggested schools set aside time in staff meetings to continue this focus.

Factors that Assist Teachers in Internalising and Using the Course Content

The provider suggested the main factor that could assist participants to internalise the information they gained on the ITPD course was time, that is, “time to think, to practice, to try it out, to evaluate the effect on their teaching and on the students’ learning”. Release time was seen as a way to provide time for teachers. Other factors to help internalisation included the structure of the ITPD sessions that provided teachers with the opportunity to “come back and discuss things that worked and didn’t work”, and teachers being encouraged to take advantage of the provider’s presence and each other for “just-in-time” help.

Barriers to Participants’ Future Use of Material

The barriers identified that could hinder participants’ use of course material included teachers not putting the time in because of other commitments and the current wave of curriculum development occurring; motivation; money; the technology breaking down and, students knowing more about how to use ICT tools than teachers.

The Role of the Provider in Presenting Research and Theory

The provider considered the role of educational research and theory in the sessions she facilitated was to confirm what she was doing was “along the right track”. She described her role as that of a “filter” as she read and repackaging research into user-friendly resources for teachers.

Research and Theory: Implicit or Explicit?

These sessions were largely teacher driven. The aim was for teachers to identify their needs and have them met. The provider tailored the sessions to the skill level of the participants while they worked.

During the sessions, the provider modelled the type of teaching approaches she was trying to encourage, that is, problem-solving by teachers when using software as opposed to getting someone else to do it for them, and peer tutoring strategies. In addition, the provider suggested a model of planning based on best practice. Throughout the sessions the provider kept the focus on the integration of ICT skills throughout the curriculum and provided examples of good practice on planning and managing technology use in the classroom. For instance, she provided examples for using peer tutors and developing students’ skills in working cooperatively. Teachers were encouraged to support and peer tutor each other and the provider modelled this approach.

Through discussions during the course of the sessions the provider prompted teachers to develop and refine their beliefs about their role as teachers, the strategies and teaching styles they used, and their ideas concerning the use of ICT in the classroom.

The focus of this professional development was on building hands-on ICT skills, rather than examining the research and theoretical basis for the use of ICT in the classroom. To this end, the research and theoretical background to the course had been repackaged by the provider. Information with a research or theoretical base, such as the authoring circle, the inquiry process, or the various ways to peer tutor, was presented in an implicit way that was accessible and relevant. It was not necessarily authoritative, however, as reference was not made explicitly, nor sources provided, to the theory behind the development of this material.

The Participants

The primary school selected for this project had a total of 10 teaching staff including the principal. Of these, eight attended the professional development course. These eight people all returned the baseline questionnaire, and five completed the follow-up interview.

These educators had been teaching or involved in school management from one month to 18 years, the average being 10 years.

Interest in the Course

Teachers were attending this ITPD because it was part of their school's professional development plan, and because they were interested in, and wished to up-skill, in this area. For most, their initial interest in ICT had been triggered by their own personal use of computers and the fact they had computers in the classroom:

Necessity—with computers being part of the classroom it became vital to try and gain some understanding and valid uses for the curriculum time devoted to them.

Five participants had previously attended professional development in this area. In most cases this had been provided by the local college of education.

Knowledge and Beliefs

Seven educators currently received information about the use of ICT in schools from colleagues, professional reading, and family and friends. They had put this information into practice by trying out new activities and tools with students. In line with their classroom practice, seven of the educators rated themselves as having at least “some familiarity” with the area of ICT, though six thought that their current level of understanding of the knowledge base behind the use of ICT in the classroom was “not very comprehensive”. Seven educators had previously developed a personal set of beliefs about teaching using ICT, for example:

I do feel it is important that IT is used as a tool in gathering, processing and using information—it is important to teach the skills, but they are only truly relevant in context. Children need to learn how to select and use appropriate information.

The educators stated that they often or sometimes reflected on their personal set of beliefs about teaching and this reflection sometimes led these teachers to change those beliefs. The experiences and sources of information that influenced their beliefs included:

- experiences with students (8);
- external courses or professional development (8);
- observation of others' teaching (8);
- formal in-school training or idea swapping sessions (8);
- classroom experiences with lesson content (7);
- informal discussions with colleagues at their school (7);
- informal discussions with colleagues at other schools (7);
- professional reading (7);
- study for a higher qualification (7);
- advisors (6);
- curriculum contracts or cluster groups (3);
- community groups/contacts/parents (3);
- e-mail or listserv discussions or communications (2);
- the World Wide Web (2); and
- professional network groups (2).

The majority of teachers wanted to gain practical skills from this ITPD that they could use for administrative purposes, and ideas for classroom activities, for example:

... practical ideas on how to develop skills and make use of the computer as a learning resource with access to the Internet.

Immediately after the course, three teachers stated that attending the professional development had affirmed or strengthened their existing beliefs, two that the professional development had changed some of their beliefs, for example the importance of students using ICT, and one stated that the professional development had not influenced her beliefs at all.

One year after the professional development three of the five teachers interviewed stated that their beliefs had not changed since the professional development and two stated that their beliefs had strengthened. These two teachers commented that they were clearer as to the importance of students having a foundation of basic skills such as spelling and keyboarding before attempting activities using computers. One of the teachers whose beliefs had not changed suggested that they were "pretty idealistic" to start with. She commented that it was not realistic to integrate ICT use throughout the curriculum with 32 students in a class and one computer.

Access to Information to Inform Teaching Practice

When six teachers were interviewed immediately after the course, most suggested that they gained their initial skills in sourcing and accessing educational research findings and theory from university study rather than from the college of education they attended. This was especially the case for the older teachers; a more recent graduate had attended a course on research skills using the Internet, books, and journals as part of her college of education study.

Since completing their teaching qualifications the majority had acquired more knowledge about educational research and information-retrieval skills through on-the-job experience. One teacher had developed skills through attending professional development.

For these teachers, access to recent educational research findings mostly consisted of perusing the information that arrived at their school such as *New Zealand Education Gazette* articles, *set: Research Information for Teachers*, and Ministry of Education publications. Colleagues in and outside school and professional development providers were other main sources of research-based information. These teachers read articles and books suggested by colleagues or received current information from attending professional development or through completing further study.

On the whole these teachers did not actively search out research-based information unless a need, such as further university study, was identified. Although most were reactive in their use of research-based information two teachers stated that they “often” and four stated that they “sometimes” incorporated research- or theory-based ideas into their classroom practice. All six teachers provided examples of this incorporation, for example, using findings from an Australian study on behaviour management, and as a result of reading new research about emergent writing skills, changing how writing skills were taught to young children.

A variety of processes were used by these teachers to initially source information when it was required, the most common being to talk to colleagues at their own school and to peruse the school library to see what was available in education-related newspapers, journals, and books. These initial contacts then led to further written information or contacts at other schools.

These teachers noted that time was a barrier to them accessing educational research findings and theory, that is, time constraints due to other job demands, and time to read and apply this new knowledge in the classroom. Half stated that they did not have enough access to educational research findings, that is, they did not have access to an “education-based library”.

All of the five teachers who were interviewed a year later had received more information about teaching and learning and ICT since attending the ITPD course. Only one of these teachers had actively sought out this information, for the others, discussions with colleagues in staff meetings remained their main information source. Only one had attended further professional development, but two others planned to attend a course on teaching and learning with the Internet. Only one of these teachers had carried out professional reading in this area, and this was part of an AST paper on computers in education that she was completing.

Use of the Information from the Programme

The participants on the ITPD were unable to recall any educational research or theory that was presented to them during the course of this professional development. This course focused more on the development of practical skills (the provider had repackaged and linked findings to present to the participants as a set of practical skills). Most of the participants reported that they were not given any reading material or further information to follow up.

The majority of participants listed practical skills that they had gained as a result of attending the professional development such as: new techniques to manage the class when they were using computers with students, and ways to integrate ICT use into classroom practice.

When the ITPD participants were interviewed immediately post-course the majority planned to follow up the practical ideas they had gained on the professional development, for example, by using ICT for their planning and administration, using the keyboard in different ways with students, and setting up peer tutoring systems.

Hand-in-hand with their attendance at the professional development was the expectation that teachers would feed back information to other staff members, and that they would contribute to future developments in the ICT area at their school.

All stated that it was likely that they would be attending professional development in this area in the future, half thought that they needed this professional development immediately as they had identified areas in which they required additional skills. The other half stated that they would require further professional development in the future once they had practised and consolidated their recently acquired skills.

One year later, participants had actioned the majority of the practical ideas they had planned when interviewed immediately post-course. For most of these teachers, carrying out these plans had not led them on to further areas. Most were continuing to consolidate the skills they had developed over the past year. In the future the teachers intended to carry on using and developing the skills they had acquired.

Factors that Assist New Developments and Change

Having a school culture that fostered new ideas and developments enabled these teachers to action the ideas they gained from professional development. All of the teachers stated that the development of new ideas and teaching practices was “often” encouraged at their school. The factors which these teachers identified as contributing most to this culture were the collegiality of staff, a system of cooperative planning sessions in which staff shared new ideas, and the emphasis on whole school and other types of professional development at their school.

Factors that Hindered the Use of Knowledge and Skills

One year after they had attended the professional development, teachers were asked to identify any barriers that might have limited or prevented their use of knowledge and skills they gained on the professional development. Technical problems such as screens crashing and printers not working were their main concerns. Comments of this type were made by four of the five teachers interviewed.

Summary

The teachers accessed educational research and theory mostly by viewing the information available at their school, following up information from colleagues, and from attending professional development. However, although these sources were available, half thought that they lacked access to educational research and theory. The course did not provide them with background theory or research as it was designed mostly as a skills-based course and therefore the provider had repackaged information as a set of practical skills. Consequently the teachers did not develop plans to follow-up any research or theory-based material from the course or subsequent to the course. Only one teacher had accessed further research-based information about ICT and learning and this was as a result of further study. One year

later participants had actioned the majority of the practical ideas they had identified when interviewed immediately after the course. Implementing these practical plans had not led most teachers on to further areas. Most were continuing to consolidate the skills they had developed over the past year.

CASE 4: INFOLINK: INFORMATION LITERACY SKILLS

The Paper

The second information skills case study was *Infolink: Information Literacy Skills*. This is a paper provided by the Centre for Information Studies at the Auckland College of Education. This paper can be completed as part of a diploma programme or as a stand-alone paper. Infolink is designed as an in-service course for primary and secondary teachers and is usually delivered as a whole school development. It is run four times a year with up to 10 school sites at a time. A number of regional co-ordinators organise the delivery of the Infolink paper around New Zealand.

The purpose of Infolink is to introduce teachers and principals to a six-stage resource-based learning model (using both ICT and print resources) called Action Learning¹⁹ based on a model developed by Gwen Gawith. This model can be used to develop students' information literacy skills and is seen by the provider as a way to link the essential skills and learning areas of the New Zealand Curriculum Framework.

This paper is delivered face-to-face by tutors who usually visit school sites to provide eight sessions (in some cases a teacher at the school will lead the sessions with the support of a tutor via the telephone).

The tutors assume that participants have little practical and theoretical knowledge of the area. Sessions are presented on the principles of the six-stage Action Learning model and teachers then try out these principles, adapting and adjusting them with their own classes. The existing skills or the knowledge of participants is incorporated, as teachers use their prior knowledge and teaching strategies to trial the Action Learning model in their classrooms.

The Infolink paper selected for this study was a whole school professional development hosted by a primary school in a main urban area in the central North Island. Eleven educators, seven from the host primary school (including the principal), and four staff from primary and secondary schools in the surrounding area initially attended the course.

Research and Theoretical Background

The background for Infolink draws from a range of international research, theory, and best practice for the content, structure, and delivery modes of the paper. Most of the background for the paper came from a synthesis of the fields of resource-based learning and information literacy; constructivist, child-centred, cooperative, behaviourist, cognitive, and humanist learning theories; teacher librarianship; information management and instructional design; and adult and lifelong learning. This information has been repackaged and developed into the Action Learning model. The co-ordinator, when commenting on the model and its relationship to research and theory, stated:

¹⁹ Gawith, G. (1988).

It is a practical model for teachers and students to use in the classroom . . . She [the original developer—Gwen Gawith] has been the bridge between research and practice . . . she has made the bridge for them [the participants] through these courses.

The co-ordinator described the roles of the child and the teacher in this model as:

. . . the child needs to be in control of the learning process and the teacher needs to guide and scaffold them. It's the teacher's role to teach the skills by integrating those skills across the normal curriculum first . . . So we use the skills of the Action Learning model to enrich classroom practice and then what the teacher does is learn to harness all those skills and place them into a process in which the child can take increasing responsibility for . . . It is a model of good practice. That's why teachers use it and appreciate it. Once they've learnt it, they see that it is just a model that enables them to embed all their good teaching practice in it.

The theoretical background to the model is presented to teachers in the first session via a tape. Teachers are also provided with a diagram in their workbook which summarises this information.

The structure of the paper encourages teachers to reflect on their own practice and engage in action research. Teachers write a log of their experiences in a workbook.

Teachers are themselves engaged in cycles of action research . . . the Action Learning model itself of six stages represents six cycles of what we could call action research and so the course structure follows that as well. The teachers go back into their classrooms. They have a problem—which is “how do I integrate these skills into what I am already doing?” They have to reflect on their practice and they have to improve their practice . . . the teachers' research—if you want to call it that—is also embedded in the learning and it's the tutor's role during the first face-to-face sessions to engage them in this sort of reflection that will lead them into the next cycle.

In addition to the background information, and the log they keep, teachers are given a series of seminal international and local readings. Readings are chosen which are written in a “teacher-friendly, accessible way”. The log and the readings are used as tools by the tutors and markers to get teachers thinking about, and commenting on, the connection between research, theory, their own practice, and students' learning.

Development

The present paper was developed in 1991 in anticipation of the publication of the New Zealand Curriculum Framework (Ministry of Education; 1993), which included information skills as one of the eight “essential skills to be developed by all students across the whole curriculum throughout the years of schooling” (Ministry of Education; 1993, p.17).

Initially Infolink was run at colleges of education campus sites but, as it became more obvious that it was difficult for teachers at some schools to travel, and the demand from principals for school-based professional development grew, the location was swapped to school sites.

Although the delivery had changed to whole school, the content of the paper changed very little over time, apart from being adapted to suit both first year and experienced teachers.

The paper is structured on the developer's conception of best practice professional development and was developed with the different learning styles of students in mind including visual, oral, and audio methods of delivery.

The co-ordinator noted that:

. . . we are modelling a variety of resources for learning that we want the teachers to use in their classrooms . . . everything we want them to do in the classroom is modelled and explored by them as adults.

Delivery

The Infolink paper had a total of eight face-to-face sessions over eight weeks. The first two sessions were on a Friday after school and from 9 a.m. till 4 p.m. on the next day (Saturday). Following this, the group met for six other sessions after school approximately once a week. A researcher attended the first two sessions of this paper.

Professional development sessions included a tutor, taped lectures from the original developer, as well as a network of other schools connected via a teleconference at the end of each session.

Teachers were provided with a series of workbooks, the first one arriving with the pre-course material. Each session's workbook contained focused questions and a number of tasks which encouraged teachers to reflect on, and attempt, the various stages of the Action Learning model. During each session participants engaged in workshops and discussions, and completed individual tasks which were summarised in their workbook. The workbooks also included a self-evaluation section. Participants were required to hand in a workbook to be marked at the end of each session.

In addition to the workbooks, teachers were provided with readings each week. After all face-to-face sessions were finished, teachers were required to hand in a "reading response booklet" with their reflections on all the readings they had been provided with.

Teachers conducted an Action Learning unit with their students during the time period of the course. They were given tasks to complete both individually and with their students between sessions, and were provided with some guidance to start this process. Teachers kept a "learning log" of their reflections on this process.

During the course of the sessions, a variety of different styles of presentation and teaching methods are used including: audiotaped lectures outlining the model and its background; a video; whole group discussions; individual and small group tasks using the workbooks; study guides in which teachers were required to keep a log of what was happening in their classroom; overhead transparencies, handouts, and charts; a teleconference for teachers to hear how others were applying the principles in their classroom; a recommended text (Gawith; 1991); and practical tasks for teachers to complete by themselves and with their students, such as conducting a brainstorming exercise. A term or so after teachers had completed the Infolink paper, the regional co-ordinator offered a workshop called "Planning for Action Learning" which gives the teachers and the co-ordinator:

the opportunity to review and reflect and refresh our understanding. . . . It's the time to go back and say "well what did we learn on that course? And how are we going to use it now?"

Teachers are also able to take another paper in the diploma to further their knowledge in this area.

The Co-ordinator

A regional co-ordinator who tutors Infolink was interviewed for this study. The co-ordinator was a trained teacher and teacher-librarian with a Bachelor of Arts degree and some post-graduate experience.

Co-ordinator's Access to Current Information

The co-ordinator accessed information on new educational research from a range of sources, including:

- professional reading;
- professional development courses;
- conferences;
- school advisors;
- libraries including public libraries; College of Education, Massey University, and the National Library;
- databases, for example, ERIC;
- the World Wide Web;
- e-mail or listserv discussions or communications;
- informal discussions with colleagues at their workplace;
- informal discussions with colleagues at other workplaces;
- formal training or idea swapping sessions at their workplace;
- teachers and visits to schools;
- professional network groups such as the schools library network and the reading association;
- education organisations;
- mentors;
- the media; and
- other sources including family and travel contacts.

The co-ordinators of Infolink have a network set up for the exchange of professional information. The co-ordinator in Auckland conducted literature searches and tracked the work of prominent authors, this information was then passed to the co-ordinators in the regional centres. All co-ordinators send relevant articles to each other, attend conferences, workshops and lectures by visiting speakers, and talk with colleagues in their own and related areas. In addition, the co-ordinator who was interviewed had engaged in some of her own action research.

When the co-ordinator was looking for information about an area, her first source was her colleagues, then libraries and increasingly the Internet. The co-ordinator used the

information she collected to update the strategies she used as a tutor, for example, using mind maps and graphics for learning:

There are a lot of strategies that I know I use now that support adult learning that I didn't use in the early days. So there is constant modification going on.

Although the co-ordinator thought that she had enough access to information, owing to the pressure of her current workload, she considered that she did not have enough "good quality reading time".

Main Themes and Ideas

During the sessions the co-ordinator wanted participants to develop a full understanding of the Action Learning model, how this model linked with the essential skills, and the situations where they could use this model, for example:

... resource-based learning is an approach to learning which enables them to integrate all the essential skills in our curriculum into their classroom programme. That they can use the Action Learning model to support the development of those independent and lifelong learners, and that they can see the significance of the information literacy skills being the survival skills that their children are going to need. That they put what they learnt on the course into practical classroom application.

The co-ordinator wanted participants to leave the course with a thorough understanding of the Action Learning model, its six stages, and the skills necessary to carry out each stage, as well as having a heightened awareness of the common ground of the curriculum documents:

When they begin the course, they still tend to see every document as a separate document. When they've completed the course, they see the overlaps and the common territory and they can see the unifying role that information skills play across all the documents. And the teachers tell us that they change their mind set.

Another outcome which the co-ordinator wanted was that teachers could:

... make far more judicious use of the strategy. They know how to introduce the skills which make up the Action Learning stages, they also know when best to bring it all together and to teach an Action Learning unit.

Intended Impact of the Paper on the Teachers' Beliefs about Teaching and Learning

The co-ordinator anticipated that the material presented on Infolink would alter participants' beliefs about teaching and give them the tools to become a facilitator of learning rather than an imparter of knowledge, that is, teachers:

. . . become much more learner-focused. They understand how children learn, they understand the skills, they can analyse the skills kids need to learn successfully.

The co-ordinator noted that this change did not necessarily occur for everyone as some teachers “felt very uncomfortable in the facilitator role”. In the past some schools that had completed a whole school professional development in Infolink had put the ideas they had gained into their school policy; in other schools, syndicates or individuals used the skills they learnt.

The co-ordinator considered that the experience of Infolink stimulated a number of changes in a school which stemmed from the new “professional skills, strategies, beliefs and attitudes” that teachers had acquired. For instance, teachers might alter the way they planned within syndicates or for individual lessons; revise their view of the priority given to the library and its resourcing; and have an increased perception of colleagues, parents, and the wider community as potential resources for learning.

Factors that Assist Teachers in Internalising and Using the Course Content

The co-ordinator identified a number of factors that assisted teachers to use the content of the Infolink paper. The main factor was that the paper format required teachers to practice the new skills they had learnt in their classrooms. Another ingredient of success for the paper was the fact that the information presented:

. . . changes individuals’ perceptions, but it also initiates an institutional or cultural change, and this is true for schools regardless of their decile.

In addition, the extended time period covered by the paper and the readings that teachers were given encouraged teachers to reflect:

. . . at the very end of the course we ask them to go back to their readings and we say to them, “in the light of your new knowledge and experience, what do these readings really mean to you now?” And they have to be very explicit. This . . . demonstrates to us what they have internalised.

Other factors which the co-ordinator identified as assisting teachers to take up the content on board were that the paper could be credited towards a recognised qualification, that the principal was involved and that it was usually delivered as a whole school development, which allowed people to discuss ideas with their colleagues:

That is the ingredient for success—that they do it with colleagues, with support, they are immersed.

Barriers to Participants’ Future Use of Material

The co-ordinator identified a number of possible barriers that might inhibit teachers’ future use of material presented at the sessions. These were the existing school culture; different teaching styles of teachers; differences in the constructivist intent of the curriculum

documents and the way they had been expressed in writing; curriculum overload in schools; ERO and assessment requirements; the low literacy level of some students; the lack of information literacy skills of some teachers, and the fact that some graduates of pre-service teacher education had not developed the skills to reflect on their practice and wanted “instant recipes”.

The Role of the Co-ordinator in Presenting Research and Theory

The co-ordinator saw the role of research and theory as:

. . . the vital underpinning. To the extent that if research began to tell us different things we'd have to rethink.

The co-ordinator also considered that the format of the paper:

. . . totally **immerses** them in the theory and the practice—research into classrooms—they're doing it!

In terms of her role in presenting research to participants, the co-ordinator saw herself as a “human face” and a “bridge” between theory and practice. The co-ordinator alerted participants to information sources and encouraged teachers to attend lectures and workshops by visiting speakers. She attempted to tie in the presentations at conferences she had attended with the work that teachers were doing, for example:

Whenever I can, I help them to make the connections between what we do in the classroom and what the research says. I help them to make connections between what they're discovering and what other teachers have found. I guess other teachers' experience is an aspect of research. Once it becomes documented and shared this becomes our professional body of knowledge and so I'm very much the bridge, the conduit. And so I'm very conscious of that role.

Research and Theory: Implicit or Explicit?

In the introductory sessions the international research and theory from which the Action Learning model had been developed was explicitly outlined. Further references and readings were suggested for those who wished to investigate this further. This background material was presented in a way that was authoritative but not necessarily immediately relevant or accessible. That is, it was not linked to teachers' current situations. The readings allocated to each session provided a mechanism for current research and theory to be made relevant and accessible to participants and gave teachers the opportunity to reflect on their own experiences in the light of previous research. The logs that teachers kept of their experiences in the classroom also supported this reflection. As noted by the co-ordinator, teachers were engaged in their own action research cycles and reflection on practice.

The co-ordinator interviewed was very conscious of her role as a bridge between theory and practice. The components of the paper such as the “reading response booklet” provided the struts for this bridge.

This structure was tied to current research findings and information about best practice in the areas of adult learning and professional development. These insights had been used to develop the format of the paper.

The Participants

Six of the 11 educators initially enrolled in the paper returned the baseline questionnaire. They had taught for between 4 and 26 years, the average being 15 years. Five completed the follow-up interview.

Interest in the Course

Teachers had enrolled for the Infolink paper because it was part of their school's professional development plan, and because they wished to upskill in this area. For three teachers their initial interest in information literacy had been triggered by seeing the results from another teacher who had done the paper for example:

I began teaching at _____ school last year and the staff had previously completed Infolink. They seemed to be speaking a “new language”—but one which made heaps of sense.

Other teachers had realised that staff and children needed to make better use of the resources their school had available.

Two teachers had previously attended professional development in this area.

Knowledge and Beliefs

Five teachers currently received information about information literacy from libraries and colleagues at their schools though they had not yet put into practice the ideas they had read about. Teachers rated themselves as “very unfamiliar” to having “some familiarity” with this area. Similarly, most of the six teachers thought that their current level of understanding of the knowledge base behind the paper was “not very comprehensive”. Two teachers had previously developed a personal set of beliefs about teaching in this area, for example:

Remember I speak as a novice!! This is quite new to me—I believe that information literacy needs to become a holistic programme—at times our programmes are disjointed in an effort to fit everything in. A huge number of resources are available—how do we discern and help children choose?

All teachers stated that they often reflected on their personal set of beliefs about teaching. This reflection led these teachers to change their beliefs—some often and others less so. The experiences and sources of information, which influenced two or more teachers to alter their beliefs, included:

- experiences with students (5);
- classroom experiences with lesson content (4);
- formal in-school training or idea swapping sessions (4);
- observation of others' teaching (3);

- professional reading (2);
- external courses or professional development (3);
- study for a higher qualification (2);
- informal discussions with colleagues at their school (2); and
- mentors (2).

The majority of teachers wanted to gain skills from this paper that they could use in the classroom, for example:

How to incorporate the skills learnt into the classroom. Confidence in using these skills for research and as a teaching tool.

Soon after the course, all five Infolink participants described their beliefs concerning teaching and learning and the use of information skills. The commonalities in these beliefs were that:

- children need to learn research skills;
- these research skills should be used in context throughout the curriculum;
- children need to learn how to learn and develop skills they can use for the rest of their life; and
- learning these skills can empower and motivate children to be independent learners.

Four attendees stated that completing the professional development had changed least some of their existing beliefs. These teachers, when they were interviewed immediately after the course, stated that they realised that “children were more capable than I had given them credit for”, and that they were previously “not aware of the importance of questioning”. One teacher stated that Infolink had cemented the fact that she had the “right idea” that teaching information skills encouraged independent learning.

After one year, three of the participants on Infolink stated that their beliefs about information skills had not changed, one stated that her beliefs had been reinforced and one had changed some of her beliefs. The teacher whose beliefs had changed noted that she was now focusing more on passing ownership to students by assisting them to develop skills as she realised that the process of how they learnt or “how they got there” was more important than the content.

Access to Information to Inform Teaching Practice

All the five teachers who attended Infolink, and who were interviewed soon after the course, suggested that they gained most of their skills in sourcing and accessing educational research findings and theory on-the-job rather than from the college of education or university they attended.

Two suggested that they had received small amounts of information from teachers college, but three stated that they received no training in this area. These teachers upskilled later from work experiences, professional development, and university study.

Access to recent educational research findings mostly consisted of perusing information that arrived at school or that was received whilst attending professional development

courses. Their main sources of research-based information were links with Massey University staff, research-based publications from the Ministry of Education and NZCER, and their school principal.

On the whole the teachers did not actively search out research-based information unless a need was identified although two teachers stated that they “often”, two stated that they “sometimes”, and one that they “occasionally” incorporated research- or theory-based ideas into their classroom practice. Like the other educators in this study, although most were reactive rather than proactive in the way that they accessed educational research or theory, all were able to provide examples of how they had incorporated this information into their classroom practice, such as, by using findings about reading recovery for students for whom English was a second language or research about reading buddies for children.

These teachers used a variety of processes to initially source information when they required it, the most common being to talk to colleagues which then led them to identify relevant books or professional development courses.

Finding the time to assess and sift through research findings was a barrier for all these five teachers. Time to read new information and apply it in the classroom was also a barrier for three, as one teacher noted, she lacked “time to reflect”.

When they were interviewed a year later most of these five teachers had not directly received or searched out any further information about information skills or the Action Learning model. Four had received some information indirectly from attendance on professional development courses in related areas such as learning styles. Two had read articles in *Good Teacher* magazine about the Action Learning model. One had received no information apart from a flyer detailing upcoming courses.

Use of the Information from the Paper

All the participants on the Infolink course were able to recall some educational theory that was presented to them during the course of this professional development, and all reported that they were given reading material or further information to follow up. The theory-based information that participants recalled were the Action Learning model that was the foundation of the course, the readings that were presented during the course, and other information about theories such as Bloom’s Taxonomy.

All these teachers listed a range of practical skills and knowledge that they had gained as a result of attending the course, such as: strategies for planning and using the Action Learning model in the classroom; and how to teach the research skills embedded in the model, such as, brainstorming, selecting keywords, note-taking, and questioning.

When the Infolink participants were interviewed soon after the course, they all planned to follow up the practical ideas gained on the course and all but one planned to follow up the theoretical aspects of the course. Examples included undertaking further reading about the background theory to the model or encouraging college of education students to bring them further readings.

The teachers planned to use the practical ideas they had gained to develop students’ skills. As part of a school-wide plan for the implementation of information skills, the teachers aimed to conduct one or two Action Learning units each year with their class.

The teachers all stated that it was likely that they would be attending professional development in this area at some stage in the future but not immediately, first they needed

time to consolidate and adapt what they had already learnt. In the future they would like to attend a refresher session which could provide them with new ways to use the model in the classroom.

After one year, four of the Infolink participants had, as they had planned previously, used the practical skills they had gained by completing one or two Action Learning units with their students. One teacher had not, as she had planned, completed a unit, but had instead used the skills individually with her students. Two teachers reported that conducting Action Learning units had led to the skills being integrated more widely in general, for example, these teachers stated that they used the term “keyword” a lot more with students. All these teachers planned to carry on developing students’ skills and conducting Action Learning units. Three planned to continue with integrating the use of the skills into more areas. Teachers tended to use the practical skills they had gained, rather than undertake further reading about the model or its background. Only one of the four teachers who had planned to conduct further reading about the model did in fact do so.

Factors that Assist New Developments and Change

When these teachers were asked if the development of new ideas and teaching practices was encouraged at their school, three stated “often”, and two “sometimes”. All these teachers stated that an emphasis on professional development was a main factor that supported a culture of change.

Other main factors, that were mentioned by half or more of the teachers, that contributed to providing an environment that enabled new ideas to be actioned at their school included:

- funds being available for professional development;
- there was an emphasis on whole school or syndicate professional development;
- a culture that fostered new ideas and developments; and
- cooperative planning sessions in which staff shared ideas.

Factors that Hindered the Use of Knowledge and Skills

One year after they had attended the professional development three of these teachers reported that a lack of time and overcrowded timetables were factors that hindered their use of the knowledge they had gained from the professional development. Two reported that large class sizes and classroom management issues made it difficult for them to undertake Action Learning units.

Summary

Infolink participants mainly accessed educational research and theory by viewing the information available at their school or from attending professional development. They had received little, if any, further information directly about information skills since attending the professional development.

The theoretical foundation of the Infolink course was the Action Learning model and its development. The co-ordinator acted as a bridge between the theory of the model and practice by providing to participants, in a relevant and accessible way, current research and theory concerning the model. Participants were given the opportunity to reflect on their own

experiences in the light of this research. Consequently all of the teachers attending the course were able to recall information about this model and a number of other educational research findings or theories that were presented to them either through the course readings or during the course.

All of the teachers who attended Infolink planned to follow up the practical ideas they had gained, and all but one planned to do some further information gathering about the model. After one year all had followed up at least in part, the practical plans they had developed, but only one had attempted any further reading.

CASE 5: PRINCIPALS FIRST ICT WORKSHOP

The Workshop

The third information skills case study was a one-day *Principals First ICT Workshop* available to school principals in New Zealand. This workshop was organised by a private provider contracted by the Ministry of Education to deliver a series of workshops as part of the Ministry's overall ICT strategy. The provider contracted a number of regional facilitators to deliver the workshops around New Zealand.

The two facilitators of this workshop were local principals contracted to deliver six workshops in their area, that is, "principals delivering to principals". The purpose of the workshop was to introduce the *Learning Technologies Planning Guide for Schools* published by the Ministry of Education (1999). This planning guide was adapted by the Ministry of Education for the New Zealand situation from a similar guide published by the Department of Education in Victoria, Australia. Each workshop participant was provided with a copy of the guide.

Research and Theoretical Background

The planning guide included a number of references for some of its content as well as information concerning the use of ICT to enhance learning. The background to some content areas in the guide was not explicit. At the workshop participants used the guide during a number of small group exercises designed to get them to start the process of reviewing, planning, and implementing ICT use in their schools, and reviewing the link between the use of ICT and the essential skills of the New Zealand Curriculum Framework. The participants also spent time reviewing sections of the guide that focused on professional development, such as the stages teachers pass through in their use of ICT, that is, entry, adoption, adaptation, appropriation, and innovation (these stages were developed from a longitudinal research project by Apple Computers Inc. (1995)).

Other material presented at the workshop that was based either on research or best practice on ICT use in schools was collected from the wider group of facilitators at a three-day planning session. The material presented by the facilitators at the session, which was observed, included:

- the video *ICT in Action* produced by the Ministry of Education which outlined the ICT strategy overall and its various sub-components, of which this workshop was one;
- an article by Dr Jamie McKenzie on just-in-time support;²⁰
- discussion of how ICT could be utilised within the framework of an inquiry-learning model such as the Action Learning model developed by Gwen Gawith. Participants were referred to a recent publication produced by the New Zealand Educational Institute (1999) entitled *Information Technology and Your School* which included an article by Gwen Gawith;
- information on traditional versus constructivist approaches to teaching;

²⁰ <http://www.fno.org/eschool/adult.html>

- the findings from the facilitators' own research conducted in 10 local schools involved in an ICT contract. The facilitators presented the results of a needs analysis survey that showed where school staff were in terms of using ICT in the classroom and personally;
- information taken from a booklet developed by the New Zealand Principal's Federation (1998) entitled *Implementing ICT in Schools: Goals for 2001*; and
- other sources of information including material from the School Trustees Association and websites which were related to ICT, and teaching and learning.

The facilitators discussed in some depth how to foster a culture of professional development and reading in schools. In addition to referring participants to relevant sections in the planning guide, issues such as staff capabilities, motivation, and understanding the change process were discussed. An overhead of 10 lessons about professional development from Dr Jamie McKenzie's website was shown, and the participants were presented with articles and handouts about professional development in ICT from Dr McKenzie and others. The facilitators suggested ways to enhance the professional reading culture in schools, and ways participants could further their understanding of the knowledge base behind the use of ICT in schools, such as setting up networks and support groups; visiting other schools; travelling overseas to visit other schools with staff and Board of Trustees members; looking at relevant websites, and using listservs.

Development

To develop the workshop, the two facilitators met for a three-day session with the other regional facilitators and the organisers of the contract. The purpose of this session was to plan as a group how they could best present the guide and assist principals with their ICT strategic planning. The facilitators anticipated that they would be presenting to a range of people—from those who knew very little about the area to experts.

At this central session the facilitators rotated between small groups to develop the content of the workshops and the methods of presentation. This provided a mechanism for the combined knowledge of the group to be shared. A suggested format for the workshops was developed, along with supporting materials and group exercises. The facilitators were then able to adapt the format based on the information they already had about their local environment.

In May 1999 the two facilitators held a number of workshops in their local area with the assistance of two other principals. The content of the workshop for secondary principals was adapted slightly and a secondary school principal assisted with the running of the session. These workshops were part of a series of approximately 75 similar workshops conducted around New Zealand.

Delivery

This professional development course was run as a one-day workshop. A variety of different presentation methods were used including: lecturing with the use of overheads, information sharing, small group exercises, observation of a video with a related small group exercise, whole group discussions, structured exercises using the guide and general discussion about

the guide and handouts. The workshop exercises focused on getting participants to start the planning process by reviewing where they currently were at their school. The format was based on ideas about best practice professional development.

Although participants were not sent any information prior to the workshop, a website was available for them which contained background material on the ICT strategy.

After the workshop, participants were e-mailed with information about websites and copies of the overheads presented at the workshop they had requested. Once all the workshops in their area were completed the facilitators planned to feed back a list of collective ICT “dos” and “don’ts” to participants by a mail-out, and post this information on a website. The facilitators also planned to set up a listserv so local principals could communicate with each other and run a few informal sessions on mail merging, using e-mail, and using the Internet to help with planning. The participants were able to network with each other through a local principals’ association.

The Facilitator

A regional workshop facilitator was interviewed for this study. He was a school principal with teaching qualifications and a Bachelor of Education. He had a number of years experience facilitating curriculum contracts. He had attended facilitation training and from that and professional reading, had developed a personal model of facilitation (though this model was difficult to apply to the Principals First Workshops as they were one-day sessions).

Facilitator’s Access to Current Information

The facilitator of the ICT workshops who was interviewed used a number of information sources to keep up-to-date in this area, namely:

- professional reading and the Education Gazette;
- courses and professional development;
- conferences;
- school advisors;
- libraries such as the National Library;
- databases;
- the World Wide Web;
- e-mail or listserv discussions or communications;
- informal discussions with colleagues at their workplace;
- informal discussions with colleagues at other workplaces;
- formal training or idea swapping sessions at their workplace;
- teachers and visits to schools;
- professional network groups such as the Principals Association;
- curriculum contracts and cluster groups;
- mentors;
- the media; and
- other sources such as a computer company the facilitator had a partnership with.

For this current contract, a listserv had been set up by the provider. This listserv was designed for facilitators to exchange information pertinent to the Principals First Workshops. In general, this facilitator used mainly local personal contacts, news groups, and listservs to keep up-to-date. When he was accessing new information, his first source was colleagues followed by listservs, and browsing the World Wide Web.

The facilitator considered he had adequate access to information on current ICT research and theory. The advent of the Internet had made information more accessible and useful for him.

Main Themes and Ideas

The main objectives for the workshops were to “introduce the strategy and the guide”, and provide a starting point and a method to initiate planning for the integration of ICT at the principals’ schools. The facilitators wanted principals to leave the workshop having begun the process set out in the guide:

So people walked away from the workshop having done something and that’s part of the . . . strategic planning. The other thing we did in the workshop was they completed a self-review . . . a survey of where they were at. That came from the guide but at least they walked away from the workshop having completed the first step.

The facilitator noted that it was important principals left with an understanding of the overall ICT strategy. Another main focus of the workshop was to:

. . . motivate the principals about some of the potentials of ICTs. . . Really we wanted them to go away feeling that they could and should do something . . . that it wasn’t a choice any more whether to be involved or not you know—the choice wasn’t there.

For this facilitator, another important focus for the workshop was to establish and build an ongoing support structure. The facilitator noted that follow-up was an important part of professional development, and the one-off nature of this workshop did not provide for this.

Intended Impact of the Workshop on Principals' Beliefs about Teaching and Learning

The facilitator considered the potential for ideas from the guide to have an influence on schools was “huge”. One of the first steps suggested in the guide was for school staff to examine their mission statements and vision and how ICT could impact on teaching and learning. The facilitator thought the material in the guide provided principals with the strategies to initiate development and change at their school:

. . . if they follow the flowcharts provided in the guide . . . they will have to try very hard to fail!

The facilitator considered that this review process would lead to changes in beliefs about using computers to enhance teaching and learning.

Activities in the workshop were seen by the facilitator as ways of encouraging principals to think more about the position of those in the school community and their needs. For example, what the constructivist approach meant in terms of changing roles for teachers, and their own role as a leader. The facilitator considered that a principal's leadership was vital for any change in teaching approach or philosophy. If the principal did not support the changes, they would take a lot longer to be realised:

Whether they were doing it themselves or were making sure that the avenues were open for it to happen and that they could lead from whatever position they could take.

In a practical sense it was hoped that the workshops would encourage principals to make more use of ICT for administration and management. This had, in fact, occurred:

There have been some who have e-mailed back to us that is the first time they've ever used e-mail. That's a big step for those who weren't brought up in the technological age.

Factors that Assist Principals in Internalising and Using the Workshop Content

The facilitator suggested a number of factors that could assist principals to use the workshop material:

There has to be an interactive part. They have to have an opportunity to share where they're at. At some stage, as early as possible, they've got to verbalise or write down where they're currently at, what their current thinking is. I think it's a very important stage. Then if they have an active part in learning the new part, the new information, and then have done something concrete that's the first step in what they should do or could do when they leave then you've got a far better chance of the thing being internalised.

The facilitator proposed other factors that were useful for assisting people to use the workshop information. For instance, professional development was more effective when demonstrations and follow-up were provided, and when professional development was based locally:

. . . in their own environment with their own machinery, their own kids, based around their own planning.

Creating a listserv was seen as a way of incorporating some of these ideas about best practice professional development into the workshops.

Barriers to Participants' Future Use of Material

The facilitator considered the impact the guide had in schools depended to a large extent on the motivation of the principals attending the workshops. Although the facilitator thought the principal's workshops were an important first step, one barrier he identified was the one-day format of the workshops. He suggested that a follow-up workshop, which was attended by more than one person on the ICT implementation team from each school, would be beneficial. This workshop could focus on assisting each team to develop the planning process. Other barriers to the take-up of the workshop content (as identified from the workshop evaluation forms) were:

- staff resistance;
- teacher overload;
- competing demands on time, such as current major curriculum reforms and ERO demands; and
- time and money, for example to release staff to develop and carry out plans.

The Role of the Facilitator in Presenting Research and Theory

The facilitator considered that:

... everything we've presented has a theoretical base to it and so none of it is guess work ... and that's important, very important.

The facilitator noted the guide itself was developed as part of a research process though this process is not written up in the guide. The guide included research-based material and statements on the importance of incorporating research findings into the professional development culture of schools. The additional material presented at the workshop was based on current New Zealand and international research and theory. The facilitator considered it essential that all the information presented at the workshops had a solid grounding in best practice and research.

In addition to the workshop material, the presentation methods also stemmed from research, best practice, and the collective experience of the group of facilitators.

The facilitator saw his role in presenting research to be one of seeding ideas, for example, by introducing principals to Dr Jamie McKenzie's work, and of discussing constructivist philosophies.

Research and Theory: Implicit or Explicit?

Various examples of research and theory were presented explicitly to participants during the workshop. Some were contained in the guide and others were presented by the facilitators, for example, the results of the facilitators' own research. The guide contained summaries of research-based findings on using ICT to enhance learning in schools, and steps for ICT professional development. The guide also contained suggestions about reviewing research and fostering a culture in which research information was sought after. In addition the guide provided strategies, needs surveys, and templates for schools to use as well as references for further reading. It was not always clear exactly how some of this information had been developed.

In addition to “unpacking the guide” (overviewing the guide and the wider context for its development and use) the facilitators tapped participants’ current experiences and successes to provide the group with a starting point.

In addition to the information presented in the guide, the facilitators also suggested a range of other websites and information sources, many of which were based on current research and theory.

The research and theory from the guide and the facilitators’ own sources was presented in a manner that was authoritative, relevant, and accessible to participants. Strategies were suggested to link this information to the situation of participants, for example, using the Action Learning model as a vehicle for integrating ICT use in the classroom.

The Participants

Twenty-two principals from local towns and rural areas attended this workshop. Many of the principals were from intermediate schools and had chosen this session so that they could be with other principals in schools similar to their own. Of the 22 principals, 15 returned the baseline questionnaire. These principals had been involved in teaching or school management for an average of 29 years. A sub-sample of seven completed the follow-up interview approximately a year later.

Interest in the Course

Principals attended the ICT workshop for three reasons, firstly because they wanted to up-skill in this area, secondly because it was part of their school’s development plan, and thirdly because of their personal interest in this area. For many principals their interest in ICT had been triggered by a perceived need to develop a vision and plan the use of ICT at their school:

The need to develop a vision for ICT delivery/integration at this school.
The need to implement an ICT development plan for this school.

Other principals were motivated by their own use of ICT in the classroom and by seeing the possibilities of ICT:

. . . as a learning tool to motivate pupil learning and support classroom programmes.

Half had previously attended professional development in this area, for example, completing post-graduate university papers or attending conferences and skills-based courses on using word processing, spreadsheets, or e-mail.

Knowledge and Beliefs

All but one of the principals were currently getting information from a range of sources about ICT in schools. Eight principals received information from key people or experts working in the area, six received information from contacts at their school, and five from professional reading. Other sources of information included educational organisations such

as New Zealand Educational Institute (NZEI), contacts at other schools, the media, and professional development. All but one of the principals had put some of the information they had obtained into practice. For most, this was in school administration or management, and strategic planning.

Most principals (10) rated themselves as having “some familiarity” with ICT. Eight thought that their current level of understanding of the knowledge base behind the use of ICT was “not very comprehensive”. Six thought that their level of understanding was “comprehensive” or “very comprehensive”. Seven principals had previously developed a personal set of beliefs about teaching using ICT, mostly centred on using ICT as a tool for students’ learning, for example:

ICT centres around developing skills in relevant settings, and gathering and processing information.

All principals stated they reflected on their personal set of beliefs about teaching and learning, ten did so often and this sometimes led them to alter their beliefs. The experiences and sources of information which influenced these principals to alter their beliefs included:

- experiences with students (15);
- informal discussions with colleagues at other schools (13);
- professional reading (13);
- observation of others’ teaching (11);
- informal discussions with colleagues at your school (11);
- formal in-school training or idea swapping sessions (11);
- external courses or professional development (11);
- advisors (11);
- professional network groups (8);
- classroom experiences with lesson content (8);
- mentors (7);
- study for a higher qualification (6);
- curriculum contracts (6);
- the media (5);
- Education Gazette (5);
- education organisations such as NZEI and principals associations (5);
- community groups/contacts/parents (4);
- the World Wide Web (3); and
- e-mail or listserv discussions or communications (2).

The majority of principals wanted to use the information they gained from this workshop to develop or review their ICT strategy. For example, one principal stated that he would:

Discuss it with the rest of my staff and Board of Trustees and PTA. Develop an overall plan for my school. Make effective use of equipment that we have. Plan to develop [a plan for] equipment purchase in the future.

All but one principal had a set of beliefs concerning teaching and learning and the use of ICT. The commonalities in these beliefs were that:

- ICT equipment is a tool, and students need to learn to select the best tool to use for any given situation;
- the use of ICT provides children with access to data and resources;
- children could develop their information literacy skills such as gathering and processing information, problem-solving, and essential skills through using ICT.

Two principals mentioned that:

- all children should have access to ICT; and
- the use of ICT could promote independent child-centred learning.

Six stated that attending the workshop had reinforced or confirmed their existing beliefs concerning the importance of ICT use by students, that is, they couldn't ignore it and put their "head in the sand". Two principals stated that, along with confirming some existing beliefs, the workshop content had changed others, for example, they had developed an awareness that they needed to plan for more ICT professional development for teachers.

After one year, three of the participants on the workshop had strengthened their beliefs, one had changed some beliefs, one had developed a set of beliefs and two stated that their beliefs had remained pretty much the same. The principal whose beliefs had changed stated that the workshop made him realise that he needed to get himself "into gear". He also realised that he would be required to model the skills he expected teachers and students to have. He attributed this change in his beliefs to presentations at a conference he had attended.

The beliefs which had strengthened over the course of the year were mostly concerned with ICT being viewed as a tool and not as a subject area, that ICT use should be integrated through the curriculum, and that the thinking processes that students used were more important than the use of the tools themselves. The principal who developed a set of beliefs during the course of the year commented on the areas mentioned above, and in addition, the motivational aspects of ICT use for students in low-decile schools, and the need for schools to have a vision of what they were trying to achieve rather than rushing into purchase hardware and software without a clear idea of how they were going to use it to enhance teaching and learning.

Access to Information to Inform Teaching Practice

Of the eight principals who were interviewed immediately after the Principals First Workshop, six indicated that they had gained some initial skills in accessing educational research findings and theory from their college of education study and two from university study. Most (5) had developed more skills on-the-job through networking and through using e-mail and the World Wide Web. Since completing their qualifications, two had acquired more knowledge about accessing educational research through professional development.

These educators' access to recent educational research findings mostly consisted of perusing the information that arrived at their school such as various publications orientated towards principals, *set: Research Information for Teachers* and other publications from NZCER or the Ministry of Education. Another main source of research-based information for this group was local and national principals' networks and conferences. Two principals received information from visiting other schools or from listservs.

Similar to the other educators in this study on the whole these principals did not actively search out research-based information unless a need was identified, though all provided examples of how they had used ideas from educational research or theory. Three stated that they “often”, and five stated that they “sometimes” incorporated research- or theory-based ideas into their work, for example, using research on power sharing and how to motivate others or reading about how inquiry-learning models could be incorporated into school programmes.

The principals named a number of ways they initially sourced information, but their first port of call was usually another person, for example, an advisor, a university consultant, or a colleague at another school. These contacts led to other principals or to sources of professional reading, depending on the area under consideration.

Six of these principals noted that the major barrier to their access to educational research findings and theory was initially finding the time to read, adapt, and adopt the material. Half also suggested that time constraints, due to administration tasks, were a barrier. Initial access to educational research findings was not a barrier for most of these principals though one from a geographically isolated rural area reported that access was a problem for him.

When they were interviewed a year later, most of the seven principals interviewed had actively searched out new information concerning teaching and learning and ICT from a wide range of sources. All these principals had networked with their colleagues and discussed ICT informally at principals’ meetings. Five had completed further professional reading in this area from articles in magazines or journals targeted towards principals. Four had attended ICT-related conferences and four had visited other schools to view ICT developments. Another three had attended further ICT-related professional development, and three had got information from the ICT teachers or advisors at their school. Two were part of an ITPD cluster group.

Use of the Information from the Workshop

Three of the participants at the Principals First Workshop were able to recall educational research or theory that was presented to them during the course of this professional development, while five reported that they could not remember. All stated that they were given reading material or further information to follow up. The educational theorists or theories that the participants recalled from the workshop were Dr Jamie McKenzie’s work and information on inquiry-learning models.

All the principals stated that they had gained practical information from the workshop that would assist them in their planning process and in refining their school’s vision for ICT use.

When the principals were interviewed after the workshop all planned to follow up the practical ideas they had gained by reworking their strategic planning and visions for ICT, as one principal stated, “filling in the gaps”. None of these principals had plans to follow up any of the theoretical information they were provided with.

These principals all had some part to play in leading ICT developments at their school and therefore it was expected that they would be feeding back the information they had gained on the professional development into this process and to staff in general. All but one principal (who was retiring) stated that it was likely that they would be attending professional development in this area in the future, the majority (5) thought that they needed

this professional development immediately and two stated that they would require professional development in the future.

After one year, the seven principals who were contacted had actioned the majority of the practical ideas they had planned when interviewed immediately post-course, for example, using some of the information in the manual to assist with the ICT planning process. For four of these principals carrying out these plans led them on to further areas, for example, networking the school led them to develop an Intranet or to use the Internet more. Half of the principals had moved on to new areas or were using alternative sources of information such as the schools ICT advisor.

Factors that Assist New Developments and Change

The majority (7) of these principals stated that the development of new ideas and teaching practices was “often” encouraged at their school. One stated that the development of new ideas was “sometimes” encouraged. All principals selected the collegiality of staff as being a main factor that supported a culture of change.

Other factors that were mentioned by half or more of the principals which contributed to providing an environment that enabled new ideas to be actioned at their school included:

- a culture that fostered new ideas and developments;
- an emphasis on professional development;
- the fact that reflection was valued at their school; and
- the enthusiasm of new and older staff and the school community.

Factors that Hindered the Use of Knowledge and Skills

One year after they had attended the workshop, five of these principals stated that the way the workshop was delivered was a barrier to their use of information. These principals noted that if ICT was an area of importance then the way professional development was structured should reflect this, that is, a one-day workshop without ongoing follow-up was not adequate to meet their needs. Another major barrier reported by these principals was a lack of funding for ICT use and professional development in schools. Three also commented that they lacked access to high quality information about ICT and another three commented that technical problems or a lack of technical support hindered their use of the knowledge they had acquired.

Summary

The principals’ main access to educational research and theory consisted of reading the information that arrived at their school. However, these principals also had access to additional sources of information that some other participants in this study lacked, that is, specialist publications orientated towards principals and local and national principals’ networks and conferences. All except one felt that there was enough access to educational research and theory.

A small amount of information about current educational theorists or theories was presented to participants during the course of the workshop. Following this workshop, participants were more proactive in their searching for, and use of, information about ICT and learning than educators in other professional developments studied. This may be

because principals were likely to see their familiarity with information about ICT as an essential part of their role as a school leader.

CASE 6: APPLE EDUCATION BUS TOUR

The Bus Tour

The fourth information skills case study was a five-day Apple Education Bus Tour of eight schools in which Apple computers were used in the two regions in the North Island. The tour was organised and facilitated by three providers from Apple Education, though essentially there were two sets of providers—the Apple staff and the staff and students at the schools.

As most of the teachers and principals on the tour were from a primary school background, the tour programme concentrated on primary and intermediate schools. Four primary, two intermediate, one composite and one secondary school were visited. Six were state schools and two were independent. The schools tended to have a strong philosophical background based on child-centred and constructivist theory, and were using a number of inquiry-based learning models in the classroom. Schools were selected by the providers because they had integrated ICT throughout the curriculum. The structure of the tour is discussed more fully later in this chapter.

Research and Theoretical Background

Research and theoretical material provided on the tour was mostly presented by the schools rather than the Apple Education providers. The providers presented some information at the debriefing sessions about keyboarding research they had undertaken and websites which contained research-based information.

During the tour, the general picture of each school presented to participants covered a wide range of information with a research and theoretical background. This often included information on the philosophies of the school and where they stemmed from. A more detailed examination of this information follows. At some schools a handout was provided outlining or summarising the various theoretical models used by the school in their teaching and learning programme. To develop their programme, one school had examined the work of a number of researchers and theorists including:

- Gardner—multiple intelligences, for example, Gardner (1993);
- De Bono—thinking hats, for example, De Bono (1985);
- Maslow—self-esteem and motivation, for example, Maslow (1968);
- Clarke—inquiry learning, for example, Locke (1997);
- Bloom—taxonomy and learning process, for example, Bloom (1956);
- Covey—seven habits for effective people, for example, Covey (1989); and
- Deming; Scholtes; and Bonstingl—team work and total quality management (TQM) theories, for example; Deming (1993), Scholtes (1994), Bonstingl (1992).

At another school several of the theories listed above were explained to the tour participants by the children.

Most of the schools visited used a model of inquiry learning. Some had adapted their model from other models. For example, at one school the model was called the “Light Bulb

of Learning” (that is, integrating information technology into learning), and at another school—“KIC start” (kids in charge of learning). As part of these models, students were required to recognise and select tools (including ICT) to meet their needs at each stage. At most schools these models provided a framework for the use of ICT. These models were explained to tour participants, handouts were provided, and tour participants were able to view students at work. In many classrooms posters and other material which outlined the stages of the models were displayed. Tour participants were able to discuss with some teachers how the use of ICT fitted in with the various learning theories and models used in the school.

Other information gained by tour participants included ways to develop a culture that focused on the use of research and theory, for example:

- At one school tour participants were introduced to the idea of a “journal club”. Teachers at this school were given a set of readings put together by a senior member of staff (who was released for this purpose). The readings were then discussed by teachers in their syndicate groups and then at a wider staff meeting once a week.
- At other schools a different model for professional development was described to teachers, that is, the use of visiting speakers to run workshops on inquiry learning and thinking skills.
- At other schools, staff discussed their attendance at conferences in particular the Innovative Schools Conference in Australia, their participation on the Apple Educators tour of the USA, and the upcoming seminars by Dr Jamie McKenzie on using ICT in the classroom.

Other information based on research and theory was presented to tour participants at schools in a number of other ways, for example, a staff member discussed how the Logo computer program was based on research and cognitive theories.

Development

The first bus tour was held in 1995, and the tour in this study was the seventh. Currently the providers organise three tours a year. The concept of the tour grew from the providers taking the occasional person with them to visit the schools they worked with. They then decided this wasn't efficient for themselves or for the school, and organised their first tour.

The providers work in partnership with the schools to negotiate what they are going to present to the tour participants. What the schools present has changed over time, partly due to the feedback give by the Apple Education providers and partly for their own reasons.

The tour structure has evolved over time with the providers now organising a formal debriefing session at the end of the day for all tour participants. The providers have changed the format of the tour in response to feedback from tour participants. The schools visited are changed if they appear to be losing their lead in the ICT area.

The length of the tour was influenced by the need to give participants enough time to stop “thinking about their classroom” and start “thinking about the schools they were visiting”.

Delivery

Prior to the tour, brief notes about the schools to be visited were sent to tour participants.

The tour was conducted over five days. On the first day a general meeting was held to gather everyone together. The remainder of that day and the following three days were spent visiting schools. On the last day a summary session was held with the whole group.

Observation was the main learning method used on the tour with Apple staff facilitating group discussions of the school observations. At the initial and final session they also provided a number of handouts, and organised small group exercises. The schools employed a number of teaching styles to get their information across to tour participants including: observation of students at work, demonstrations of software, lectures, guided tours, handouts, and time to talk individually with staff and students.

The Provider

One provider from Apple Education was interviewed for this study. This provider was a trained teacher who had worked in a range of positions in New Zealand and overseas as a school advisor and trainer, and as a curriculum developer. He had also lectured on a post-graduate course on the use of computers in education.

Provider's Access to Current Information

The provider accessed information relevant to his work from a range of sources, including:

- the World Wide Web;
- e-mail or listserv discussions or communications;
- professional reading;
- conferences;
- informal discussions with colleagues at their workplace;
- informal discussions with colleagues at other workplaces;
- formal training or idea swapping sessions at their workplace;
- teachers and visits to schools;
- ITPD and ICT cluster groups;
- the media; and
- other sources including visiting speakers.

The provider had a network of work-related contacts and kept up-to-date through his association with the schools he worked with. When the provider was looking for information about an area, his first port of call was the Internet including using e-mail and listservs, then colleagues. These sources of information would often lead him to other sources.

The provider did not perceive any barriers to his access to educational research and theory though he commented there was little conclusive research data on student use of ICT for presentation to teachers.

Main Themes and Ideas

The main themes and ideas the provider wished participants to leave the tour with were:

Give kids sophisticated tools and they will do sophisticated things . . . thinking digitally. I think one of the problems we have is that people are using the new tools to do old things. . . . That is really what I want people to think through; the change in education that has to come about to think digitally. Because it is not just a case of putting ICT on to the existing curriculum.

One important area for participants to consider on the tour was their overall vision concerning the use of ICT at their school:

I want them to develop their own vision. It is very very hard to put someone else's vision into place. It has got to be your vision. It can be the same vision, but it still has to be yours.

Tour participants were also given a wide range of “nuts and bolts” ideas about using ICT in schools. These included information on a range of different software and ways to use it in the classroom, setting up networks, and the use of the Internet and Intranets.

Intended Impact of the Tour on Educators' Beliefs about Teaching and Learning

The provider anticipated that attendance on the tour would impact on participants' classroom practices and teaching philosophies in a variety of ways:

Some will do nothing, some will modify some of the things they do in some way to incorporate some of the ideas they saw, and others will do a complete work-over to the way they think about things.

All the schools visited operated from a child-centred philosophical base and observation of this could encourage some participants to:

. . . think in a more child-centred way and give kids a bit more control over their learning, which is what ICT can help them to do. For others it won't make the slightest bit of difference!

One important way the provider considered the tour could impact on participants was in updating their schools' vision for the use of ICT. Staff at the schools visited outlined their vision, the reasoning behind this vision, the strategies they used to reach it, and the strategies they tried that did not work. Participants were able to use this information to refine their vision and were given strategies to bring about change in their schools, and for managing ICT resources in school, by learning from the experiences of others. The provider noted that senior staff members on the tours were more in a position to affect changes at their school compared to first year teachers.

Factors that Assist in Internalising and Using Course Content

The provider identified a number of factors that were necessary for participants to internalise the information they had received during the course of the bus tour. A major factor was the participants' motivation and willingness to "give it a go" and to overcome personal and institutional inertia. Other potential influences were being located in an environment that supported change and having a commitment to ongoing learning to kept abreast of technological changes. Financial considerations such as "is there enough money to buy equipment or put in a network?" were also important.

Barriers to Participants' Future Use of Material

The possible barriers identified by the provider were:

- personal inertia;
- institutional inertia;
- potential philosophical differences between teachers and the overall school philosophy; and
- a lack of finance.

The Role of the Provider in Presenting Research and Theory

Most of the research and theory presented on the tour was contributed by the schools. The content of this was negotiated by the Apple providers and the schools. The provider had, in essence, selected examples of best practice:

. . . all the schools that we went to have a pretty sound philosophical base that is based on research from other people. . . . I think it underpins everything that is presented. . . . We don't take people to places that have lots of gear and haven't thought through what they are doing.

The provider saw his role as a facilitator who "shows teachers good ways to do things". The information he, and the schools, provided had to be based on best practice and informed teacher opinion as he felt there was not always research data available.

Research and Theory: Implicit or Explicit?

Participants on this tour were able to hear in principle, and observe in action, a wide range of teaching strategies developed from research-based findings and from examination of current educational theories. Although this was not a stated objective of the tour, teachers gained a wealth of ideas concerning different learning theories and how to apply these theories in the classroom.

All the schools visited had well-developed philosophies about teaching and learning, and at many of the schools the research and theory behind the approaches taken were explicitly outlined for the benefit of tour participants. The research and theory presented by the schools was authoritative, relevant, and accessible as participants were able to view how these theories were applied in a practical everyday sense in the classroom.

In addition to information gained from observation and discussions during the tour, other references and sources of research-based information such as conferences, visiting speakers, and websites, were suggested by providers and staff at the schools visited.

The Participants

Twenty-seven teachers and principals, education providers, and computer sales representatives from around New Zealand attended the tour. Seven schools sent two staff members on the tour. The 25 teachers and principals were sent the baseline questionnaire. Of these 16 returned the questionnaire. The educators had been involved in teaching or school management from 1 to 38 years, the average being 17 years. A sub-sample of seven educators completed the follow-up interview approximately one year later.

Interest in the Tour

Educators went on the tour mainly because they had an interest in this area and wished to up-skill. For most educators their initial interest in using ICT had been triggered by the need to keep up-to-date with what was happening at other schools and with their personal skills, for example:

Personally it was the challenge of coming to grips with computers—something new and something to be mastered. Also I could see that this was the way education would move—I didn't want to be left behind.

The interest of some educators in ICT was triggered by seeing the potential of computers to motivate students and support their learning:

I could see it as a great motivational tool for children.

Fourteen participants had previously attended professional development in the area, and most of the educators had some responsibility for ICT programmes at their schools.

Knowledge and Beliefs

All the educators currently received information about ICT from a range of sources, the most common being colleagues, key people or experts in the field, and through professional development.

Nearly all had already been able to incorporate their interest in ICT into their work by using various ICT tools with students. Half the educators rated themselves as “familiar” with the area of ICT, the others rated themselves as having “some familiarity” or as “unfamiliar”. Half thought, their current level of understanding of the knowledge base behind the use of ICT was “not very comprehensive”. Six thought their understanding was “comprehensive”. Nine had previously developed a personal set of beliefs about teaching using ICT that mostly centred on providing students with access to ICT tools and the skills to use these tools to enhance their learning, currently and in the future:

Children live in a world that is ever-changing. Much of what they will need to know tomorrow hasn't yet been thought of so it is vital that we teach them how to gather information, what to do with the information, how to interpret it and how to use it to make a difference in their lives or the lives of others. Knowledge is secondary to the process. We have to prepare our children for their lives in a society full of technology.

All educators stated that in general they reflected on their personal set of beliefs about teaching; most did so frequently and this sometimes led them to change their beliefs. The experiences and sources of information which influenced these educators to change their beliefs included:

- experiences with students (16);
- informal discussions with colleagues at their school (15);
- observation of others teaching (14);
- professional reading (14);
- external courses or professional development (14);
- formal in-school training or idea swapping sessions (13);
- classroom experiences with lesson content (13);
- informal discussions with colleagues at other schools (12);
- advisors (10);
- study for a higher qualification (8);
- curriculum contracts and cluster groups (8);
- mentors (7);
- the media (6);
- the World Wide Web (6);
- professional network groups such as principals' associations (5);
- community groups/contacts/parents (5);
- e-mail or listserv discussions or communications (2); and
- other sources such as college of education staff.

The goal for the majority of educators taking part in the tour, was to obtain more information about the use of ICT in schools. Specifically they wanted information that would assist them to further develop their classroom programmes and to refine management, administration and professional development structures, for example:

How to integrate [ICT] into the classroom.
How to create a long-term plan.
A variety of ideas for the management of computer [resources].
How to train staff.

Many of the educators intended to share the knowledge they had gained with their colleagues.

Following the tour, all eight educators who were interviewed reported that they had a set of beliefs concerning teaching and learning and the use of ICT. The commonalities in these beliefs were that:

- ICT use should be integrated across the curriculum;
- ICT equipment is a tool and it was vital that students learn the best tool to use for any given situation; and
- children could develop their information literacy, problem-solving, and essential skills through using ICT.

Two educators mentioned that:

- through their use of ICT students could have access to real resources and data;
- all children should have access to ICT;
- the use of ICT could promote independent child-centred learning; and
- teachers could model skills and attributes to students.

The majority (6) of these educators stated that attending the professional development had reinforced or affirmed their existing beliefs concerning the fact that ICT should be integrated through the curriculum and that ICT were “tools not toys”. Two stated that the professional development had changed some of their beliefs, for example that they could have higher expectations of what children could achieve through their use of ICT.

After one year, four of the tour participants stated that, through further experience, their beliefs had strengthened, for example, “I am more confident I am on the right track now”. The other three reported that their beliefs had stayed the same, for example, “my beliefs were strong to start with”.

Access to Information to Inform Teaching Practice

Eight teachers who attended the bus tour were interviewed post-course. Most suggested that they gained their initial skills in accessing educational research findings and theory from university study rather than from a college of education. Half of these educators reported that they received no training in this area during their pre-service programme. This was especially the case for the older teachers; a more recent graduate had attended a library skills course.

Since completing their teaching qualifications half had acquired more knowledge about accessing educational research through on-the-job experience, and two educators had acquired skills through attending professional development.

For these educators, access to recent educational research findings mostly consisted of perusing the information that arrived at their school such as *New Zealand Education Gazette* articles, flyers, *set*, and publications from the Ministry of Education and the National Education Monitoring Project (NEMP). Professional development providers and university study were other main sources of research-based information. Two educators received research-based information from journals such as the *New Zealand Journal of Educational Studies* or professional groups such as the Computers in Education Society.

On the whole these educators did not actively search out research-based information unless a specific need was identified. Although most were reactive rather than proactive in the way that they searched for this information - one educator stated that he/she “often”, five that they “sometimes”, and two that they “occasionally” incorporated research or theory-based ideas into their classroom practice. All eight educators provided examples of this

incorporation, such as, using the material from the NEMP mathematics study to change school-wide mathematics planning, using information from the Pacific Liaison project to encourage first language maintenance at their school, and incorporating information from multiple intelligence theories into classroom practice.

Educators used a variety of processes to search for information when they required it, the most common being talking to local advisors or colleagues at their school, or to visit other schools to see what information they had and how they dealt with similar situations. These initial contacts provided further information to follow up, for example, a relevant professional development course. In the ICT area educators used computer suppliers as information sources.

These educators noted that the major barrier to their access to educational research findings and theory was initially finding the time to access or sift through material, half also mentioned finding the time to read and adopt findings was a barrier for them. Time constraints due to other job demands were a barrier for three educators. Three educators stated that they did not have enough access to educational research findings, that is, this information was not “on hand”.

When seven of the bus tour participants were interviewed a year later most (5) had proactively sort out further information about ICT. The most common sources of information were professional development courses, contact with colleagues, professional reading, and information from ITPD cluster group meetings.

A year later six educators had attended further professional development. For most this professional development had been delivered as a result of the school being part of an ITPD cluster group.

Use of the Information from the Professional Development

All participants on the Apple Education Bus Tour were able to recall educational theory presented to them during the course of this professional development, and five participants reported that they were given reading material or further information to follow up. The theories that the participants recalled were the theoretical approaches the educators were informed about or observed in use in the classroom at the schools that were visited. Examples of these approaches included de Bono’s thinking hats, various inquiry-learning models, multiple intelligences, and catering for children’s different thinking and learning styles using ICT.

As well as ideas on how to incorporate educational theory into the classroom all educators listed a range of practical skills and knowledge they had gained as a result of attending the professional development, such as, an increased awareness of what was happening in other schools and how to integrate ICT use into the curriculum and classroom practice, ideas for developing long-term plans and school visions which incorporated ICT, practical ideas for using and managing their existing administration and classroom software; and ideas for management of professional development programmes.

When the tour participants were interviewed immediately post-course all planned to follow up the practical ideas they had gained on the professional development. The majority (7) also planned to follow up the theoretical knowledge they had gained, for example, by researching information available concerning learning styles, de Bono’s thinking skills, or inquiry-learning models and then applying these approaches in their classrooms. Educators

planned to use the practical ideas they had gained in the classroom, for the purposes of streamlining their administration systems, to further refine their school ICT visions and planning, as well as to improve how their professional development programmes were delivered.

Many of these educators were part of the team that led ICT developments at their school and therefore there was an expectation that they would be contributing to future developments in the ICT area at school and feeding back information to other staff. These educators all stated that it was likely that they would be attending professional development in this area in the future, three thought that they needed this professional development immediately and five stated that they would require further professional development in the future.

After one year, the majority (6) of the participants on the tour had actioned all the practical ideas they had planned when interviewed immediately post-course, and the majority (6) had looked for at least some of the theoretical material they had planned to source. For example, one teacher had read articles about thinking skills, had passed this information on to others and had organised guest speakers to come and talk at her school. Although most of the educators who planned to source further education theory had done so, three had not completed as much reading as they had hoped nor had they integrated these new ideas into their classroom practice.

For most of these educators (5) actioning their plans had led them on to further areas (mostly “practical” in approach), for example, using ICT more for internal and external communication, developing their own personal ICT skills, finding more software for school administration, and developing a school Intranet or website. Most (6) planned to continue to use the practical ideas they had gained from the tour in the future. Only one had further plans to look more closely at any research or theory. This teacher planned to do more reading about thinking skills.

Factors that Assist New Developments and Change

The majority (6) of these educators stated that the development of new ideas and teaching practices was “often” encouraged at their school. One stated that the development of new ideas was “sometimes” encouraged and another, “occasionally”. A school culture that fostered new ideas and developments, the collegiality of staff, an emphasis on whole school or syndicate professional development, and cooperative planning sessions in which staff shared ideas were the main factors which enabled these educators to action new ideas. Other factors, which contributed to a school culture that supported change, were an emphasis on professional development in general, with funds set aside for this purpose, and innovative leadership.

Factors that Hindered the Use of Knowledge and Skills

One year after they had attended the professional development just over half (4) of the tour participants in the follow-up study reported that the major factors which hindered their use of the information they gained from the tour were lack of funding (for example, “money is always a concern”) and lack of time.

Summary

Similar to the other educators in this study, the four participants mainly accessed educational research and theory by viewing the information available at their school, such as Ministry of Education publications or from attending professional development. A small number accessed research- and theory-based material through subscriptions to educational journals, or through membership of societies that could provide them with this type of information. Three others thought that they lacked access to educational research and theory at their school.

Some of the participants on the tour were quite proactive in their searching for, and use of, educational research and theory both before and after the professional development. It is likely that, as many of these educators were either ICT specialists, senior teachers, or principals, keeping up-to-date in this way was an explicit part of their role.

Information about a number of current educational theories was presented to participants during the course of the tour and all educators were able to recall some of these theories. Most planned to follow up this information. After one year the majority had followed up some of the theoretical material they had planned to source, but three had not progressed as far as they had hoped with this information. In contrast six of the seven had actioned the practical plans they had developed.

SUMMARY AND DISCUSSION OF MAIN FINDINGS

The Providers' Perspectives

The Place of Research and Theory in the Courses

The findings, lessons learnt, and models from research and theory permeated many aspects of the six courses in this study either explicitly and implicitly.

With regard to the four information skills courses, much of the content had been developed from a synthesis of years of direct experience working with information skills and ICT in the classroom, professional reading, and, in some cases, the providers' own research. Course providers had repackaged the findings from research and theoretical models to make them more accessible to course participants. Sometimes this meant the research findings and theoretical information on which the course was developed was so imbedded in the course content it was difficult to ascertain the original source of information.

The main research and theoretical materials that were presented to course participants concerned the background body of knowledge on which the paper or course was centred. On the whole, most of the providers viewed the course content as stemming from a theoretical and research or philosophical base. There were some similarities between the philosophical bases of the information skills courses. The model underpinning these courses was constructivist, child-centred, and involved the use of resource-based learning and a focus on the essential skills (process rather than content). This model also included a focus on cross-curricular activities and the development, for both students and staff, of a lifelong learning culture (learning how to learn and ongoing professional development).

Whether the sources of information about this philosophical base were made explicit or were implicit differed amongst courses. The background and reasons for the use of ICT at many of the schools visited on the Apple Education Bus Tour was made very explicit, as was the background to the development of the Action Learning model in the Infolink paper. This was not necessarily the case for the Information Technology Professional Development sessions (which had more of a skills focus) or the Principals First ICT Workshop (in which the published guide was presented but the background underpinning it was not).

There were other ways in which ideas from research and theory were used or presented during the courses. For example, course providers used ideas from research and best practice in the field of adult learning and professional development to develop the structure of the courses. Examples of this included the use or incorporation of: facilitation skills, whole school developments which included school principals, small group tasks, participants' existing skills, modelling of desired approaches, and multiple sessions to give participants time to integrate information and follow-up sessions. These structures and exercises could be useful to participants either immediately, if they wished to use them themselves, or to pass on information they had gained to others.

In contrast to the information skills and ICT courses, which (apart from Infolink) did not necessarily have a well-developed research base, the Multiple Intelligences in the Classroom and the Future Problem Solving New Zealand courses were explicitly grounded in their respective research and theoretical bases and the course providers distributed numerous handouts of readings and references related to the theoretical base. In both these cases this

research and theory was central to participants' understandings and take-up of the course content. Philosophically the courses were aligned with constructivism and an emphasis on students' learning by doing with the teacher facilitating their learning.

The research and theory presented on the six courses was reviewed according to the criteria of authoritativeness, relevance to practitioners, and physical and conceptual accessibility for educators (Kennedy, 1997). For this study, authoritative was redefined to include transparency of the research or theoretical base, and was assessed by determining if the research and theory was referenced to its original source.

The emphasis given to the three criteria varied amongst the courses. For more skills-based ICT courses the focus was on presenting information that was relevant and accessible but not necessarily authoritative (that is, the findings were repackaged and their source lost). For other courses, namely Infolink: Information Literacy Skills, Multiple Intelligences in the Classroom and Future Problem Solving New Zealand, an authoritative overview was provided before links were made to ensure the background research was relevant and accessible to participants. Generally, providers made these links for participants. In some cases the providers' role in making this link was explicit, in other cases it was implicit. The role that the provider took determined to a large extent whether research and theory was presented or not, and if it was, whether this was done so in an authoritative, relevant, and accessible manner.

Sources of Research-based Information for Providers

The six providers interviewed accessed a range of sources of information for their own professional development and for development of the course structure and content. Their main sources were colleagues and other professional contacts, the Internet, and professional reading. Generally, providers did not perceive any barriers in accessing information on relevant research and theory apart from time. Depending on where they were located, providers appeared to have varying access to research-based information, with those in universities and colleges of education having access to large libraries and information professionals. As a result, they tended to make more use of research-based information. Providers not located in these environments tended to rely more on colleagues and the Internet for information. Some providers noted that research findings in the ICT area were at best patchy with little authoritative evidence available, for example, on the effect of the use of ICT tools on student literacy.

The Role of the Provider in Presenting Research

Providers undertook a number of different roles in presenting research to course participants. These roles varied depending on the situation of the provider, but all providers in these case studies took on at least one or two of the following different roles:

- **Provider as Research Filterer**

All providers essentially saw themselves as a clearing house for research and best practice in the area they worked in, and thus they acted as what can be termed a research filterer. Providers reviewed current research and theory and selected information that was relevant and accessible to the educators they were working with, for example, the Infolink: Information Literacy Skills and Multiple Intelligences in the

Classroom course providers selected easy to read research-based articles for participants; and the Apple Education Bus Tour providers selected schools to visit that had a sound philosophical base behind their use of ICT and were able to explain this base.

- **Provider as Research Repackager**

Once providers reviewed current research and theory they could either provide it directly to participants, or as occurred in most cases, repackage it. That is, providers reorganised information to tailor it as relevant, and accessible to the educators they were working with, for example, the original Infolink developer had repackaged a number of models to develop one which suited the New Zealand environment. Likewise the national director of the future problem-solving programme had adapted the material from the United States so that it was less prescriptive.

- **Provider as Research Linker**

Related to the role of research filterer or repackager is the role of research linker. Research linkers not only filter, repackage, and present research, they also assist participants to make explicit links between research-based information and its application. In this way a research linker makes research findings relevant and accessible to educators. For example, this linkage was part of the Infolink course in the way the providers assessed the course work and in the provision and analysis of research-based articles. Similarly the course developer for the multiple intelligence course emphasised that teachers should reflect on their own practice in relation to newly acquired theory. Hodges (1996) suggests that to develop schools that are “self-renewing learning organisations” there needs to be more of this type of linkage between research and practice.

- **Provider as a Model**

One way that providers furthered such linkages was by providing a model of desired approaches. Providers attempted to guide educators towards models of best practice as presented by the school community or by current research. They acted as models in a number of ways for example, by directly modelling the desired approaches, by showing educators or informing them about the best practice of others, or by modelling information awareness by suggesting information sources or by directly providing information. The ITPD provider modelled ICT planning systems to educators and ways to peer tutor. On the Apple Education Bus Tour the staff in schools modelled how they had linked research to practice. The Infolink: Information Literacy Skills co-ordinator noted, “we are modelling the model all the way through” as educators practice the Action Learning model in their classrooms, and the national director of the Future Problem Solving New Zealand programme had participants working on future problem-solving tasks in small groups to foreshadow what their students would do in the future.

- **Provider of New Visions**

Another role that the providers took on was that of a visionary or “seeder of ideas”. Providers stressed the need for educators to reflect on their practice and develop new visions. Related to this role was an encouragement to adopt and then adapt the practices

seen or studied on the professional development. For example, during the Apple Education Bus Tour and the Multiple Intelligences in the Classroom course, the providers assisted educators to reflect on their own, and others' situations, and to develop a new vision for themselves concerning use of ICT or multiple intelligences within their classrooms.

- **Provider of Strategies**

Providers suggested that the changes they wished to see occurring in educators' philosophies or use of new research-based information would not occur at the school level unless a vision or culture was developed and shared among all staff at a school. In order for educators to attain their visions or action changes in their belief systems they needed strategies which would promote change. On the courses in this study the providers attempted to furnish educators with strategies which would enable them to action change by:

- demonstrating how educators could apply their existing teaching strategies to a new situation (Information Technology Professional Development, Infolink: Information Literacy Skills, Future Problem Solving New Zealand);
- directly providing models and systems (Principals First ICT Workshop guide, Future Problem Solving New Zealand);
- suggesting strategies which had worked in other schools for educators to adopt or adapt (Apple Education Bus Tour: included observing how learning theories had been used in the classroom);
- directly providing papers or information sources (Infolink: Information Literacy Skills, the Apple Education Bus Tour, the Principals First ICT Workshop, and Multiple Intelligences in the Classroom); and
- providing strategies that could support the on-going professional development of educators. (Educators taking the Infolink paper were provided with journal articles to read, and the national director of the future problem-solving course encouraged the development of local cluster groups for mutual support).

In their article about recent changes to professional development in New Zealand, Burt and Davison (1998) suggest use of such strategies is necessary to encourage the change process that is needed to implement skills and information gained through professional development.

A sub-text of some of the information skills professional developments appeared to be that the providers were working at a number of different levels to effect a cultural change in educators and schools. That is, to encourage the development of a school culture in which the contributions of professional reading, ongoing professional development, and the input of state of the art commentators were highly valued. Providers attempted to encourage the educators to develop strategies that would allow them to access and assess new sources of information as they developed an information culture in their schools to obtain and filter good quality information for decision-making.

Intended Impact of the Professional Development on Educators' Beliefs about Teaching and Learning

All the providers considered the professional development they offered would have a mixed impact on educators. This ranged from providers who believed educators would substantially alter their overall vision, classroom practice, planning, teaching philosophy, and personal beliefs, to providers who felt educators would do little to effect any changes in either their personal beliefs about teaching or in their school environment.

Providers felt the presentation and modelling of educational philosophies could prompt educators to emphasise the facilitation aspects of their roles, especially with regard to constructivist, child-centred approaches to provide a framework within which information skills and ICT, multiple intelligence theories or future problem solving could be used.

In the information skills and ICT sessions, the providers prompted the educators to develop and refine their vision about the use of ICT or information skills at their school, their beliefs about their roles as educators, and their teaching strategies and styles. Providers encouraged educators to review their own position on the area in question and compare it to others, that is either other educators at their own school, or at other schools. In a practical sense the providers suggested that increased personal use of information skills and ICT by the educators, which was likely to follow on from the professional development, would lead to other changes.

Factors That Assist Integration of Information from Professional Development

The providers mentioned a number of factors that could assist educators to adopt and adapt the research findings, lessons learnt, and models they gained on the courses. These concerned the personal situation of the participants. Providers suggested educators needed to be willing to "give it a go", to be committed to lifelong learning and professional development, to have the skills to access and use new information, and be in a position in their schools to influence or lead change.

Generally, the information skills providers felt that on-site, on-going whole school developments were more likely to provide educators with an environment which encouraged the take-up of new ideas. This view is supported by the literature (Burt and Davison, 1998; Gilmore, 1994; and Scott and Murrow, 1998). Providers believed that providing professional development to educators in their school environment could improve the relevance of the development, and courses where educators undertook the professional development over time in stages provided educators with the opportunity and time to review and reflect on their practice. They also considered that the development of a reading and professional development culture in schools was an important way of providing educators with the means to keep up-to-date. Providers considered that school resourcing can have a positive influence on the take-up of new ideas from professional developments. For example, resourcing for release time to reflect, discuss, and practice new ideas; and financing for new equipment, obtaining up-to-date information, and continuing professional development.

Barriers to the Integration of Information from Professional Development

Course providers identified factors that could constrain educators' take-up from professional development courses as staff, students, the school, the wider educational system, and the

structure of the courses.

Personal barriers included inertia and lack of motivation of some educators, the different teaching styles of educators, students knowing more about ICT tools than educators, and the lack of reflection and information literacy skills of some educators.

Student barriers included the low literacy level of some students, and lack of student interest. School barriers included institutional inertia, the existing school culture, potential philosophical differences between educators and the overall school philosophy, and lack of finance for further professional development, release time, and equipment.

System barriers included educator overload due to conflicting commitments; technology breaking down; differences between the intent of curriculum documents and their expression, and the crowded curriculum.

Course design barriers included the one-off nature of some courses, which did not allow time for reflection and practice, and course participation by only one or two people from a particular school.

The Participants' Perspectives

Participants in the case studies were educators who had been teaching or in school management for between one month and 40 years, the average being approximately 17 years. Only seven had been teaching for less than five years. Thirty-two (45 percent) had previously completed professional development in the area which was the subject of this case study. This was more often the case for those attending information skills professional development.

In the baseline questionnaire educators gave their reasons for undertaking the professional development. Overall three-quarters said they wished to upskill in the area in question, and a little under three-quarters stated personal interest was a factor. Not surprisingly, those who were involved in a whole-school professional development indicated one of the main reasons for their attendance was that the course was part of their school's professional development plan.

Participants' initial interest in the course area was triggered by a number of factors, which varied depending on the nature of the course in question. One common element was a desire to challenge and extend themselves and their students. For those in the ICT area, their initial interest had been triggered by personal use of computers and the need to plan a more strategic approach to ICT at their school.

When asked about their general beliefs concerning teaching and learning, all educators stated that they reflected on these beliefs at least occasionally, with nearly two-thirds "often" reflecting, a quarter "sometimes" reflecting and the remainder reflecting occasionally. This reflection led the educators to change their beliefs "sometimes" rather than "often".

In response to a checklist, all educators identified a range of experiences and sources of information that had influenced them to alter their beliefs. The most common factors were experiences with students, followed by professional development, and professional reading. The experiences and sources of information which influenced the educators' beliefs are provided in detail below:

- experiences with students (97 percent);
- external courses or professional development (85 percent);
- professional reading (83 percent);
- informal discussions with colleagues at their school (79 percent);
- informal discussions with colleagues at other schools (72 percent);
- observation of others' teaching (69 percent);
- classroom experiences with lesson content (65 percent);
- formal in-school training or idea swapping sessions (63 percent);
- study for a higher qualification (62 percent);
- advisors (54 percent);
- curriculum contracts and cluster groups (32 percent);
- mentors (30 percent);
- community groups/contacts/parents (28 percent);
- professional network groups (27 percent);
- the media (18 percent);
- the World Wide Web (17 percent);
- education organisations (17 percent);
- e-mail or listserv discussions or communications (11 percent);
- libraries (3 percent);
- databases (3 percent); and
- other sources (8 percent).

Overall, half the educators had a previously developed set of beliefs about teaching and learning in the course area with numbers varying according to the course. For example, almost all of those completing the future problem-solving course had a previous set of beliefs compared to approximately one-third of those completing the Infolink and multiple intelligences papers.

In the follow-up interview most teachers who had participated in the future problem-solving or multiple intelligences courses said they had confirmed, strengthened, or extended their beliefs about future problem solving since the course. Of those teachers attending the four information skills or ICT courses, nearly half reported no change in their beliefs at the follow-up interview, and a little over a third said that their beliefs had strengthened or consolidated.

At the time they were beginning the professional development, over three-quarters of the educators were already receiving some information on the course area, and a little over two-thirds were already using this information in their school environment. The main sources of this information were colleagues, professional reading, and "key experts" in the area.

One year later nearly all educators who were interviewed had received some further information about the course area. The main sources were very similar to the earlier ones—namely colleagues, further professional development and professional reading. All educators reported using a variety of sources in searching for information they required, with people (colleagues and advisors) featuring most often. With regard to research-based information, most teachers were reactive rather than proactive in that they perused information coming into their school, rather than seeking out specific information.

Although the aims of the course and the role the provider adopted influenced the extent to which educators gained access to research and theory, most course participants gained

some improvement in access to such information during the course. However, the absence of school subscriptions to appropriate professional journals and the lack of access to a professional information service or library to support the on-going needs of school-based educators for research-based information meant there was no opportunity for most participants to maintain such access. Those educators undertaking tertiary study gained access to such information from the library or information service at the tertiary institution where they were studying, but they were few in number.

Before undertaking the course just over half the educators rated themselves as having “some familiarity” with the course area, a little over a quarter considered that they were “very familiar” or “familiar” with the area, and the remainder were “unfamiliar” or “very unfamiliar”. Not surprisingly, after one year the participants who were interviewed were much better informed and more confident about the course area. At the course outset, a little under two-thirds thought that their current level of understanding of the knowledge base behind the professional development was “not very comprehensive”, while just under a quarter rated their knowledge level as “comprehensive”. Of the remainder, two people regarded their level of understanding at this time as “very comprehensive” and the rest selected “not at all comprehensive”. By the time of the follow-up nearly all those interviewed from the multiple intelligence and future problem-solving courses could name theorists and outline the main theory behind the course, and approximately a third of those undertaking the information on skills or ICT courses had obtained more information about relevant educational theories or models.

The majority of educators wanted to gain ideas and skills from the course which they could use in their work. For teachers, this mostly involved developing and enhancing classroom programmes and their personal skills in the area, and for principals, it mostly involved planning and setting up school-wide systems. Educators attending the information skills or ICT courses were more likely to follow up the practical ideas they had gained than the theoretical approaches, with most actioning all of their practical plans and the remainder actioning some of their plans. Teachers had incorporated ideas from the theory and practice of the multiple intelligences course into their classroom teaching and those teachers with responsibility for the specific classroom programme of future problem solving had utilised knowledge and skills from that course in developing and implementing the programme. At the time of undertaking the professional development, approximately one-third of participants intended to share the information they gained with their colleagues. At the follow-up nearly all teachers had shared this information either formally at staff meetings or informally with colleagues.

One year on educators were asked to identify any barriers which hindered their use of the knowledge and skills they had gained from the course. For the information skills or ICT courses, the main barriers were funding or lack of equipment and time. The time barrier had two components. Namely, an already overcrowded curriculum and lack of teacher time to search for new information. Other barriers included technical problems or a lack of technical support at school, and a lack of access to information. Teachers had incorporated aspects of the multiple intelligences course into their own classroom programmes and work with individual children and the only common barrier which was identified was the resistance of other staff. The main barrier with use of the future problem-solving resources was lack of adequate time in the curriculum for the programme.

At the time the course began participants were asked about the likelihood of them attending further professional development courses in the same area in the future. Information skills and ICT educators were the most likely to have this intention. In fact all of these educators (except one who was retiring) thought they would attend future professional development courses in this area. Eleven felt they needed this immediately and 15 felt they would need this in the future. One year later half the participants had attended further professional development. Most others had either received follow-up information as part of a cluster group, visited other schools or attended ICT-related conferences. The majority were also still consolidating the skills they had acquired on the first professional development. This was particularly so for those attending the Infolink: Information Literacy Skills course. Future Problem Solving New Zealand and Multiple Intelligences in the Classroom courses participants were less likely to be planning further attendance, although one year later most Future Problem Solving New Zealand participants had undertaken further professional development in this area. Several Multiple Intelligences in the Classroom course participants were following up their continuing interest in the different ways that children learn by undertaking related professional development.

Conclusions

The experiences from this research suggest that in order for educators to use research findings and theory, this information must be made accessible both physically and conceptually. This was not necessarily the case with all the courses studied. The providers themselves had varying access to research-based information—those providers based in universities and colleges of education appeared to have more access through libraries attached to their place of work. The course participants who were school educators had some access to a limited range of information sources, but (unless they were enrolled in a course of tertiary study) they lacked access both to comprehensive libraries such as those available to tertiary educators, and to professional librarians whose role is to assist users to access and obtain information. Most course providers attempted to give the educators access to research-based information by directly presenting such information to them or by encouraging the development of a professional reading culture within the educators' school.

Personal contacts (including colleagues, students, professional development providers, and advisors) were the main source of new ideas for educators, rather than professional reading.

Attending professional development courses was one of the main ways the educators accessed new educational theory and research findings. Given this, professional development providers have an important role to play in assisting participants with the means to source information which they can follow up later if required. The findings from this study suggest that educators will use this type of information to some extent, if they gain access to it on professional development courses. For this reason, the professional development provider's role in filtering, linking, modelling, and providing strategies (rather than just repackaging information) is vital for the transparent dissemination of educational research and theory.

Some of the providers in this study were explicitly aware of their role as research and theory information disseminators and others were less aware.

Kennedy's (1997) research showed there were a number of factors that inhibited U.S. educators' use of research findings, namely that the research and/or theory was not:

- authoritative;
- relevant to practice or does not address teachers' questions and constraints; and
- easily accessible (the findings were not presented in a comprehensible way).

This small study suggests strongly that the situation reported by Kennedy is also evident in New Zealand. Research findings concerning the use of ICT in the classroom are often equivocal therefore making adaptation and adoption by teachers difficult. New Zealand educators lack access to a comprehensive information system which is tailored to their needs, that is, a system that makes connections between theory and practice, instead they are largely reactive, relying on whatever information arrives at their school.

Some existing sources of New Zealand based information attempt to make connections between theory and practice including *set: Research Information for Teachers* published by NZCER, various listservs or news groups on which current practice in ICT in schools is discussed (such as *Leaders-Net* run by Waikato University School of Education, and a range of conferences on best practice use of ICT in schools).

Of the limited amount of new research findings that were commonly accessed by the educators in this study, Ministry of Education publications emerged as a major source. Given this, greater attention should be given to making connections between research and practice and disseminating this information. One way might be to provide research digest summaries of current research for teachers, or to develop a professional journal on teaching with articles summarising local studies. Two educators in this study suggested new models for information access, such as providing information summaries online.

This research suggests that school principals (who tend to have greater access to new research findings through mentors and professional networks) could usefully take more of a leadership role in providing teachers with access to research-based information.

Educators cited lack of time as a main difficulty for them in sourcing educational research material. This difficulty includes lack of time and opportunities to source information, lack of time to scan, read, evaluate, reflect, adopt, or adapt the information and lack of planning time to integrate this information into their teaching practice.

Their difficulty with the sourcing and scanning of information could be assisted by utilising the new government initiative *Te Kete Ipurangi: The Online Resource Centre*²¹ to provide searchable, authoritative, accessible, useful, and relevant summaries of current research for teachers. This would be a timely development considering that both the providers and the educators in this study were making increasing use of Internet sources for professional reading, in that most of the providers were well advanced in this area, and many of the educators were beginning to use the Internet as an information source.

²¹ <http://www.tki.org.nz/>

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APPENDIX 1

PARTICIPANTS' QUESTIONNAIRE 1999

[Course name]
Professional Development

Course date

This questionnaire is part of a study being completed by the New Zealand Council for Educational Research. The main purpose of this questionnaire is to collect information on the background to your participation at the [COURSE NAME] you are about to attend on [COURSE DATE] and the knowledge you hope to gain from this course.

Please complete this questionnaire before you attend the session on [COURSE NAME].

This questionnaire should take approximately 15 to 20 minutes. The information you provide will be treated confidentially. Individuals will not be identifiable in any report from this study. This questionnaire will only be seen by the NZCER researchers working on this study.

Instructions

- Please answer this questionnaire
by ticking all boxes that apply
- AND/OR *by writing in the spaces provided*

- 1) Please write your name: _____
- 2) Please indicate the name of your school: _____
- 3) How many years or months have you been teaching? _____ years _____ months
- 4) Have you attended professional development in the area of [COURSE AREA] before?
- a) Yes b) No

(Please describe)

c 1 2 3
4 5 6
7 8 9

- 5) What motivated or encouraged you to attend this course? *(Please tick as many boxes as applicable.)*

- a) I have responsibility for this area in my school b) Personal interest
- c) I want to up-skill in this area d) I was encouraged by staff at my school
- e) Part of school's staff development plan f) To meet a particular need at my school
- g) To obtain information to start a development at my school
- h) Other *(please describe)*

i 1 2 3
4 5 6
7 8 9

6) Thinking back to when you first became interested in the area of [COURSE AREA]. What triggered your initial interest? *(please describe)*

1 2 3

4 5 6

7 8 9

7) Where do you currently obtain your information on [COURSE AREA]? *(please describe)*

1 2 3

4 5 6

7 8 9

8) How, if at all, have you been able to incorporate your interest in this area into your school management or classroom teaching? *(please describe)*

1 2 3

4 5 6

7 8 9

9) What knowledge and/or skills do you hope to gain from this course? *(please describe)*

1 2 3

4 5 6

7 8 9

10) What might you do with the knowledge and/or skills you gain on this course?
(please describe)

1 2 3

4 5 6

7 8 9

11) How familiar do you think you are with the area of [COURSE AREA]?

- a) Very familiar b) Familiar c) Some familiarity
 d) Unfamiliar e) Very unfamiliar

12) How comprehensive do you think your level of understanding of the knowledge base behind the area of [COURSE AREA] is?

- a) Very comprehensive b) Comprehensive c) Not very comprehensive
 d) Not at all comprehensive

13) Do you have a personal educational philosophy or set of beliefs about teaching and learning in the area of [COURSE AREA]?

- a) Yes b) No (go to q15a)

14) What is your personal philosophy or your set of beliefs concerning the area of [COURSE AREA]? (please describe)

1 2 3

4 5 6

7 8 9

page 3

15a) Thinking about your teaching OVERALL, would you say, in general, you reflect on your personal philosophy or set of beliefs about teaching and learning?

- a) Yes –often b) Yes –sometimes c) Yes –occasionally d) No

15b) Would you say you alter your personal philosophy or set of beliefs about teaching and learning?

- a) Yes –often b) Yes –sometimes c) Yes –occasionally d) No (go to q17)

16) What, if any, are the experiences or sources of information which influence you to alter your personal philosophy or set of beliefs about teaching and learning?
(Please tick as many boxes as applicable.)

- a) Experiences with students b) Classroom experiences with lesson content
 c) Observation of others' teaching d) Professional reading
 e) Education Gazette f) External courses or professional development
 g) Study for a higher qualification h) Advisors
 i) Libraries (please name) _____
 j) Databases (please name) _____
 k) World Wide Web
 l) E-mail or listserv discussions or communications
 m) Informal discussions with colleagues at your school
 n) Informal discussions with colleagues at other schools
 o) Formal in-school training or idea swapping sessions, e.g., staff meetings
 p) Professional network groups (please name) _____
 q) Curriculum contracts (please name) _____
 r) Cluster groups (please name) _____
 s) Education organisations, e.g., NZEI, PPTA (please name) _____
 t) Community groups/contacts/parents
 u) Mentors
 v) Media, e.g., newspapers, TV, radio
 w) Other (please describe) _____

- 17) Are there any other comments you would like to make about this upcoming course and your thoughts on using the information and/or skills you gain in your classroom or school?

1 2 3

4 5 5

7 8 9

Thank you for your time.

*Please return this questionnaire to NZCER by [DATE]
in the freepost envelope provided.
NZCER, PO Box 3237, Wellington, New Zealand*

*If you have any questions please contact: Sally Boyd, NZCER, Ph (04) 802 1466,
sally.boyd@nzcer.org.nz, or Anna Chalmers, NZCER, Ph (04) 802 1462,
anna.chalmers@nzcer.org.nz*

APPENDIX 2

TEACHERS' USE OF RESEARCH AND THEORY
STUDY

PHONE INTERVIEW QUESTIONS

Teachers' Use of Research and Theory Study Phone Interview Questions

*This interview is part of a study being completed by the New Zealand Council for Educational Research. The main purpose of this interview is to collect information on what knowledge you have gained from the **name** course you attended in **name month**, and whether you have made any progress or have any plans to incorporate this knowledge into your work. We are specifically focusing on the background research, theory, or body of knowledge that was the basis for this course.*

This interview should take approximately 30 minutes. Anything you say in this interview form will be treated confidentially. You do not have to answer any questions you are not comfortable with. With your permission I will be taping this interview, I will also be writing down your comments. This interview will only be seen by the NZCER researchers and research assistants working on this study.

Some of the questions in this interview will require a one word answer, others will be more in-depth.

BACKGROUND QUESTIONS

- 1) **What is the name of your school?**
- 2) **What is your current position at your school?**
- 3) **(If applicable) What year level do you teach?**
Primary and Intermediate
 a) Junior school (yr 1/2/3) b) Standards (yr 4/5/6) c) Forms (yr 7/8)
Secondary
 d) Junior secondary (yr 9/10) e) Senior secondary (yr 11/12/13)
Other
 f) Specialist _____ g) Other _____
- 4) **How long have you been teaching/in school management? _____ years _____ months**
- 5a) **Do you currently have any responsibilities at your school in the area of [name of course]?**
Yes/No
- 5b) **What are these responsibilities?**
- 6) **Could you tell me what educational qualifications you have?**

7) Which age group are you in?

- a) Under 30 b) 30 – 39 c) 40 – 49 d) 50 – 59 e) 60+

USE OF RESEARCH AND THEORETICAL MATERIAL IN GENERAL

8) Thinking about any area related to teaching and learning that you currently want more information on, how would you go about getting this information?

Area:

Process:

Information source:

9) In general, where do you currently get information about teaching and learning?

- a) Professional reading (*please name*)
 b) Education Gazette
 c) SET - research information for teachers
 d) External courses or professional development
 e) Study for a higher qualification
 f) Advisors
 g) Libraries (*please name*)
 h) Databases (*please name*)
 i) World Wide Web
 j) E-mail or listserv discussions or communications
 k) Informal discussions with colleagues at your school
 l) Informal discussions with colleagues at other schools
 m) Formal in-school training or idea swapping sessions, e.g., staff meetings
 n) Professional network groups (*please name*)
 o) Curriculum contracts (*please name*)
 p) Cluster groups (*please name*)
 q) Education organisations, e.g., NZEI, PPTA (*please name*)
 r) Community groups/contacts/parents
 s) Mentors
 t) Media, e.g., newspapers, TV, radio
 u) Other (*please describe*)

10a) To what extent did your teachers' college training provide you with the knowledge and skills to access information on new educational research and theory on an on-going basis?

10b) Do you have these skills now? How have you been able to develop or extended these skills since leaving teachers' college?

10c) Thinking now about educational research findings. Do you currently get research-based information on teaching and learning? Where from?

11a) Do you find you incorporate ideas from educational theories and research into your work?

a) Yes - often b) Yes - sometimes c) Yes - occasionally d) No (go to q12)

11b) Please give an example of this.

12) Please describe any barriers to your access and use of educational research findings and theory.

13a) **Thinking about teaching and learning and [name of course], do you have a set of beliefs about teaching and learning in this area?**

13b) **What are your beliefs?**

14) **Would you say, in general, that you reflect on your general beliefs about teaching and learning?**

a) Yes – often b) Yes – sometimes c) Yes – occasionally d) No

15) **What are the experiences or sources of information which influence you to alter your general beliefs?**

- a) Experiences with students
- b) Classroom experiences with lesson content
- c) Observation of others' teaching
- d) Professional reading (*please name*)
- e) Education Gazette
- f) SET - research information for teachers
- g) External courses or professional development
- h) Study for a higher qualification
- i) Advisors
- j) Libraries (*please name*)
- k) Databases (*please name*)
- l) World Wide Web
- m) E-mail or listserv discussions or communications
- n) Informal discussions with colleagues at your school
- o) Informal discussions with colleagues at other schools
- p) Formal in-school training or idea swapping sessions, e.g., staff meetings
- q) Professional network groups (*please name*)
- r) Curriculum contracts (*please name*)
- s) Cluster groups (*please name*)
- t) Education organisations, e.g., NZEI, PPTA (*please name*)
- u) Community groups/contacts/parents
- v) Mentors
- w) Media, e.g., newspapers, TV, radio
- x) Other (*please describe*)

SCHOOL CULTURE

16) Is the development of new ideas and teaching practices encouraged at your school?

- a) Yes – often b) Yes – sometimes c) Yes – occasionally d) No (go to q18)

17) What is it about the environment of your school that encourages the development of new ideas and teaching practices? I am looking to get up to 5 key factors here. First I will read out a list of 11 possible factors. After I have read each one, please indicate whether it is at all applicable, and then at the end, as a second step, we can return to those items you have indicated and identify the 5 (or fewer) key factors.

- a) Non-teaching time set aside for professional development or meetings
 b) Cooperative planning sessions allow time to discuss new ideas
 c) Reflection/thinking about practice is valued at your school
 d) New ideas are valued at your school
 e) The collegiality of staff at your school
 f) There is an emphasis on professional development
 g) There is an emphasis on whole school/syndicate/whole department development
 h) New materials/information are brought into school regularly
 i) Educational research findings are available at school
 j) Funds are available for professional development
 k) Other

18) Does your school have any systems set up to discuss new ideas or implement changes or ideas from professional development? If so, what are these?

19) Generally, do you feel that attending professional development courses is supported by your school culture?

- a) Yes – very well supported
 b) Yes – well supported
 c) No – limited support
 d) No – not at all supported

USE OF COURSE MATERIAL

20) **What areas of knowledge did the course cover?**

- a) ICT (information and communication technology skills)
- b) Future problem-solving skills
- c) Thinking skills
- d) Multiple intelligences
- e) Integrating ICT into curriculum areas
- f) Facilitating students' learning in this area
- g) Students' social skills
- h) Students' cooperative learning/peer tutoring
- i) Students' self-directed learning
- h) Modelling
- k) Teaching practice
- l) Classroom management
- m) Unit/lesson planning
- n) Facilitating developments in this area at your school
- o) Other areas

21) **Please outline/describe any research or theory that was presented at the course.**

22) **Did this course refer you to further reading materials or sources of information?**

- a) Yes b) Not sure c) No

23) **What new knowledge and/or skills did this workshop provide you with? Please describe.**

24a) Do you have any plans at this stage to use this knowledge and/or skills at your school?

In your teaching? Yes/ No/ Not sure

In other ways? Yes/ No/ Not sure

24b) If yes, what are your plans?

24c) Have you been able to implement your plans at all so far?

25) Please describe any barriers which maybe limit or prevent your use of the knowledge and skills gained on this course.

26) How, if at all, has this workshop influenced your beliefs on teaching and learning in the area of [name of course]?

27) Please describe any links you see between your participation in this course and benefits for students' learning.

28) Did this course provide you with strategies for encouraging developments in [name of course] at your school? *Please describe.*

29) What aspects, if any, of the course made it worthwhile for you?

30a) Have you (or will you) discuss or share the knowledge you obtained on this course with other staff at your school?

a) Yes – all or most of it b) Yes – some of it c) Not sure d) No (go to q31a)

30b) How will this happen? Are there (formal) processes in place?

31a) Having completed this course, is there an expectation that you will contribute to developments in this area at your school?

a) Yes b) Not sure c) No (go to q32a)

31b) How will this happen? Are there (formal) processes in place?

32a) Do you think that you need further professional development in this area?

a) Yes – now b) Yes – later c) Not sure d) No

32b) Please describe.

33) Are you likely to participate in further professional development in this area?

a) Yes b) Not sure c) No

FINAL QUESTION

34) Are there any other comments you would like to make?

Thank you for your time.

APPENDIX 3

COURSE PROVIDERS' INTERVIEW

- a) Code: b) Date of interview:/...../..... c) Time of interview:
- d) Place of interview: e) Person interviewed:
- f) Course code:

This interview is part of a study being completed by the New Zealand Council for Educational Research. The main purpose of this interview is to collect information on the development of the _____ course including its research and theoretical basis, and the expectations you have of course participants.

This interview should take approximately 40 minutes to an hour. Anything you say in this interview will be treated confidentially. With your permission I will be taping this interview. You do not have to answer any questions you are not comfortable with.

GIVE THE PROVIDER A COPY OF THE INTERVIEW SO THEY CAN READ THE QUESTIONS

COURSE PARTICIPANTS

I will start by asking you a couple of questions about course participants.

- 1) Could you tell me for whom this course is intended?

- 2) Do you tailor this course towards this group in any way? How?

COURSE PREPARATION

I will now ask a few questions about preparation for the course.

- 3a) **What background (if any) in this area do you anticipate your course participants will have?** (Prompt: how do you accommodate the range of participant's experiences?)

- 3b) **Could you outline any background reading, information gathering, or exercises that are provided for participants prior to attending the course?** (*obtain copies*)

COURSE PRESENTATION

I will now ask about how the course is presented.

- 4) **How do you incorporate the existing skills, or the knowledge base of participants into the course?** (*please describe*)

- 5) **What styles of presentation and teaching methods are used on this course?**
(Prompt: presenting, group discussions, prior handouts/tasks, practical tasks, modelling, role plays, peer tutoring, background reading, observations.)

- 6) **During the course do you provide handouts, reference or reading lists, URLs, or any other resources?** (Prompt: approx. how many items?) *(please describe and collect copies)*

- 7) **Do you provide any follow up sessions, information, or contacts for participants after the course?** *(please describe)*

COURSE DEVELOPMENT

The next few questions cover how the course was developed.

8) What influenced you (and/or others) to develop this course?

9) Could you describe how you (and/or others) went about developing this course?
(Prompt: how was the course content developed?. What factors influenced the course development and structure: time, money, TRDs available?)

10a) When did you first start running this type of course? 19_____

10b) How many one-off courses/whole school developments are held per year?_____

11a) How has the course content developed over time?

11b) What has influenced this development?

12) Which body of knowledge, theoretical material, or research played a part in developing the course content?

(Prompt for area: ICT, problem solving/thinking skills, multiple intelligences)

(Prompt for how teachers learn: recognition of teachers different learning styles?)

(Prompt for teaching and learning theory: facilitating learning, social skills, cooperative learning, modelling, classroom management, unit/lesson planning, self-directed learning, peer tutoring, teaching practice, facilitating change?)

(Prompt for curriculum areas: best practice in a specific area)

(Prompt: could you tell me the names of authors whose work you have used or the name of the projects/theory you refer to?)

13) **How is theory or research presented or used on this course?** (Prompt: implicitly or explicitly, as part of the general course development, background reading, by observation?)

14a) **How do you obtain information on research, theory, and other knowledge relevant to the content of this course?** (Prompt: do you have ongoing use to a library and information service which enables you to keep up-to-date?)

14b) **How do you keep up-to-date with the new information relevant to the content of this course?**

14c) **Do you incorporate this new knowledge into the course? How?**

13) **How is theory or research presented or used on this course?** (Prompt: implicitly or explicitly, as part of the general course development, background reading, by observation?)

14a) **How do you obtain information on research, theory, and other knowledge relevant to the content of this course?** (Prompt: do you have ongoing use to a library and information service which enables you to keep up-to-date?)

14b) **How do you keep up-to-date with the new information relevant to the content of this course?**

14c) **Do you incorporate this new knowledge into the course? How?**

14d) Are you, as a provider, able to access research or theory on any connections between the use of [IT/thinking skills] in the classroom and improved students' learning outcomes? Prompt: or research and theory related to this area?

15) Thinking about an area that you currently want more information on - where will you go for this information?

Area: _____

Location for information: _____

16) In general, where do you currently get information about new educational research and theory? (read out list)

- a) Professional reading
- b) Education Gazette
- c) Courses
- d) Conferences
- e) Study for a higher qualification
- f) School advisors
- g) Libraries (please name) _____
- h) Databases (please name) _____
- i) World Wide Web
- j) E-mail or listserv discussions or communications
- k) Informal discussions with colleagues at your workplace
- l) Informal discussions with colleagues at other workplaces
- m) Formal training or idea swapping sessions at your workplace
- n) Teachers/visits to schools
- o) Professional network groups (please name) _____
- p) Curriculum contracts (please name) _____
- q) Cluster groups (please name) _____
- r) Education organisations, e.g., NZEI, PPTA (please name) _____
- s) Community groups/contacts/parents
- t) Mentors
- u) Media, e.g., newspapers, TV, radio
- v) Other (please describe) _____

17) Do you think there are any barriers that hinder your use of educational research and theory in the development of the courses you run?

THE IMPACT OF THE COURSE

This section of the interview focuses on the possible gains for course participants.

18) Through this course what are the main themes, ideas, and/or teaching tools you wish to convey to course participants?

Themes/ideas:

Teaching tools:

19) How do you anticipate the material presented on this course will affect the participants' teaching practices? What do you think will change? (Prompt: influence of research/theory base on teaching practice.)

(Prompt: affect of themes/ideas:)

(Prompt: affect of teaching tools:)

20) Do you expect that the material presented on this course will alter participants' beliefs, attitudes, or personal philosophy of teaching in this area in any way? How?

21) Could you describe any links you see between teachers' participation on this course and benefits for students' learning?

22) Do you think this course will have provided participants with strategies to bring about developments in their school? (Prompt: classroom level or school level?)
(please describe)

- 23) Do you think there are any other developments participants will make as a result of the knowledge they obtained from this course? *(please describe)*

PROVIDERS' BACKGROUND AND VIEWPOINTS ON THE RELATIONSHIP BETWEEN PROFESSIONAL DEVELOPMENT AND RESEARCH

This section of the interview covers your background in this area and your viewpoints on the relationship of research and professional development.

- 24) Please describe any related training or qualifications you have. (Prompt: degree, training as a trainer, training others to be a trainer, teacher training, research experience.)

- 25) In your view, what are the factors that assist course participants to internalise and use the information they are provided with on professional development courses? (Prompt: time, mix and background of participants, presenter skills, methods of presentation, opportunities for feedback, school culture.)

26) What do you see is the role of research in the format and content of the course you are presenting?

27) How do you see your role in presenting research to teachers?

28) Do you think there are any barriers existing that could hinder course participants in their future use of course material? (Prompt: could you comment on... lack of time, other commitments, lack of resources, lack of access to information, school culture, factors to do with the course content and delivery mode).

LAST QUESTION - *This is the last question of this interview.*

29) In conclusion, is there anything else you would like to say?

*Thank you for taking part in this interview.
Are there any questions you would like to ask?*