Abstract

This paper discusses the interim findings of a work-in-progress concerned with educators' use of research and theory to inform their teaching practice. The project examines relationships between research and teaching by studying educators' access to, and use of, research and theory relating to a sample of six professional development courses in which the educators participated during the first half of 1999. The educators were either school teachers or school principals. The paper utilises data collected from observations at professional development courses, interviews with the providers of these courses, and questionnaires for the educators who participated in the courses. These questionnaires were administered at the time of the course. Follow up interviews are being conducted with the educators in December 1999 to investigate the extent to which they have used the educational theory and research presented at the respective course in their teaching.

The experiences from this research to date, suggest that, in order for educators to use research findings and theory, this information needs to be made accessible to educators both physically and conceptually. This was not necessarily the case with all the courses studied. The course providers themselves had varying access to research-based information with providers based in universities and colleges of education appearing to have greater access (through libraries attached to their place of work) than private providers. The school-based educators had some access to a range of
information sources, but not to comprehensive libraries normally available, for instance, to tertiary educators, nor to trained staff on-hand to assist them to access 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; and, at least to some extent, course providers made links between the research or theory presented and the educators’ practical environments.

Introduction

This paper discusses the interim findings of a work-in-progress concerned with educators’ use of research and theory to inform their teaching practice. The project examines relationships between research and teaching by studying educators’ access to, and use of, research and theory relating to a sample of six professional development courses in which the educators participated during the first half of 1999. The educators were either school teachers or school principals. The paper utilises data collected from observations at professional development courses, interviews with the providers of these courses, and questionnaires for the educators who participated in the courses. These questionnaires were administered at the time of the course. Follow up interviews are being conducted with the educators in December 1999 to investigate the extent to which they have used the educational theory and research presented at the respective course in their teaching.

Aims of this Study

The aims of this study are 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

Three criteria were developed for use in considering possible courses for inclusion in the study. These were:

• the relationship of the course to the essential skills of the New Zealand curriculum framework (it was decided to focus on the essential skills rather than curriculum areas to encompass a wider perspective than specific curriculum areas would have allowed);
• the likelihood that the course was grounded, at least to some extent, in theory and/or research; and
• the topical nature of the subject area or the current level of educators’ interest.

Discussions with colleagues, and perusal of the New Zealand Education Gazette and institution handbooks were used to identify suitable courses for consideration. Type of
provider, methods of course delivery, and geographical location of the courses were taken into account, so as to widen the range of courses from which to sample.

Six courses were studied from those available within the time frames for the study. These courses were concerned with 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 two essential skills, namely problem solving or information skills.

The courses 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 were in the North Island and one was in the 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.

All 142 course participants who were educators were invited to take part in the study.

Data Collection

The instruments which were confirmed after trialling, comprised a base-line questionnaire for course participants at the time of the course and a follow up interview to be conducted at the end of 1999; and a questionnaire for the course providers. In addition, courses were observed and course materials were obtained and reviewed for all courses.

Response rates for the participants base-line questionnaires varied amongst courses from 100 percent in one case (8 out of 8) to 33 percent (19 out of 57) in 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).

Each professional development course is written up as an individual case to include information from the provider interview, the base-line questionnaire for participants, observation notes, and the examination of course materials.

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 working in teams, supported by a future problem solving programme (FPSP) coach, learn and apply a six-step problem solving process. The steps involve brainstorming, problem identification, developing criteria, and evaluating and describing solutions.

The programme was founded in the United States in 1974. It was introduced to New Zealand in 1990, and New Zealand became an affiliate in 1994.

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.

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.

The New Zealand national director had drawn on the work of Treffinger, Joan Dalton, Tony Ryan, Edward de Bono, Jim Bellanca, and Robin Fogarty as she developed the coaches workshops. Joan Dalton’s work on co-operative 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. Crabbe, 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. 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.

Main Themes and Ideas

The main ideas which the director wanted to convey to workshop participants were the six steps process for the FPSP. 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".

The Role of the Director in Presenting Research and Theory

The workshop 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. The director provided a display of approximately 20 books on future problem solving, thinking skills, and creative learning for participants to browse during breaks.

The Participants

Seven of the 15 workshop participants completed the initial questionnaire. Four teachers were from primary or intermediate schools, one from a composite school and two from secondary schools. Respondents were asked why they had enrolled in the workshop and could select as many reasons as applied from a list. Nearly all said personal interest, amongst other various reasons.

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 most teachers to alter their beliefs were experiences with students, professional reading, external courses or professional development, informal discussions with colleagues at own school, and classroom experiences with lesson content.

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.

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.
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 implications; the second is on developing practical applications of multiple intelligences; and the third is on multiple intelligences, the New Zealand Curriculum Framework essential skills, and assessment. 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.

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., Gardner and Sternberg) 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.

Course 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.

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 to actually critique and look at things—not to take anything for granted but to make it their own.

The Role of the Course Developer in Presenting Research and Theory
As described above, research and theory was presented explicitly in the content of the three study guides and was 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.

The Participants

Nineteen of the 57 course participants completed the initial questionnaire. Eleven were from primary or intermediate schools, 5 from secondary schools, one was from a special school and 2 were not teaching. Respondents were asked why they had enrolled in the course and could select as many reasons as applied from a list. Nearly all selected "personal interest", amongst other various reasons.

Most teachers had some familiarity with multiple intelligences. Five teachers described their personal philosophy or set of beliefs concerning multiple intelligences in the classroom. These beliefs focussed 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. The experiences and sources of information which influenced half or more of the teachers to alter their beliefs were experiences with students, study for a higher qualification, external courses or professional development, professional reading, informal discussions with colleagues at own school, informal discussions with colleagues at other schools, formal in-school training or idea swapping sessions, and advisers.

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

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 focussed on the consideration of this theoretical material, and its applications, in the context of participants’ own classrooms.

Case 3: Whole School Information Technology Professional Development

The Professional Development Programme

The first information skills case study involved a whole school information technology professional development (ITPD) in a primary school. This professional development was
partially funded from the 1999 ITPD scheme and was provided by a facilitator from a private company specialising in ICT support and resourcing for the education sector.

The facilitator’s brief was to assist staff to integrate ICT throughout the curriculum, and to develop strategies to ensure that computer equipment was cared for by students and staff.

**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. She used an approach known as "whole school development" which was tailored to the individual situation of the staff at each respective school.

A central core of information which the provider had developed over time was presented in the sessions, though this information could vary depending on the needs of the school and the individual staff members, new ideas which the provider had obtained, or if the technology had changed. Changes to this core information were influenced by evaluation of the content of the service and the methods used to deliver the service. Both these aspects were also influenced by the material the provider obtained from professional reading.

**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.

**The Role of the Provider in Presenting Research and Theory**

The provider considered that the role of educational research and theory in the sessions she facilitated was to confirm that 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.

**The Participants**

The primary school selected for this project had a total of 10 teaching staff including the principal. Of these, 8 attended the professional development course. These 8 people all returned the base-line
questionnaire. For most respondents, their initial interest in ICT had been triggered by their own personal use of computers and the fact that they had computers in the classroom. Nearly all the educators had previously developed a personal set of beliefs about teaching using ICT.

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.

These 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 their beliefs. The main experiences and sources of information which influenced the beliefs of most of the educators were experiences with students, external courses or professional development, observation of others' teaching, formal in-school training or idea swapping sessions, classroom experiences with lesson content, informal discussions with colleagues at their school, informal discussions with colleagues at other schools, professional reading, study for a higher qualification, and advisors.

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.

**Research and Theory: Implicit or Explicit?**

The focus of this professional development was on developing 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. The information presented which had a research or theoretical base, such as the enquiry process, or the various ways to peer tutor, was presented in an implicit way.

**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. The 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.

The purpose of Infolink is to introduce teachers and principals to a 6-stage resource-based learning model (using both ICT and print resources) called Action Learning 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 8 sessions (in some cases a teacher at the school will lead the sessions with the support of a tutor via the telephone). Sessions are presented on the principles of the 6-stage Action Learning model and teachers then try out these principles and adapt and adjust them with their own classes. The existing skills, or the knowledge base of participants is incorporated
as teachers, using their prior knowledge and teaching strategies, trial the skills in their classrooms.

The Infolink paper selected for this study was a whole school professional development hosted by a primary school. Eleven staff from the host primary school (including the principal), and 4 staff from primary and secondary schools in the surrounding area 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, the structure, and the 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, co-operative, behaviourist, cognitive, and humanist learning theories; teacher librarianship; information management and instructional design; and adult and lifelong learning. This information has been re-packaged and developed into the action learning model. The co-ordinator, when commenting on the model and its relationship to research and theory, stated that:

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 is 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 6 stages represents 6 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.
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 8 "essential skills to be developed by all students across the whole curriculum throughout the years of schooling" (p. 17, Ministry of Education; 1993).

Although the delivery has changed from colleges of education to school sites, the content of the paper had changed very little over time.

Main Themes and Ideas

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.

In addition, the co-ordinator wanted participants to leave the course with a thorough understanding of the action learning model, its 6 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.

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. In addition, she attempted to tie in the presentations at conferences she had attended with the work that teachers were doing.

The Participants

Six educators returned the questionnaire. Teachers had enrolled for the Infolink paper mainly because it was part of their school's professional development plan, and because they wished to up skill in this area. Most teachers did not have a previously developed set of personal beliefs about teaching in this area. 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 at least half the teachers to alter their beliefs included experiences with students, classroom experiences with lesson content, formal in-school training or idea swapping sessions, and observation of others' teaching. The majority of teachers wanted to gain skills from this paper that they could use in the classroom.

Research and Theory: Implicit or Explicit?

In the introductory sessions the international research and theory from which the action learning model had been developed were explicitly outlined. Further references and readings were suggested for those who wished to investigate this further, while the readings
allocated to each session gave teachers the opportunity to reflect on their own experiences in the light of related research.

**Case 5: Principals First ICT Workshop**

**The Workshop**

The third information skills case study was a one-day ICT (Information and Communications Technology) workshop for school principals. This workshop was organised by a private company which was contracted by the Ministry of Education to deliver a series of workshops as part of the overall ICT strategy developed by the Ministry. The company then contracted a number of regional facilitators to deliver the workshops around New Zealand.

The 2 facilitators of this workshop were local principals contracted to deliver several workshops in their area, that is, "principals delivering to principals". The purpose of the workshop was to introduce principals to 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 which had been published by the Department of Education in Victoria, Australia. Each workshop attendee was provided with a copy of the guide.

**Research and Theoretical Background**

The learning technologies planning guide provided to attendees 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. Other material presented at the workshop, which was based either on research or best practice on ICT use in schools, was collected from the wider group of facilitators at a 3-day planning session. The material presented at the observed session included a video, an article by an expert in the field and other publications and information sources.

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.

**Development**

To develop the workshop, the 2 facilitators held a planning session with the other regional facilitators and the organisers of the contract to plan as a group how they could best present the guide and assist principals with their ICT strategic planning.

**Main Themes and Ideas**

The main objectives for the workshops were to "introduce the strategy and the guide", and provide the principals with a starting point and a method to initiate planning for the integration of ICT at their schools. The facilitators wanted principals to leave the workshop having begun the process set out in the guide. One facilitator noted that it was important the principals left with an understanding of the overall ICT strategy.
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 that the guide itself was developed as part of a research process (though this process is not written up in the guide) and 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 by the facilitators 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 material presented at the workshops, the methods used to present the material 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 the work of experts in the field, and by discussing constructivist philosophies.

The Participants

Twenty-two principals from the 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 similar schools to their own. Of the 22 principals, 15 returned the questionnaire.

Principals attended the ICT workshop for 3 main 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 at their school for the use of ICT.

Seven principals had previously developed a personal set of beliefs about teaching using ICT which mostly centred on using ICT as a tool for students' learning.

All principals stated that they reflected on their personal set of beliefs about teaching and learning. The experiences and sources of information which influenced half or more of these principals to alter their beliefs included experiences with students, informal discussions with colleagues at other schools, professional reading, observation of others' teaching, informal discussions with colleagues at your school, formal in-school training or idea swapping sessions, external courses or professional development, advisors, professional network groups, classroom experiences with lesson content, mentors, study for a higher qualification, curriculum contracts, the media, the New Zealand Education Gazette, and education organisations such as NZEI and principals associations.

The majority of principals wanted to use the information they gained from this workshop to develop or review their ICT strategy.
Research and Theory: Implicit or Explicit?

Various examples of research and theory were presented explicitly to attendees during the course of this workshop. Some of these 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 the use of ICT in schools to enhance learning, 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 use in schools to use as well as references for further reading on some areas. However, it was not always clear exactly how some of this information had been developed.

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

Case 6: Apple Education Bus Tour

The Bus Tour

The fourth information skills case study was a 5-day Apple Education Bus Tour, of 8 schools in which Apple computers were used, in the Auckland and Tauranga regions. The tour was organised and facilitated by 3 providers from Apple Education, though essentially there were 2 sets of providers on the tour—the Apple staff and the staff and students at the schools which were visited. 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, 2 intermediate, 1 composite and 1 secondary school were visited. Six were state schools and two were independent. These schools tended to have a strong philosophical background based on child-centred and constructivist theory, and were using a number of enquiry-based learning models in the classroom. Schools that were on the tour were selected by the providers because of their integration of ICT throughout the curriculum.

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 tour 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. At some schools a handout was provided outlining or summarising the various theoretical models used by the school in their teaching and learning programme. Schools had examined the work of a number of researchers and theorists to develop their respective programmes. For instance, one school had used the work of Gardner (multiple intelligences), De Bono (thinking hats), Maslow (self-esteem and motivation), Clark (enquiry learning), Bloom (taxonomy and learning process), Covey (seven habits for effective people), and Deming, and Scholtes (team work and TQM theories).

Information gained by tour participant’s included ways to develop a culture which focussed 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 some schools a different model for professional development was described to teachers, that is, the use of visiting speakers to run workshops on enquiry learning and thinking skills.
• At some 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 during the course of the week in a number of other ways, for example, a staff member discussed how a particular computer program was based on research and theories of learning.

Development

The first bus tour was held in 1995, and the tour in this study was the seventh. Currently the providers organise 3 tours a year. The concept of the tour grew from the providers taking the occasional person with them to visit the schools that they worked with. They then decided that this wasn’t efficient for themselves or for the school, and organised their first tour.

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 which are 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’.

Main Themes and Ideas

The main themes and ideas which the provider wanted participants to gain 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 onto 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 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, for example, information on a range of different software and ways to use it in the classroom schools, setting up networks, and the use of the Internet and Intranets.
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 in schools to focus on:

... 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 "show 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.

Participants

Twenty-seven teachers and principals, education providers, and computer sales representatives from around New Zealand attended the tour. Seven schools had sent 2 staff members on the tour. The 25 teachers and principals were sent the background questionnaire. Of these 16 returned the questionnaire.

Educators went on the tour mainly because they had an interest in this area and the wished to up skill themselves. 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.

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

Most of the educators had previously developed a personal set of beliefs about teaching using ICT which 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.

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 at least half of the educators to change their beliefs included experiences with students, informal discussions with colleagues at their school, observation of others' teaching, professional reading, external courses or professional development, formal in-school training or idea swapping sessions, classroom experiences with lesson content, informal discussions with colleagues at other schools, advisors, study for a higher qualification, and curriculum contracts and cluster groups.

From the tour, the majority of educators wanted to obtain more information about the use of ICT in schools; specifically information that would assist them to further develop their classroom programmes and to refine management, administration and professional development structures.

Many of the educators intended to share the knowledge they had gained with their colleagues.
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 at the schools were explicitly outlined for the benefit of tour participants. The research and theory presented by the schools was relevant and contextual 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 the course providers and by staff at the schools visited.

Discussion

The six providers interviewed for this study accessed a range of sources of information for their own professional development and for the 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 see any barriers to their access to 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 the colleagues and the Internet for information. Some providers noted that research findings in the ICT area are at best patchy, with little authoritative evidence available, for example, on the effect of the use of ICT tools on literacy.

It is apparent from the literature and from the interviews with the professional development providers, that the provider’s involvement is vital for any research presentation. 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 of the 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 that they worked in, that is they acted as a research filterer. Providers reviewed current research and theory and selected information which was relevant and accessible to the educators they were working with.

Provider as Research Repackager

Once providers reviewed current research and theory they could either filter it directly to participants, as in the case of the Multiple Intelligences course, or as occurred in the other
cases, repackage it. That is, providers reorganised information to maximise its relevance to the educators they were working with.

Provider as Research Linker

Some providers assisted participants to make explicit links between research-based information and participants’ practice.

Provider as a Model

Providers attempted to guide educators towards models of best practice as presented by the school community or by current research by directly modelling the behaviours they wished to see used, by informing them about the best practice of others, and by providing a model of an information culture through suggesting information sources or directly providing information.

Provider of New Visions

Another role which the providers took on was that of a visionary or "seeder of ideas". Providers stressed the need for personal reflection on their practice by educators, and the development of new visions. Related to this role was an encouragement to adopt or adapt the practices seen or studied on the professional development.

Provider of Strategies

Providers identified that the changes they wished to occur in educators’ philosophies or in their use of new research-based information would not occur in a school environment 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 all of the professional development courses in this study the providers attempted to furnish educators with strategies which would enable them to action change.

The barriers identified by information skills and ICT providers which could influence educators uptake from professional development courses involved 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.

One student barrier was the low literacy level of some students. School barriers included institutional inertia, the existing school culture which was resistant to change, potential philosophical differences between educators and the overall school philosophy, and lack of finance for further professional development, release time, and equipment.

System barriers were educator overload due to other commitments such as curriculum development, and ERO demands; the technology breaking down, and differences between the intent of the curriculum documents and their expression. 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.
Conclusion

In conclusion, the experiences from this research to date, suggest that, in order for educators to use research findings and theory, this information needs to be made accessible to educators both physically and conceptually. This was not necessarily the case with all the courses studied. The course providers themselves had varying access to research-based information with providers based in universities and colleges of education appearing to have more access through libraries attached to their place of work than private providers. The school-based educators had some access to a range of information sources, but not to comprehensive libraries normally available, for instance, to tertiary educators, nor to trained staff on-hand to assist them to access 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, and at least to some extent course providers made links between the research or theory presented and the educators’ practical environments.
References


