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**ICTPD Through Three Lenses
An Evaluation of the ICTPD School Clusters
Programme: 2001-2003**

Report to the Ministry of Education

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RESEARCH DIVISION

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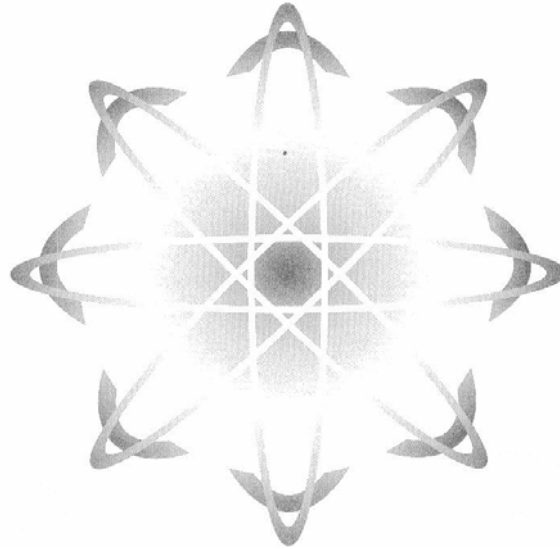
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Evaluation of the 'New Initiatives' in 'Interactive Education: An Information and Communication Technologies (ICT) Strategy for Schools'

ICTPD Through Three Lenses



An Evaluation of the ICTPD School Clusters Programme 2001-2003

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COLLEGE of EDUCATION**

Tē Whare Whai Matauraka Ki Otautahi

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Abstract

This research report is the fourth of four submitted to the Ministry of Education as part of the Christchurch College of Education's evaluation of the "New Initiatives" announced in the strategy documents *Interactive Education: An Information and Communication Technologies Strategy for Schools* (Ministry of Education, 1998) and *Digital Horizons: Learning Through ICT: A Strategy for Schools* (Ministry of Education, 2001).

The particular Initiative addressed in this report is the so-called '28 ICTPD School Clusters' programme of teacher professional development in information and communication technology (ICTPD) 2001-2003. Under this initiative, which was the second iteration of the ICTPD cluster programme in New Zealand, 28 clusters of schools from around the country were selected to deliver a programme of teacher development for up to three years related to teachers' effective use of ICTs.

This research on the 2001 cohort of ICTPD cluster teachers supplements, and makes comparisons with, the evaluation of the first ICTPD Cluster Programme (the '1999 cohort') published by the Ministry in 2002 (Ham et al).

The ICTPD programmes in New Zealand are aimed at increasing teachers' ICT skills and knowledge, at increasing their usage of ICTs for professional and administrative tasks in schools, at supporting school policy and planning initiatives related to ICTs, and at increasing the frequency and quality of classroom usage of ICTs to support teaching and learning.

The research programme for the 2001-2003 cluster programme took three forms, each representing one of the 'three lenses' in the title of this report. These three 'lenses' or perspectives on the programme are reported separately, but combine to provide a multilayered overview of the programme's impact on teaching and learning in New Zealand. The three perspectives are:

1. A 'national perspective' provided by a pre-post survey study of the effects of the cluster programme on teachers from all of the clusters.
2. A 'Kura Kaupapa Maori cluster perspective' provided by comparative case studies of two Kura Kaupapa Maori clusters; one from the original 1999-2001 Programme, and one from the 2001-2003 Programme.
3. An 'individual participant perspective' provided by a series of action research studies completed by a group of teachers and facilitators in the 2001-2003 Programme.

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Executive Summary

This research report is submitted to the Ministry of Education as part of an evaluation of the initiatives announced in the documents *Interactive Education: An Information and Communication Technologies Strategy for Schools* (Ministry of Education, 1998) and *Digital Horizons: Learning Through ICT: A Strategy for Schools* (Ministry of Education, 2001).

The purpose of the evaluation reported here was to assess the overall impact of the ICTPD School Clusters programme of teacher professional development (PD) as implemented in the period from January 2001 to the end of 2003.

The report covers the impact of the ICTPD Clusters Programme from three perspectives:

1. National Trends 2001-2003
2. Two Kura Kaupapa Maori Cluster Case Studies, 1999-2003
3. Teacher and Facilitator Action Research Projects, 2001-2003

The research questions guiding the evaluation were:

1. How effective were the PD strategies implemented by various clusters in meeting stakeholder and participant goals?
2. How effective were the ICTPD cluster programmes in participating schools in terms of promoting effective teacher use of ICTs for lesson preparation and planning and school administration?
3. How effective were the ICTPD cluster programmes in increasing teachers' skills and knowledge related to the educational applications of ICTs?
4. How effective were the ICTPD cluster programmes in increasing effective classroom usage of ICTs by students?
5. How much and in what respects have these effects changed as the model has rolled out over time and to new cohorts?

The main findings of the study with regard to these questions follow.

The ICTPD Clusters programme of teacher professional development 2001-2003 had a significant effect on the national profile of teacher use of ICTs in New Zealand. Teachers in the programmes tended to have goals related to increased ICT skills and more effective use of ICTs with classes, and report high levels of achievement of these goals as a result of the programmes. Teacher use of ICTs for school administration and lesson preparation also increased significantly over the period of the cluster programme, although the programme itself was only one of several factors encouraging this increase in usage. The most striking teacher effects of the programme were to increase significantly teachers' skills in using ICTs, and, perhaps more importantly, to significantly increase their confidence about and actual usage of, a range of ICTs for classroom learning activities. At the end of the project most teachers were using more ICTs, more confidently, more often and for a wider range of curriculum objectives with their classes than before the programme. The key factors

which statistically correlated with these increases in classroom usage were teacher confidence with and about ICTs, and the length of time that individual teachers were actively engaged in the PD process.

The Kura cluster case studies provide some insight into how the cluster programme was implemented in Maori immersion contexts in particular. In most respects the Kura teachers' experiences reflect very similar concerns and patterns of progress to those found among non-Kura clusters in this and previous studies (Ham et al 2002), though there seem to be some differences in relation to how the programme is implemented in Kura compared to mainstream schools occasioned by the shortage of human and teaching resources in those schools and, for many, their geographical isolation.

Like the Kura case studies, the teacher action research reports included in this report also suggest that for many teachers the programme has had a major impact in terms of stimulating deeper reflective practice about teaching and learning generally, and in improving their professional understandings around what might constitute educational 'value' and 'effectiveness' in terms of student learning when using ICTs.

In virtually all key respects the effects of the cluster programme on the 2001-2003 cohort were similar in scope and scale to those found for the previous 1999-2001 cohort.

National Trends in the ICTPD Clusters, 2001-2003

Effective strategies for professional development in ICT

- Across the clusters as a whole, teachers tended to concentrate on PD goals related to increasing their ICT skills and increasing their use of ICTs with students in classrooms, with secondary teachers tending to report relatively more goals related to skill development and primary teachers relatively more goals related to classroom usage.
- Overall, participants reported high levels of goal achievement as a result of the ICTPD programmes, and high levels of satisfaction with the programmes in terms of meeting their expectations. The overall proportions of objectives 'fully achieved' and expectations met were slightly lower for the 2001 cohort than for the 1999 cohort.
- The extent to which goals and objectives were achieved varied by sector, length of time in the programme, and in some instances, gender. Primary teachers and those who had been in the programmes longest reported the highest levels of goal achievement and expectations met.
- Most, but far from all, teachers tended to prefer one-to-one or small group modes of grouping for professional development, and to prefer sector-based groupings over mixed primary-secondary groups.
- Female teachers showed a greater preference for working in groups of similar ICT skill level than male teachers.
- A mixture of formal and informal, in-school and out of school, short term and longer term PD strategies were highly ranked by teachers. Most notably these involved release time, extended retreats, technology mentors and one-to-one

tutorials. Teachers did not generally rank professional reading or listserves/online communities highly as effective PD strategies.

- In almost all respects, what the 2001 cohort of teachers regarded as ‘effective’ in ICTPD strategies paralleled the preferences of the 1999 cohort before them.

Teachers’ use of ICTs for lesson planning and preparation and school administration

- There was a significant increase of the proportion of routine users of ICTs for both lesson planning/preparation and school administration among teachers over the period of the ICTPD programme. Both before and after the ICTPD programme, teachers tended to use ICTs for lesson-related purposes more often than for other administrative purposes.
- Internet usage in particular, for both school administration and for lesson planning and preparation, increased significantly among both secondary and primary teachers over the period of the ICTPD programme. There is some evidence that this is part of a general increase in teachers’ use of internet across the board, and is not confined or unique to the cluster schools.
- There were significant differences between teachers of different school sectors in their use of ICTs for most lesson related and other administrative purposes, with primary teachers reporting greater increases in such usage compared to secondary teachers. This difference may be largely explained by the generally higher levels of entry point usage among secondary teachers compared to primary teachers.
- Taking into account the higher entry level usage of the 2001 cohort of teachers, the increased use of ICTs for administration and planning reported for the 2001 cohort is comparable to that reported for the 1999 cohort. For both cohorts, moreover, the ICTPD programme seems to have been but one of several determinants of the reported increases in teachers’ use of ICTs for various administrative and lesson planning/preparation purposes. Many school principals, whether in clusters or not, seem to be requiring administrative use of ICTs for reporting, roll checks etc, and it is likely that the laptops for teachers scheme is also having an impact on most teachers’ use of ICTs for administrative and lesson planning functions.

Teacher effects: teachers’ knowledge, attitudes, skills and confidence regarding ICTs

- The teachers in the ICTPD programmes generally believed that ICTs could play a valuable role in teaching and learning, both in terms of helping to improve the efficiency of curriculum delivery, and as a pedagogically justifiable investment of school resources.
- The perceived benefits of ICTs for teaching and learning were felt to relate most to increased student motivation, student skill acquisition (both ICT skills and the Essential Skills), and the achievement of specific curriculum objectives.
- Primary teachers tended to be more focussed on student acquisition of ICT skills as a benefit of ICT usage, compared to secondary teachers.
- Teachers’ concerns about the use of ICTs for teaching and learning focussed most on issues of technical reliability, lack of time for themselves to become

familiar with software and its possible uses, and lack of access for their students.

- In all respects the reported benefits and concerns regarding the use of ICTs among the 2001 cohort of cluster teachers mirrored those of the 1999 cohort.
- The majority of teachers in the 2001 cohort entered the programme already competent in a few ICT skills areas, most notably word processing and desktop publishing, but much less competent in most others. Overall, they entered the programme more competent than their predecessors in the 1999 cohort.
- By the end of the programme the majority of teachers were at high levels of competence in several, though not necessarily all, of the ICTs commonly used in schools. The increases in competence were most notable with regard to graphics, internet applications, and basic computer systems. There were smaller increases in competence with regard to databases, spreadsheets, and, for secondary teachers, multimedia applications.
- In terms of teacher confidence about ICTs, the overall trend was that teachers moved from being generally not confident before the ICTPD programme to being generally confident after participating in the programme, both in terms of personal confidence with ICTs and in terms of confidence about their use with students in classes.
- Teachers were more confident about using ICTs personally than they were about using ICTs with their classes, both before and after the programme. The greater effect of the programme, however, was the increase in teacher confidence regarding classroom use.
- Teachers' confidence with ICTs, both personally and with classes, was related to: gender (males reported higher confidence levels on entry to the programmes), length of teaching experience (teachers with more experience reported higher increases in confidence), sector (primary teachers reported higher increases in confidence than secondary), and length of time in the ICTPD programme (those who were longer in the programme reported higher increases in confidence). The 2001 cohort results also tended to confirm the major finding of the 1999 cohort evaluation that there was a correlation between increased teacher confidence about ICTs and increased classroom usage of them.
- In all key respects the trends identified in teachers' confidence in relation to using ICTs personally and with classes reflected those found for the 1999 cohort.

Classroom effects: teachers' classroom usage of ICTs for teaching and learning

- There was a distinct tendency for teachers in the 2001 cohort to use a smaller range of ICTs with classes than those in the 1999 cohort.
- Consistent with the findings for the 1999 cohort, secondary teachers in the 2001 cohort tended to use a smaller range of ICTs with classes than primary teachers. This is to be expected given primary teachers' need to teach all Essential Learning Areas, and secondary teachers' focus on one or two.

- The predominant uses of ICTs in classes were for Language/English objectives, and to a lesser extent Social Studies, Maths and Science objectives.
- Word processing for static print presentation continues to be the predominant student use of ICT in both sectors, followed by use of the internet for research and information gathering. Primary students seem to use a wider range of ICTs for a wider range of curriculum purposes compared to secondary students.
- The pattern of curriculum coverage and pedagogical purpose for ICT use was substantially the same for the 2001 cohort as for the 1999 cohort, except for a tendency for more use of ICTs for problem solving, and less for content/skill practice, in the 2001 cohort.

Comparison of trends in the 2001 cohort with those in the 1999 cohort

- In almost all key respects the trends identified in relation to the 2001 cohort of ICTPD teachers mirror those identified in the earlier study of the 1999 cohort.
- The only areas in which the cohorts differed in any substantial way were :
 - Demographically the 2001 cohort had proportionally more secondary teachers and proportionally more male teachers taking part than in the 1999 cohort, although both these groups were still under-represented in relation to their proportions in the teaching population generally.
 - The 2001 cohort of teachers started with generally higher personal skill levels compared to the 1999 cohort. This trend is seen in subsequent cohorts as they enter the programme as well, and seems to indicate that skills based professional development is a continuing commitment in schools which are not part of a cluster programme (Ham, Graham & Toubat 2004).
 - The 2001 cohort tended to make greater use of the internet than the 1999 cohort, both for general professional and administrative use as well as for teaching and learning activities with students.
 - The 2001 cohort generally used a smaller range of ICTs with classes than the 1999 cohort.

ICTPD in Two Kura Kaupapa Maori Clusters

As was found in the cluster case studies in the 1999 cohort generally (Ham et al 2002), the ICTPD programmes in Te Urewera and Te Ara Rima clusters had a significant impact on the skill levels, and even more importantly, the confidence levels of most, though not all, teachers in the Kura. For the great majority of teachers in most of the Kura, also, it resulted in greater classroom use of ICTs, and the use of a wider range of ICTs in classrooms. However, the range of experience observed in these regards varied considerably from kaiako to kaiako, and from Kura to Kura. There seems to have been a group of kaiako, many older and often less experienced in teaching, for whom increased skills were achieved, but at the end of the project they were still hesitant about incorporating ICTs into their teaching. On the other hand, another group seemed to deal with the barriers they faced as a challenge to be overcome, both in a technical sense and in the sense of using the inclusion of ICTs into their teaching as an occasion for reviewing their core pedagogical assumptions.

The major issues reported by the kaiako in the Kura related to increasing the connectedness of ICT activities to other things happening in the classroom, practical strategies for organising the rotation of students through ICT activities given the small number of them available, and, above all perhaps, frustrations at the often low levels of technical reliability of the equipment.

The experiences of the kaiako in the Kura case study schools reflect most of the trends reported throughout the clusters generally, with two exceptions. The first is that the shortage of relievers and staffing movements in the Kura made it difficult to provide ongoing, long term PD programmes accessible to everyone equitably. The other exception is that the fragilities of the technical infrastructure in many of these small, low decile, isolated schools seem to have had a disproportionately diluting effect on the effectiveness of the PD compared to most of the other clusters.

The patterns of students' classroom usage of ICTs, curriculum coverage and learning outcomes observed in the two Kura case study clusters were little different from those reported for the cluster programmes in general. The predominant uses observed were language related activities using word processors or the internet, leading either to print-based presentation or, occasionally, multimedia slideshows. Most activities observed involved students on lower or middle order thinking skills, though there were some notable exceptions to this. Collaborative activities were common, and the general levels of technical skill shown by students were high.

The overall feeling in both the case study clusters was that their ICTPD programmes had been extremely effective in 'getting them off the ground' in terms of the effective uses of ICTs for teaching and learning. However, most at the end also expressed a sense of incompleteness in terms of meeting their full needs as immersion schools. As one participant put it: 'kāore nawhe', *not enough*.

Teacher and Facilitator Action Research Projects

A range of action research or self-study projects was undertaken as part of the evaluation. In these, teachers or cluster facilitators volunteered to investigate their own 'best practice' in relation to some aspect of ICT use in the teaching and learning process, or some aspect of facilitating teacher professional development in that area. Twelve action research reports are summarised in Part 3 of this report. The full reports themselves are included in an accompanying Supplement document.

Taken as a group, the action research reports provide richer case study evidence illustrative of some of the national trends identified in the first part of this report. They help exemplify, personalise and put into a more comprehensive context how some of these averaged trends actually played out in individual teachers' professional lives during the programmes, and in this they are in many ways the stories behind the statistics.

What is more striking in these reports, however, is that they bring to our attention an aspect of the ICTPD programme that is difficult to discern in the 'averaging effect' of national statistics and general trends. That is, the impact of the ICTPD programmes on teacher's and facilitators' *understandings* about teaching and learning. In this sense the research reports in this section need to be read not so much as stories about teachers'

growing technical ability with ICTs, nor their growing confidence as ICT users, nor indeed their more frequent classroom use of ICTs, which tend to be the stories evoked by the statistical trends analysis. Rather they are best read as self-reflective stories of some individual teaching professionals coming to grips with what constitutes ‘quality’ and ‘value’ in teaching, and what it is that might produce ‘productive learning’, when students use ICTs in classes. The ICTs discussed might provide the context of the studies, but they are not the substance. The *substance* is denoted by the much more pedagogically oriented phenomena that they address. They are, at essence, studies of things like ‘equity’, ‘integration’, ‘quality teaching’, ‘information literacy’, ‘peer tutoring’, ‘narrative’, ‘whole school development’, and so on, and not studies of ICTs. In critically investigating such phenomena in the context of their own practices, the authors themselves seem to move beyond a preoccupation with ICTs per se, to a preoccupation with more fundamental aspects of what it is, for them, that makes for quality teaching and learning in general.

Introduction

The 2001-2003 ICTPD School Clusters in the National Strategy for ICT in Schools

In 1998 a national ‘ICT Strategy for Schools’ was announced which established a new, ‘national’ system of funded professional development school clusters. This programme has become known as the ICTPD School Clusters programme. The main features of the cluster programme, which has become an ongoing feature of the teacher professional development landscape in New Zealand since 1999, are:

- The programme funding is devolved directly to schools as both ‘producers and consumers’ of their own PD programmes. This represents a significant departure from the previous custom of seeking tenders from traditional ‘providers’, such as the Colleges of Education Advisory Services, who would then invite schools or teachers to participate in a programme which was largely pre-defined by the provider.
- The programmes are only available to *groups* of schools, which have committed to a ‘clustered’ model of professional development for the benefit of teachers in all the participating schools.
- The programmes are funded over three years for programmes that are to last for three years, much longer than the up-to-one-year model that had been customary in the past.
- No particular delivery model is mandated in the contracts themselves. Within very broad parameters, applicants for ICTPD cluster funds are expected to develop and propose their own models of delivery, rather than to implement a variation on a predetermined, Ministry-approved model.

The basic structure of the ICTPD cluster programmes is centrally prescribed. The programmes are to focus on the integration of ICTs into a variety of teachers’ professional practices. A ‘Lead School’, often, but not necessarily, one with a reputation for best practice in the area of ICT use, forms a collaborative partnership with other schools for the provision of up to three years of teacher professional development in those schools. Each cluster receives c.\$100,000 per annum in central funding. These funds are to be spent on teacher professional development, and may not be used to defray schools’ hardware, software or infrastructure costs.

Beyond that common brief, however, schools are free to group themselves as they wish, and are encouraged to develop and propose their own models and modes of delivering their programmes. Early in 1999, 23 such ICTPD School Clusters in various parts of the country were selected as the first cohort under the scheme. There were no cluster programmes started in 2000, but, based on the apparent success of the first cohort, it was decided to continue the programmes on a rolling basis from 2001 on. The cohort which is the subject of this report was thus the second intake of clusters. They began their programmes in January of 2001 and completed in 2003. An evaluation of the first cluster cohort (1999-2001) was commissioned in 1999 and published by the Ministry of Education in 2002. This current report makes

comparisons where possible and relevant with the findings of the research into that first cluster cohort.

The Aims of the Evaluation

This report outlines the findings of an ongoing three year study of the 28 ICTPD School Cluster programmes in action. In doing so it addresses several questions related to the ‘effects’ and ‘effectiveness’ of such collaborative models of professional development in ICT: for schools, for participating teachers, and for students in classrooms.

The purpose of the research was to outline the effects of the ICTPD cluster initiative from three different perspectives: a statistically averaged picture of the impact of the programme on a national scale, an outline of the programme as it operated in two Kura Kaupapa Maori clusters, and a series of participant self-studies showing how the programme impacted on the professional lives of individual teachers or facilitators. Parts 2 and 3 of this Report should be read as individual cluster and participant case studies supplementing and enriching the ‘averaged’ picture provided by the analysis in part 1.

The overall research questions for all three parts of the study were the same. How well, and in what ways, did the ‘ICTPD school clusters’ initiative meet stakeholder and participant objectives? What have been the effects of the initiative on New Zealand teachers’ understandings of ICT in education, and on teachers’ and students’ usage of ICTs in classrooms? And how, if at all, have these effects changed as the model has rolled out over time and to new cohorts? Such questions are seldom amenable to simple answers, but, taken together, the three lenses through which the 2001 cohort programme was viewed hopefully provide some insight into the complex ones.

Methodology

Objectives of the Evaluation

As stated in their contracts with the Ministry of Education, the major objectives common to all the ICTPD cluster programmes were to:

- “• *Provide professional development for teachers in participating schools on the use of ICT for teaching and learning and administration;*
- *Trial and develop activities that integrate ICT into the teaching and learning process and meet important learning outcomes of the New Zealand Curriculum;*
- *Explore innovative ways of using ICT in the provision of educational activities for students, teachers and their communities;*
- *Develop printed and digital resources for dissemination that reflect good practice in the use of ICT in teaching and learning;*
- *Utilise ICTs to meet a variety of administrative needs;*
- *Develop systems and strategies for technical support of ICTs;*
- *Develop integrated policies and sustainable development plans for ICT” (Cluster Contracts, Schedule A. p1)*

Research Questions

As stated in our evaluation contract with the Ministry, the overarching purpose of the evaluation of the ICTPD School Clusters initiative was: “*to evaluate how well, and in what ways, the various professional development programmes of the ICTPD school clusters meet the objectives of stakeholders and participants.*”

In doing this the report addresses the following core research questions in relation to the ICTPD cluster programmes, 2001-2003:

1. How effective were the PD strategies tried in the various clusters in meeting stakeholder and participant goals?
2. How effective were the ICTPD cluster programmes in participating schools in terms of promoting effective teacher use of ICTs for lesson preparation and planning and school administration?
3. How effective were the ICTPD cluster programmes in increasing teachers’ skills and knowledge related to the educational applications of ICTs?
4. How effective were the ICTPD cluster programmes in increasing effective classroom usage of ICTs by students?
5. How much and in what respects have these effects changed as the model has rolled out over time and to new cohorts? Specifically, this involves a comparison of the 1999-2001 and 2001-2003 cohort results.

Research Strategy and Data Collection

The general strategy used for the evaluation was a mixed method investigation of the operational nature and in-school effectiveness of the professional development programmes offered in the 28 school clusters over the three years, 2001-2003.

Certain data were gathered from all of the 2001 cohort. These included pre- and post-programme surveys of participants and various official documents such as cluster Proposals and Milestone Reports. In addition, interviews with key stakeholders, participants and Ministry officials were conducted as part of the Kura case studies and the action research projects. Direct observation of classroom activities by students was also a feature of the Kura case studies and most of the action researchers' projects.

In assessing the downstream effects of the PD models on teachers and teaching, we looked for evidence of change in four primary **indicators of uptake and implementation**:

- *increased teacher understandings of the role of ICTs in teaching and learning.*
- *improved teacher competence with ICTs.*
- *increased teacher confidence regarding their professional use of ICTs.*
- *increased professional and classroom usage of ICTs*

Data on uptake and implementation were drawn from the extensive pre- and post-programme surveys of all participants from all the clusters and two forms of qualitative case study. The first case study approach was an ongoing non-participant observation and interview study of two Kura Kaupapa Maori school clusters, one from the 1999-2001 cohort and one from the 2001-2003 cohort. The second case study approach was to facilitate a group of teachers and facilitators from a number of different clusters, who volunteered to conduct ongoing action research projects analysing their professional experience in the cluster programmes. The particular research questions developed by the action researchers varied widely in focus and form, but all involved an empirical self-study of their own role and practices, either as cluster facilitators or as teachers coming to grips with the task of effectively integrating ICTs into their classroom programmes.

National Trends: The 'Baseline Survey' and the 'End-of-Project Survey'

Pre- and post-project surveys of participants were conducted in all 28 clusters. Baseline data on teachers' skills and classroom use of ICTs on entering the programme came from the results of a survey which teachers from all the clusters completed late in 2000 or early in 2001. The 'End of Project' survey was distributed to all teachers in all clusters in October-November 2003. In order to ensure validity of comparison across cohorts, the instruments for this were based on the End of Project survey developed for the previous evaluation of the first cohort of ICTPD clusters in 1999.

In order to increase the points of comparison, the End of Project survey asked participants to identify both their pre- and post-project skill levels and classroom ICT

experiences, so that these could then be compared with and triangulated against parallel questions in the baseline survey.

In all, 2,115 responses from teachers from 25 of the 28 clusters were made available to the research team from the baseline surveys in 2001. 1,811 responses to the End of Project survey were received from teachers in 27 clusters.

As can be seen in Table 1, the distribution of participants was very evenly spread in terms of years of teaching experience. It appears that the demographic distribution of the respondent group was similar to that of the teacher population in the PD programmes, though it is noted that secondary school teachers, and especially male secondary school teachers, were significantly underrepresented in the ICTPD teacher population, as they had been in the 1999 Cluster programme.

Table 1 *Responses to Baseline and End of Project (EoP) Surveys of Teachers, 2001 & 2003, by Cluster, School Sector, Teaching Experience and Gender*

Clusters	Total Baseline Survey 2001	Total End of Project 2003	School Sector	Total Baseline Survey 2001	Total End of Project 2003	
A	318	50	Primary	1,358	1,225	
B	81	87	Secondary	647	449	
C	22	63	Both	180	137	
D	48	23	Total	2,005	1,811	
E	282	213				
F	68	45				
G	131	89				
H	55	31				
I	92	79				
J	62	55				
K	82	76				
L	51	59				
M	58	51				
N	72	56				
O	74	69				
P	175	133				
Q	67	62				
R	63	61				
S	78	64				
T	12	56				
U	0	46				
V	18	8				
W	0	30				
X	13	10				
Y	0	93				
Z	65	75				
AA	113	127				
AB	15	0				
Total	2,115	1,811				
			Teaching Experience	EoP Primary	EoP Secondary	EoP Total
			0-2 yrs	162	42	204
			3-5 yrs	191	64	255
			6-10 yrs	164	54	218
			11-15 yrs	128	50	178
			16-20 yrs	140	54	194
			21-25 yrs	163	70	233
			26-30 yrs	111	52	163
			30+ yrs	114	58	172
			Totals	1,173	444	1,617
			Gender	EoP Primary	EoP Secondary	EoP Total
			Female	991	245	1,236
			Male	210	199	409
			Totals	1,201	444	1,645

Cluster Case Studies: Two Te Kura Kaupapa Maori Clusters and ICTPD

In the initial study of the first cohort of ICTPD clusters, 1999-2001, qualitative data on the effective elements of cluster ICTPD models were drawn from interviews and observations in ten purposefully selected 'case study clusters'. The 10 'case study' clusters were selected to represent both comparable and contrasting delivery models for professional development in ICT from among the 23 programmes in the project. The 'cases' were selected to provide coverage of all key operational features of the various models of professional development being used in the various ICTPD clusters, and to maximise opportunities for cross-case comparisons among models and participant roles in analysis. The selection of cases was made so as to ensure that at least two comparable and contrasting cases were selected with regard to each of the core characteristics of the programmes.

In addition, some clusters offered unique features or objectives that were not apparent in other clusters, and in this regard Maori immersion school clusters were felt to justify their selection as cases predominantly on the basis of their providing a 'unique' feature of importance in the New Zealand education context. Since there was only one cluster of Kura among the 1999-2001 programmes, it was decided to add the second, 'comparison case' cluster of Kura Kaupapa Maori from the group of clusters which began their programme in 2001. The case studies reported here, therefore, did not operate as part of the same cohort and did not operate contemporaneous with each other. Te Ara Rima cluster was studied over the period 1999-2001, and Te Urewera cluster was studied over the period 2001-2003.

In the case study clusters the researcher conducted regular (at least termly) visits to three or four schools in each cluster. During these visits he observed professional development events and conducted interviews with a sample of teachers, facilitators and managers, and conducted observations of students using ICTs in various classrooms. All interviews were transcribed for analysis. The researcher observations in the first few terms concentrated on the dynamics of the PD programmes themselves, but from then on observations increasingly focussed on the use of ICTs by students in the classrooms of some of the teachers who were undertaking the PD. It was also intended that the researchers observed and interviewed the same group of three or four teachers in each selected school, in order to get data on change over time for those teachers. The termly visits to the schools increasingly involved structured observations of students engaged in ICT-based activities in the classrooms of the teachers in the cluster programme. Observation instruments and interview schedules for the study were developed and piloted in the latter half of 1999, and these were used for both of the two Kura case studies. In the Kura clusters some 30-40 formal and informal interviews were conducted over time, and c.10 professional development events and c.60 ICT-based classroom 'lessons' were observed. A sample Observation Schedule used for the observation of ICT-based teaching/learning activities in classrooms is attached as an Appendix. Further data for the cluster case studies came from relevant cluster documents such as Proposals and Milestone Reports to the Ministry of Education.

Teacher Case Studies: Action Research Projects

The case study ‘stories’ of individual participants over the period of the programme were garnered from a group of volunteer teachers and facilitators. Expressions of interest in conducting action research projects as part of their ICTPD programmes were sought from cluster leaders at the Learning @School Conference in February 2001, which representatives from all 28 clusters attended.

Over the next two school terms, two action research mentors (Dr. Vince Ham, from the Christchurch College of Education, and Margaret Lamont, then of EdCom Ltd) conducted workshops for interested teachers in those clusters which outlined the parameters of the proposed action research programme and provided a basic introduction to action research methods. Individual teachers and facilitators then registered as action researchers and were visited at least termly by the research mentors over 2001 to negotiate their research projects, define their research methods, and develop research action plans. Thereafter, the action researchers were visited at least termly for the rest of the ICTPD programme. During these visits, which were usually a half day or a whole day in duration, the mentors provided academic support and methodological guidance. In the final two terms of the programme, action researchers were provided with ‘writing-up workshops’ and given several days of release time to finalise their findings and write up their projects.

Having defined a particular aspect of their ICT related work as worthy of ongoing study, each researcher negotiated an action plan for gathering data and analysing results. The actual data gathered was, of course, different for each project, reflecting the particular focus of each piece of research. An example of one such Research Plan is provided below. The particular methodological procedures adopted for those studies which resulted in formal reports are attached to the summaries of those projects in Part 3 of this Report.

Initially, 14 clusters expressed interest and were provided with workshops on action research. From these clusters, 50 individual teachers or facilitators then registered as action researchers and 45 developed research plans. Fifteen teachers withdrew after the first year, the great majority of these because they gained new teaching or management positions and moved out of the ICTPD programme itself. About 10 of the others remained in the PD programme but withdrew at some point from the action research component, all citing the pressures of other work as the main reason they could not continue. In the end, therefore, of the 45 who initially developed research action plans, about half stayed with the project for the allotted time. Of these, 10 conducted a significant level of data gathering and analysis but did not write a formal report at the end, while another 12 both completed their research and produced formal written reports of their findings. These latter reports accompany this document as a supplementary volume.

Example of an Action Researcher's Data Gathering Plan

Questions	Data 'Me' – Teaching	Data 'Them' – Learning	Sampling & Frequency
<p>What are my current and evolving understandings and definitions of 'Integration of ICT'?</p>	<ul style="list-style-type: none"> ~ Define integration as I see it now by describing a lesson/unit in which KP IS integrated and some lessons in which it is NOT integrated. ~ Formal recorded discussions with colleague or evaluator once or twice per term to discuss 'integration' of KP to date. 		<ul style="list-style-type: none"> ~ Write down my current definitions in journal once a month. ~ Ongoing collection of written materials.
<p>What do students use KP (KidPix) for in my class? What are my objectives and what do they actually do?</p> <p>How does the KP activity relate to other activities going on at the same time?</p> <p>How does the KP activity relate to other activities which happened before or will happen later?</p>	<ul style="list-style-type: none"> ~ Copies of all lesson/unit plans with ICT(KP) components ~ Copies of all written instructions etc given to class when setting up ICT activities. (Write verbal instructions etc as journal entries. Or tape record those instances). ~ Journal entries answering these questions on the basis of observation data once a fortnight. My thoughts on progress, feelings etc. 	<ul style="list-style-type: none"> ~ Copies of work produced on computer (files on disk etc) encourage saving each session's work under new name. ~ Set aside 'special' observation days to record (audiotape or videotape) students' conversations while using the computer & the rest of the class activities. 	<ul style="list-style-type: none"> ~ Choose a different day/or half day each week when students are using KP and tape record up to 15 mins minutes of KP activity AND the classroom activities going on around it over the day. ~ Do two types of recording: up to 5 mins focussed on computer users including audio then up to 5 minutes of the whole class. Could do the computer group with audiotape only and the whole class with video in corner that I turn on & off every so often?

Lens 1

National Trends In The 2001-2003 Cohort

Lens 1. National Trends in the 2001-2003 Cohort

‘Effective’ School Cluster Strategies for Professional Development in ICT: Participant Perspectives 2001-2003

This section addresses the following core questions in relation to the goals and objectives of the teachers in the clusters.

1. What were the teachers’ goals and objectives for the ICTPD programme?
2. To what extent did they feel at the end that these goals had been met, or not met, and their objectives achieved or not achieved?
3. To which particular aspects of the ICTPD programmes did they tend to attribute that achievement, or lack of achievement?

Participant Goals for the ICTPD Programme

In their Baseline questionnaires teachers were asked to state up to three goals or objectives they had for the PD programme. Teachers in the 2001 cohort had objectives reflecting most of the goals articulated in the ICT Strategy and Ministry contract documents. These included: increased use of ICTs for administration in schools, strategic planning and policy development in ICT, greater and more effective classroom use of ICTs by students, improved school infrastructures, increased inter-school and inter-teacher collaboration, and increased technical competence for teachers.

As can be seen in Table 2, by far the greater proportion of teachers’ goals, both before the programme and on reflection afterwards, were focussed on the acquisition of technical skills and the collection of ideas for classroom use of ICTs. These two groups of goals account for well over three quarters of all teachers’ goals as expressed in both the Baseline and End of Project surveys. In this respect, the goal profile of the teachers in the 2001 clusters programme was remarkably similar to that found for the 1999 clusters programme in our previous study (Ham et al, 2002).

Table 2 *Teachers’ Goals for the ICTPD Programmes as Stated in Surveys, 1999 & 2001*

Focus of Teacher Goals	1999 Cohort	2001 Cohort	% of Goals 1999	% of Goals 2001
Use for Administration	269	486	11%	9%
Better Teaching and Learning	132	304	5%	6%
Increased Classroom Use	573	1345	24%	26%
Infrastructure	126	159	5%	1%
School-wide Policy & Planning	16	23	1%	3%
School/Teacher Collaboration	93	198	4%	4%
Technical ICT Skills	1199	2668	50%	51%
Total Goals Stated	2408	5250		

There was a slight tendency for females to articulate more goals related to improved teaching and learning or increasing classroom use, compared to males, and a definite tendency for primary teachers to focus more on teaching and learning or classroom use goals, and less on technical skills acquisition compared to secondary teachers (Table 3).

Table 3 *Teacher Goals by Gender and Sector, Baseline 2001*

Focus of Teacher Goals	Female	Male	Primary	Secondary
Use for Administration	5.7%	7.4%	5.5%	7.4%
Better Teaching and Learning	13.0%	8.6%	14.5%	4.8%
Increased/Practical Classroom Use	18.4%	17.6%	19.3%	15.8%
Infrastructure	0.5%	1.2%	0.6%	0.7%
School-wide Policy and Planning	0.7%	1.8%	1.0%	0.6%
School/Teacher Collaboration	1.9%	3.0%	1.8%	2.6%
Technical ICT Skills	59.4%	60.2%	56.8%	67.8%
Qualifications	0.5%	0.3%	0.5%	0.2%
N	2882	949	2815	873

$p=0.00001$, $\chi^2=34.8$, $df=7$ (gender); $p=3 \times 10^{-14}$, $\chi^2>35$, $df=7$ (level).

$p<.05$

Generally, too, teachers felt that over the period of the ICTPD programme most of these goals were either partly or wholly achieved. About half of the objectives in most of the categories in Table 3, for example, were ‘fully met’ during the programmes. We note that although the acquisition of formal qualifications did not appear in sufficient numbers in the 1999 cohort responses to merit being a separate category, for the 2001 cohort qualifications had by far the greatest percentage of ‘fully achieved’ of all the foci. However, the number of responses citing qualifications as a goal was very small ($n=17$). For all other categories of goal, similar proportions of teachers felt they had ‘fully’ or ‘partially’ achieved their goals. Very few teachers felt that the programme had not enabled them to at least partially achieve their goals.

Table 4 *Overall Achievement of Specific Goals*

	Objective not achieved		Objective partly achieved	Objective fully achieved	
	1999	2001	2001	1999	2001
Use for Administration	5%	7%	41%	55%	52%
Better Teaching and Learning	3%	7%	53%	46%	40%
Increased/Practical Classroom Use	8%	6%	51%	44%	43%
Infrastructure	12%	4%	52%	48%	43%
School-wide Policy and Planning	0%	6%	40%	69%	54%
School/Teacher Collaboration	n/a	7%	39%	n/a	54%
Technical ICT Skills	6%	9%	45%	54%	46%
Qualifications	n/a	6%	24%	n/a	71%

$p=0.006$, $\chi^2=31.0$, $df=14$

$p<0.05$

Table 5 *Levels of Goal Achievement by Gender and Sector*

	Female	Male	Primary	Secondary
Objective not achieved.	7.8%	8.1%	6.6%	12.1%
Objective partly achieved.	47.5%	44.1%	46.8%	45.6%
Objective fully achieved.	44.7%	47.8%	46.6%	42.3%
N	2824	938	2761	860

p=0.19, $\chi^2=3.3$, df=2 (gender); p=7 x 10⁻⁷, $\chi^2=28.2$, df=2 (level). p<.05

Levels of goal achievement did not significantly differ across genders, but primary teachers stated generally higher overall levels of goal achievement than secondary. The preoccupation of secondary teachers with the implementation of NCEA in year 3 of the programme may have been a factor here, although the same tendency for primary teachers to be more satisfied that they had achieved their goals was found in the study of the 1999 cohort as well.

There also seems to have been a correlation between teachers' length of active involvement in the programme and the level of goal achievement, with these levels increasing steadily as the length of involvement increased (Table 6).

Table 6 *Levels of Goal Achievement by Length of Involvement*

	Length of Involvement in PD (months)					
	0 to 6	7 to 12	13 to 18	19 to 24	25 to 30	31 to 36
Objective not achieved.	12.1%	9.7%	8.9%	8.8%	9.7%	4.8%
Objective partly achieved.	48.3%	46.4%	46.3%	47.6%	47.9%	43.7%
Objective fully achieved.	39.7%	44.0%	44.7%	43.7%	42.3%	51.5%
Totals	290	548	257	490	267	1388

p=4 x 10⁻⁶, $\chi^2=43.3$, df=10. p<.05

As a further measure of levels of teacher satisfaction with the ICTPD programmes, teachers were asked the extent to which their expectations of the PD programme had been met or exceeded (Table 6). While the great majority of teachers clearly felt that their expectations of the PD programmes had been largely or fully met, or even exceeded, a significant minority of around a quarter of them felt that these expectations had only been partly met. Only a very small number felt that their expectations had not been met at all.

As with teachers' expressed levels of goal achievement, their level of satisfaction that their expectations had been met by the programme varied to some extent by sector, but even more by the length of their active involvement in the programme. In particular, higher levels of satisfaction with the programmes were expressed by primary teachers compared to secondary teachers, and generally higher levels of satisfaction were expressed by those who had been active in the programmes for an extended period of time (Tables 7 & 8).

Table 7 *Extent to which Teachers' Expectations were met by the ICTPD Programmes, by Sector*

	Primary	Secondary	Primary	Secondary
Exceeded.	132	24	11.8%	6.2%
Fully met.	241	61	21.5%	15.8%
Largely met.	498	172	44.5%	44.7%
Partially met.	226	114	20.2%	29.6%
Not met.	23	14	2.1%	3.6%
N	1120	385	1120	385

$\chi^2=27.3$, df=4 p<.001

Table 8 *Extent to which Teachers' Expectations were met by the ICTPD Programmes, by Length of Time in Programme*

	0 to 6 months	7 to 12 months	13 to 18 months	19 to 24 months	25 to 30 months	31 to 36 months
Exceeded.	7.4%	7.4%	5.7%	8.6%	10.5%	15.7%
Fully met.	15.6%	20.9%	22.6%	19.5%	18.1%	22.8%
Largely met.	41.5%	41.0%	50.9%	49.0%	47.6%	43.6%
Partially met.	30.4%	26.2%	18.9%	21.0%	21.9%	17.0%
Not met.	5.2%	4.5%	1.9%	1.9%	1.9%	0.9%
N	135	106	210	105	553	244

$\chi^2=54.6$, df=20 p<.05

Generally speaking, the highest levels of satisfaction with the programme were registered by those who had been actively engaged in it for the full three years, and the lowest for those whose involvement had been for up to six months. The proportion of teachers who felt their expectations were 'fully met' or exceeded' and who had been involved for up to six months, for example, was c.26% compared to 39% for those who had been involved for the whole three years of the project.

Overall, these results were similar in pattern to those for the 1999-2001 cohort, although there does seem to have been a tendency for the 2001 cohort to express slightly lower levels of satisfaction and goal achievement than the 1999 cohort before them, notably with regard to technical skills goals. The relatively lower levels of goal achievement with regard to policy issues is partly explained by the much lower numbers in the 2001 cohort who had goals in this category. Given the Ministry initiatives in effect on the production of school policies and plans 1999-2001 the comparative decline in the significance of policy goals among the 2001 cohort is understandable.

Participants' Views on Effective Professional Development Activities

How effective were various PD groupings employed in the cluster programmes?

The clusters tried various types of groupings of teachers within their programmes, including cross-sector groupings, cross-department groupings, cross-school groupings, and so on. Generally all of these were felt to be effective by significant groups of teachers across all of the clusters, and none stand out as being especially 'ineffective'.

In both the Baseline survey and the End of Project survey, for example, teachers were almost unanimous in finding learning one-to-one with a tutor to be an effective strategy. High percentages of favourable responses were also recorded for working with a partner and working in a small group. On the other hand, half the respondents indicated that learning on one's own was also effective. Fewer, but still 37%, favoured learning in a large group (Table 9).

Table 9 *Teachers' Rating of Modes of Learning as 'Effective or 'Very Effective'*

Mode of learning	Percentage of 'effective' or 'very effective' responses
Learning 1 to 1 with a tutor	92%
Working regularly with a partner	80%
Working in a small group	67%
Learning on one's own with written support material	50%
Working in a large group	37%

There was a tendency in both surveys for males, and secondary teachers, to find learning on their own more effective than females, and primary teachers, who preferred collaborative strategies (Table 10).

Table 10 *Teachers' Rating of Working in a Large Group, by Gender and by Sector*

	Female	Male	Primary	Secondary
Not effective.	19%	15%	17%	21%
Partly effective.	47%	40%	45%	45%
Effective.	27%	40%	30%	31%
Very effective.	8%	6%	8%	3%
N	991	344	938	321

$p=0.0002$, $\chi^2=19.71$, $df=3$ (gender); $p=0.012$, $\chi^2=10.91$, $df=3$ (level). $p<.05$

Overall, teachers also responded more favourably to working in separate primary and secondary sector groups, in their own syndicate or department groups, and to a lesser extent in groups within their own schools or within groups of similar skill level. The extent of the latter preferences should not be exaggerated, however, since large minorities in most cases expressed no clear preference about grouping (Table 11).

Table 11 *PD Groupings which Teachers found Effective.*

Grouping Preference	Percentage finding this grouping effective	Percentage with no preference	Percentage finding the opposite grouping effective
In separate primary and secondary groups	64.2	32.1	3.7
With staff from own school	59.4	34.1	6.5
With others of similar skill level	47.2	24.1	28.6
With members of own department/syndicate	41.3	49.1	9.6

Teachers' grouping preferences were analysed with regard to several demographics, including gender and sector (Tables 12, 13, 14). We found that there were no significant gender based differences among teachers with regard to working with members from their own department or syndicate, or working with colleagues from other schools, although females tended to prefer working with colleagues of similar skill levels compared to males.

We did find that a higher percentage of secondary compared to primary teachers felt that working with members of their own department was more effective than working in cross departmental groups. This contrasts with the findings of the 1999-2001 study (Ham et al, 2002), which found no significant sector differences in this regard. In the 1999-2001 report, it is stated that secondary teachers were significantly more likely than primary teachers to report that cross-sector groupings for skill development were effective. If anything, however, in this cohort primary teachers were more likely to find cross-sector groupings effective than their secondary colleagues. In all but this regard, the findings about teachers' grouping preferences echo those for the 1999 cohort.

Table 12 *Teachers' Preferences regarding Working in Groups of Similar or Differing Skill Levels, by Gender and Sector*

Grouping Preference	Female	Male	Primary	Secondary
Same/similar skill levels.	48.7%	43.0%	49.1%	45.5%
Mixture of skill levels.	29.9%	24.7%	29.2%	25.8%
Either/no preference.	21.4%	32.2%	21.7%	28.8%
N	1149	388	1090	365

$p=0.00009$, $\chi^2=18.7$, $df=2$ (gender); $p=0.02$, $\chi^2=7.6$, $df=2$ (level). $p<.05$

Table 13 *Teachers' Preferences Regarding Working with Groups from their Own or Other Departments or Syndicates, by Gender and Sector*

Grouping Preference	Female	Male	Primary	Secondary
Members from own dept/synd.	42.1%	38.8%	38.6%	51.3%
Members from other dept/synd.	9.6%	9.7%	9.3%	10.4%
Either/no preference.	48.4%	51.5%	52.1%	38.3%
N	1050	358	994	332

$p=0.53$, $\chi^2=1.27$, $df=2$ (gender); $p=0.00003$, $\chi^2=20.9$, $df=2$ (level). $p<.05$

Table 14 *Teachers' Preferences Regarding Working with Separate School Level Groups, or Mixed Primary and Secondary Groups, by Gender and Sector*

Grouping Preference	Female	Male	Primary	Secondary
Separate prim/sec groups.	66.5%	57.5%	67.5%	58.4%
Mixed prim/sec groups.	3.8%	3.4%	3.7%	1.5%
Either/no preference.	29.7%	39.1%	28.8%	40.1%
Total	100.0%	100.0%	100.0%	100.0%
N	1050	358	994	332

$p=0.0007$, $\chi^2=14.4$, $df=2$ (gender); $p=0.0002$, $\chi^2=17.0$, $df=2$ (level). $p<.05$

Effectiveness of specific professional development activities and strategies

Overall data for the effectiveness of particular professional development activities and strategies is summarized in Table 15. A ranked order of perceived effectiveness in both the 1999 and 2001 cohorts appears below. This ranking is based on the sum of the 'largely effective' and 'very effective' responses in the EOP questionnaire for the 1999 cohort and both the Baseline and EOP questionnaires for the 2001 cohort.

Table 15 *Teachers' Ratings of the Effectiveness of Particular Professional Development Strategies Used in Cluster Programmes in the End of Project Surveys, 1999 Cohort - v- 2001 Cohort*

	1999 cohort	2001 cohort	1999 cohort	2001 cohort	1999 cohort	2001 cohort
PD Strategy	Study Groups		Professional reading		Technology Coaches	
not at all effective	8.4%	7.2%	21.1%	17.4%	5.9%	5.0%
partially effective	30.0%	29.9%	50.4%	50.4%	34.0%	39.0%
largely effective	39.3%	42.8%	20.3%	25.7%	36.9%	36.5%
very effective	22.2%	20.2%	8.2%	6.4%	23.2%	19.5%
N	333	767	611	1045	474	920
PD Strategy	Technology Mentors		On the Spot Support		Lead Teachers	
not at all effective	4.0%	5.0%	7.2%	Na	7.4%	7.3%
partially effective	21.3%	26.0%	23.5%	Na	25.0%	29.7%
largely effective	42.7%	39.9%	36.7%	Na	39.3%	39.7%
very effective	32.1%	29.0%	32.7%	Na	28.4%	23.3%
N	602	934	597	Na	680	1059
PD Strategy	Tutorials		Listserve e-communities		Release Time	
not at all effective	3.9%	4.6%	29.9%	32.0%	2.6%	2.8%
partially effective	26.2%	26.8%	48.6%	44.2%	17.7%	18.3%
largely effective	38.7%	45.0%	16.4%	17.1%	37.9%	38.6%
very effective	31.2%	23.6%	5.1%	6.7%	41.9%	40.3%
N	718	1259	214	584	583	1114
PD Strategy	Workplace Visits		Workshops & Seminars		Conferences	
not at all effective	15.9%	11.9%	8.1%	5.2%	10.4%	9.7%
partially effective	37.4%	30.9%	32.9%	26.5%	26.8%	24.2%
largely effective	26.9%	33.9%	35.2%	43.0%	31.1%	33.6%
very effective	19.8%	23.3%	23.9%	25.3%	31.6%	32.6%
N	227	605	742	1251	395	777
PD Strategy	Retreats & Practicums		School Visits			
not at all effective	4.2%	7.4%	12.0%	7.6%		
partially effective	24.5%	19.6%	32.9%	27.7%		
largely effective	30.8%	35.7%	33.7%	35.1%		
very effective	40.5%	37.3%	21.4%	29.6%		
N	237	608	359	866		

(Percentages represent the proportions of respondent teachers who gave each strategy a given rating. Respondents were asked to rate only those strategies which had been used in their particular cluster programme)

A combination of formal and informal activities and strategies appeared the most successful, most notably release time, retreats, mentors and tutorials. Least effective were professional reading and listserve/online communities. There were no major gender or sector differences in the perceived effectiveness of these activities or strategies.

Table 16 *Rankings of Most Effective Strategies, 1999 and 2001 Cohorts*

1999 EOP	2001 Baseline	2001 EOP
Release time (80%)	Release Time (79%)	Release Time (81%)
Technology Mentors (75%)	Retreats (73%)	Technology Mentors (79%)
Retreats/Practicums (71%)	Technology Mentors (69%)	Tutorials (71%)
Tutorials (71%)	Tutorials (69%)	Classroom Visits (71%)
	Seminars (68%)	Seminars/Conferences (68/65%)

(Percentages represent the proportion of that participant group who rated a delivery strategy either 'largely effective' or 'very effective'. Definitions of the various strategies are outlined in Q5 of the EOP questionnaire in the Appendices)

As can be seen in Table 16, the perceived effectiveness of particular strategies among the 2001 cohort parallels the findings of the 1999-2001 study. Indeed, the Table is much more remarkable for the similarity of data from the two cohorts than any differences. In the Report on the 1999 cohort it was noted that *“the modes of delivery most positively regarded by participants were those that involved practical and relevant skills and classroom ideas, those which maximized the time available for teachers to come to grips with the content involved, and those which combined this substantial ‘time out’ on the one hand, with ongoing access to facilitators or mentors within their schools or classrooms on the other”* (Ham et al, 2002, p49). This general finding is also true for the 2001 cohort.

The high proportions of teachers from both cohorts who rated listserves and e-communities as 'not effective' or only 'partially effective' is notable, though it should also be acknowledged that the TKI Commsuities software was not in place until late in the life of the 1999 cohort, and the Talk2Learn e-community only began in earnest during the final year of the 2001 cohort's programme. Moreover, the initial focus of both these communities tended to be on the community of facilitators rather than the community of participant teachers. In this regard, then, the teachers' ratings of e-communities as a general mode of communication or collaboration probably should not be seen as a direct reflection on those particular communities.

Summary

- Teachers tended to concentrate on goals related to increasing their ICT skills and increasing their use of ICTs with students in classrooms, with secondary teachers tending to report more of the former and primary teachers more of the latter.
- Overall, participants reported high levels of goal achievement as a result of the ICTPD programmes, and high levels of satisfaction with the programmes in terms of meeting their expectations, although the overall proportions of objectives fully achieved and expectations met were lower for the 2001 cohort than for the 1999 cohort.
- The extent to which goals and objectives were achieved varied by sector, length of time in the programme, and in some instances, gender. Primary teachers and those who had been in the programmes longest reported the highest levels of goal achievement and expectations met.
- Most, but far from all, teachers preferred one-to-one or small group modes for professional development, and preferred sector-based groupings over mixed primary-secondary groups.

- Female teachers showed a greater preference for working in groups of similar ICT skill level than male teachers.
- A mixture of formal and informal, in-school and out of school, short term and longer term PD strategies were highly ranked by teachers. Most notably these involved release time, extended retreats, technology mentors and one-to-one tutorials. The participating teachers did not generally rank professional reading or listservs/online communities highly as effective PD strategies, though few seem to have experienced them as part of their programme.
- In almost all respects what the 2001 cohort of teachers regarded as ‘effective’ in ICTPD strategies paralleled the preferences of the 1999 cohort before them.

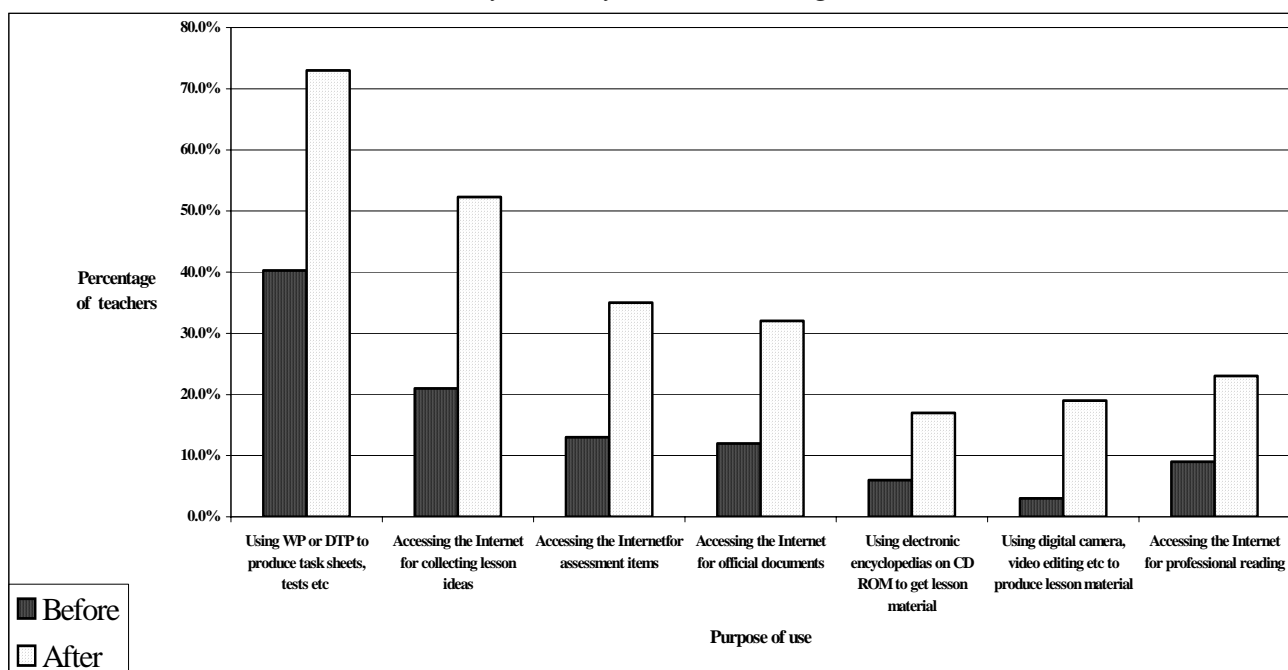
School Effects of the ICTPD Programmes

The ‘school effects’ of the ICTPD cluster programmes were investigated in relation to teachers’ use of ICTs in two areas: lesson planning and preparation, and school administration. In both these regards the majority of participating teachers in the ICTPD programme, 2001-2003, reported significant increases in their use of ICTs, the increase for planning, preparation and presentation of classroom material being greater than that for other administration purposes.

Teachers’ Use of ICTs for Lesson Planning and Preparation

Regarding the use of ICTs for planning, preparation, and presentation of classroom material, teachers’ most frequent use of ICTs before the ICTPD programme included: “the use of Word processors (WP) or a Desktop Publishing package to produce task sheets, tests, handouts etc”, “accessing the internet for finding and collecting lesson ideas”, “accessing the internet for assessment items”, and “accessing the internet to get official documents” respectively. These rankings remained unchanged at the end of the programme. Similarly, the least frequent use of ICTs before the ICTPD programme was for “producing lesson materials using digital camera, video editing, digitising, scanner etc.”, “getting lesson content materials from electronic encyclopaedias on CD ROM”, and “accessing the internet for professional readings, subject association newsletters etc”. This pattern also stayed largely the same by the end of programme, apart from the fact that the use of electronic encyclopaedias on CD ROM for getting lesson content material seems to have reduced in frequency relative to the other uses, although it still more than doubled over the time of the programme.

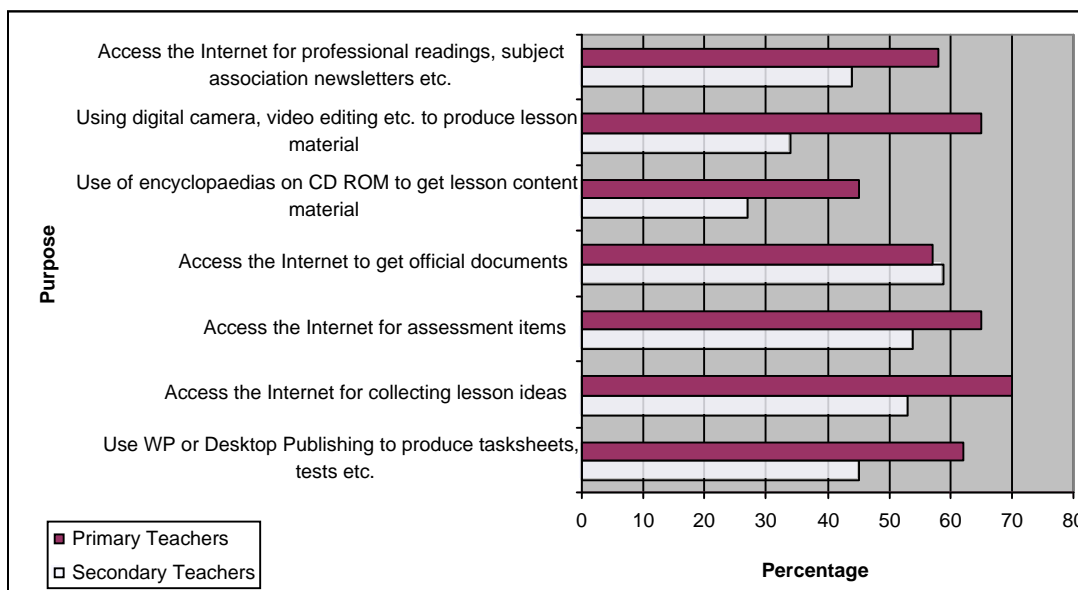
Figure 1 Percentages of Routine Users of ICTs for Planning, Preparation and Presentation of Classroom Material Before and After the ICTPD Programme



As Figure 1 shows, not only did the percentage of users of ICTs increase over the period of the ICTPD project, but the frequency of individuals' use increased as well. There was a general and significant increase in frequency of use across all the specific purposes studied, with the proportion of teachers using ICTs for each purpose more or less doubling across the board. For example, the percentage of routine (often/always) use of WP or DTP packages for "producing task sheets, tests, handouts etc" increased from less than 41% before the ICTPD project to over 73% at the end of the project. The percentage of teachers who used the internet for the same purpose often/always increased by the end of the project from 21% to over 52%.

Proportionally fewer secondary teachers than primary teachers reported increases in their use of video editing, digital camera and digitizing for producing lesson materials and the use of Word Processor or Desktop Publishing to produce task sheets and tests. While 34% of secondary teachers reported an increase in their use of video editing, digital camera and digitizing for producing lesson materials, 65% of primary teachers reported increases in the same aspect. Also, while 62% of primary teachers reported increases in their use of WP or Desktop Publishing for producing task sheets, tests etc, only 45% of secondary teachers reported the same (see Figure 2).

Figure 2 Percentages of Primary/Secondary Teachers Reporting an Increase in Usage of ICTs for Planning, Preparation and Presentation of Classroom Material



It was interesting that both secondary and primary teachers alike reported that the highest increase in their use of ICTs was in the use of the internet for "finding and collecting lesson ideas" and for "getting assessment items". Seventy percent of primary and 53% of secondary teachers reported an increase in their use of the internet for finding and collecting lesson ideas. Also, 65% of primary and 54% of secondary teachers reported the same for the use of the internet for "finding assessment items".

The lowest increase of ICT usage was in the "the use of encyclopaedias on CD ROM for getting lesson content material". While 45% of primary teachers reported an increase in their use of ICT for this purpose, only 27% of secondary teachers reported the same (Figure 2).

The increase in teachers' frequency of ICT use was also related to school sector. Results show that a higher percentage of primary teachers than of secondary teachers increased their use of ICT for planning, preparation and presentation of classroom material (Table 17).

Table 17 *Increases in Teachers' Use of ICTs For Lesson Planning & Preparation, by Sector*

Extent of increase	No. of Primary teachers	No. of Secondary teachers	Percentage of Primary Teachers	Percentage of Secondary Teachers
No change	346	151	38.9%	53.9%
Some increase	516	109	52.6%	39.7%
Significant increase	75	16	7.6%	5.6%

$p=8.827E-7$, $df=2$, $X^2=28.2288$

$p<0.001$

One explanation of the differences between sectors is secondary teachers' relatively higher entry level usage. When the entry level of ICT use is taken into consideration, results show a significant dependence between the frequency of increase in the use of ICT and school sector (primary/secondary) for each purpose. In other words, secondary teachers show lower levels of increase because they had higher levels of usage at the beginning of the project (Table 18 & Figure 3).

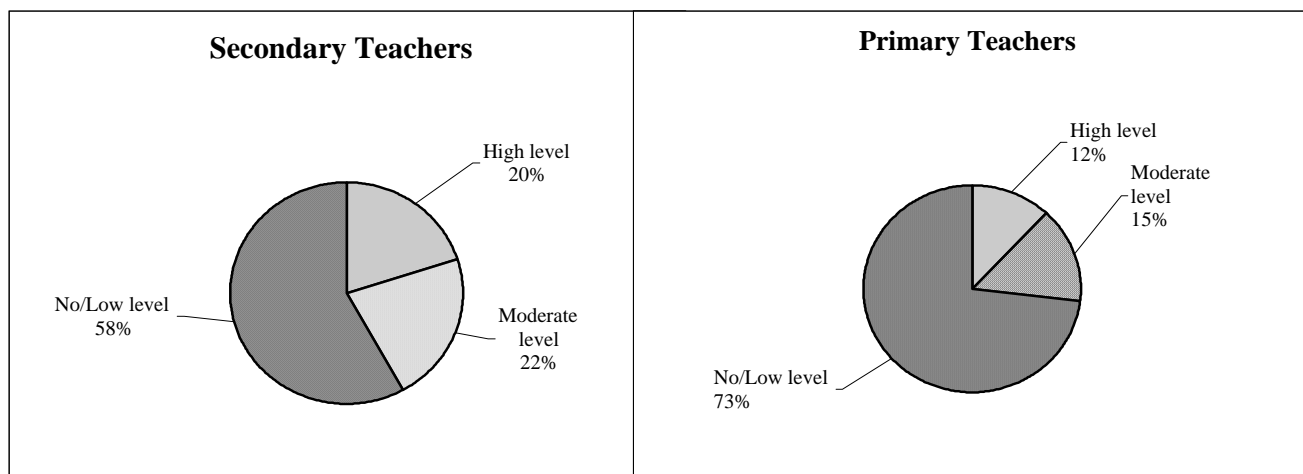
Table 18 *Teachers Reporting an Increase in the use of Word Processor or Desktop Publishing to Produce Task Sheets, Tests, Handouts, etc, by Sector*

Extent of increase	No. Primary Teachers	No. Secondary Teachers	Total	Primary Teachers'	Secondary Teachers'
No change (High use at entry)	283	142	425	28.3%	44.7%
No change (Moderate use at entry)	52	22	74	5.2%	6.9%
No change (No/Low use at entry)	43	9	52	4.3%	2.8%
Some increase (High use at entry)	75	30	105	7.5%	9.4%
Some increase (Moderate use at entry)	205	54	259	20.5%	17.0%
Some increase (No/Low use at entry)	260	46	306	26.0%	14.5%
Significant increase (No/Low use at entry)	76	13	89	7.6%	4.1%
Decrease (Moderate use at entry)	2	1	3	0.2%	0.3%
Decrease (No/Low use at entry)	1		1	0.1%	0.0%
Decrease (High use at entry)	3	1	4	0.3%	0.3%
N	1000	318	1318	100.0%	100.0%

$p=1.59915E-6$, $df=9$, $X^2=43.939799$

$p<0.05$

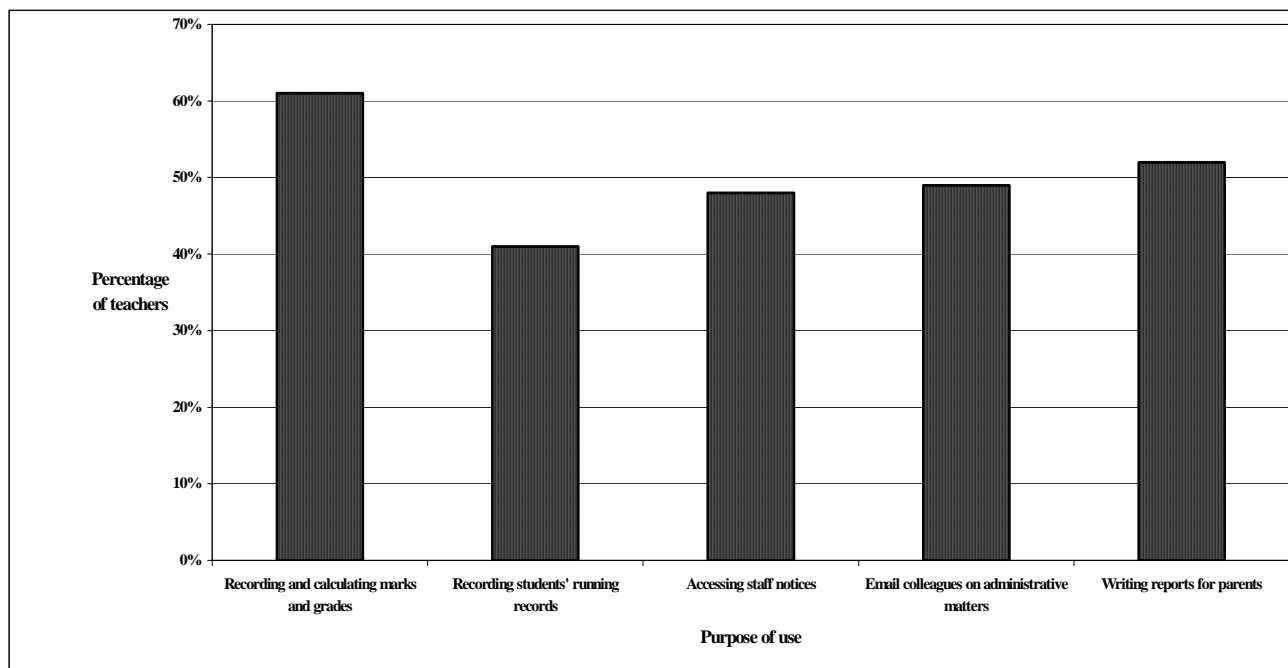
Figure 3 *Entry Levels of Primary/Secondary Teachers' Use of ICTs for Lesson Planning & Preparation*



Teachers' Use of ICTs for General School Administration

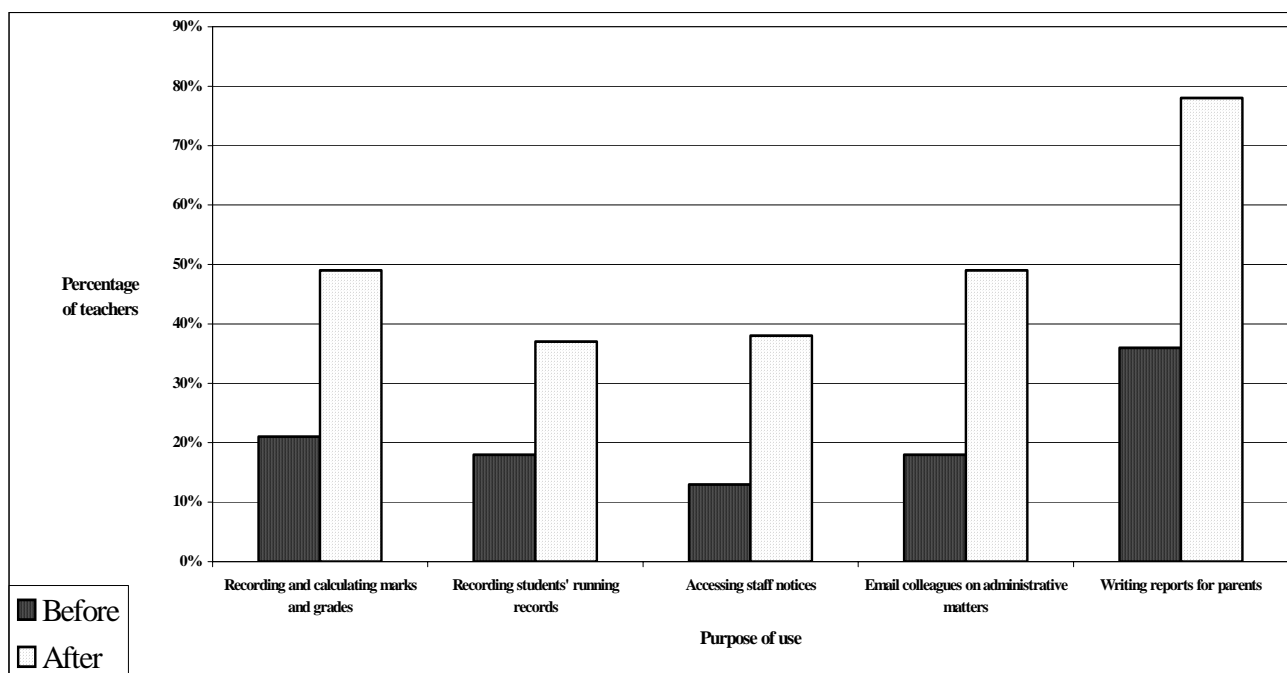
Use for general school administrative purposes increased as well, but this increase seems to have been less than increases in ICTs use for classroom preparation purposes. The greatest reported increase was teachers' use of ICTs for "recording or calculating assessments, marks and grades" and for "writing reports for parents". The lowest increase in such usage was in "recording students' running records". Only 41% of teachers increased their use of ICTs for such purpose (Figure 4).

Figure 4 *Teachers Reporting an Increase in Usage of ICTs for General Administration*



Overall, by the end of the programme some 48% or more of teachers were routine users of ICTs for most school administration purposes (Figure 5).

Figure 5 *Routine Users of ICTs for General Administration Before and After the Programme*



Sector differences in the use of ICTs for general school administration were more variable than for lesson preparation (Table 19), though there was still a tendency for primary teachers to report greater increases overall. Some 60% of primary teachers for example reported an increase in use of ICTs for general administration compared to c.45% of secondary. Again this is largely explained by the fact that higher proportion (53%) of secondary teachers reported moderate and high entry point usage compared to primary (39%).

Table 19 *Reported Increases in Using ICTs for General School Administration by Sector*

Purpose	Number of primary teachers	Number of secondary teachers	Total	Percentage of primary teachers	Percentage of secondary teachers
Recording & calculating marks and grades	593	190	783	59.1%	57.6%
Recording students' running records	368	159	527	37.6%	50.2%
Accessing staff notices	507	128	635	50.4%	40.8%
Email colleagues on administrative matters	619	210	829	60.7%	64.6%
Writing reports for parents	520	179	699	52.2%	54.9%

p=0.003, df=4, X²=15.89 p< 0.01

Extent to which Changes in Usage for School Administration, Lesson Planning and Preparation were Attributed to the ICTPD Programme

Although the vast majority of teachers (89.4%) attributed increases in the use of ICTs at least in some degree to the ICTPD programme, the proportion attributing such usage either completely or largely to the programmes is much smaller at 32%. The great majority attributed their usage only partly or not at all to the ICTPD programme. Moreover, primary teachers tended to attribute increases to the ICTPD programme more than secondary teachers. While 44.9% of primary teachers referred the increase in their use of ICTs “completely” or “largely” to the ICTPD programme, 51% saw that the programme had “partly” or “no” contribution to this increase. Some 68% of secondary teachers said the contribution of the programme was either nil or partial (Table 20). It seems, therefore, that there are other factors that contributed to this increase, especially in secondary schools.

Table 20 *The Extent to which Increased use of ICTs for Lesson Planning & Preparation and School Administration is Attributable to the ICTPD Programme*

	Primary teachers	Secondary teachers	Total	Primary teachers	Secondary teachers
Completely attributable	105	20	125	9%	5%
Largely attributable	441	110	551	40%	27%
Partly attributable	463	216	679	42%	54%
Not at all attributable	105	55	160	9%	14%
Total	1114	401	1515	100%	100%

Comparing these results with the 1999 ICTPD programme, there was a significant difference in the frequency of increase in teachers’ use of ICTs in their planning and preparation of lesson material (Table 21). The increases reported by the 2001 cohort in these areas was significantly lower than the increases reported by the 1999 cohort, though that study also reported that the ICTPD programme was only one of a number of a number of factors affecting teacher usage in this area. A number of teachers reported during our visits to schools, for example, that many principals, especially in secondary schools, were increasingly mandating that teachers use certain ICTs in the performance of administrative functions. It is also likely that the Laptops for Secondary Teachers scheme, which started in the final year of the 2001 cohort programme, had some effect in increasing secondary teachers’ entry usage of ICTs for administration in that cohort relative to the earlier cohort. It seems that teachers’ use of ICTs for administration and lesson planning and preparation has been increasing in the population of teachers generally, both inside and outside the cluster cohorts (See Ham, Graham & Toubat, 2004). The net effect of these factors would be higher entry levels of usage among the 2001 cohort, which would in turn reduce the opportunity to report significant increases in such use of ICTs.

Table 21 *Teachers Increased Usage of ICTs for Lesson Planning and Preparation and School Administration, 1999 and 2001 ICTPD cohorts*

Extent of increase	Percentage of 1999 Teachers	Percentage of 2001 Teachers
No change	35.4%	40.0%
Some increase	25.1%	49.4%
Significant increase	38.8%	7.2%

$p=0.0212332$, $df=2$, $X^2=7.7043581$

$p < 0.05$

Summary

- There was a significant increase in the proportion of routine users of ICTs for both lesson planning/preparation and school administration among teachers over the period of the ICTPD programme.
- Both before and after the ICTPD programme, teachers tended to use ICTs for lesson related purposes more often than for other administrative purposes.
- Internet usage in particular, for both school administration and for lesson planning and preparation, increased significantly among both secondary and primary teachers over the period of the ICTPD programme.
- There were significant differences between teachers of different school sectors (primary/secondary) in their use of ICTs for most of lesson-related and other administrative purposes, with primary teachers reporting rather greater increases in such usage compared to secondary teachers. This difference may be largely explained by the generally higher levels of entry point usage among secondary teachers.
- Taking into account the higher entry level usage of the 2001 cluster teachers, the trends reported in the 2001 cohort are comparable to those reported by the 1999 cohort. For both cohorts, moreover, the ICTPD programme seems to have been only one of several determinants of the reported increases in teachers' use of ICTs for various administrative and lesson planning/preparation purposes.

Teacher Effects

In assessing the effects of the PD models on teachers and teaching, we looked for evidence of development in five primary indicators of uptake and implementation. Three of these related to teachers themselves, and these are the focus of this section of the report. The other three relate to their students' use of ICTs in classes and form the focus of the next section.

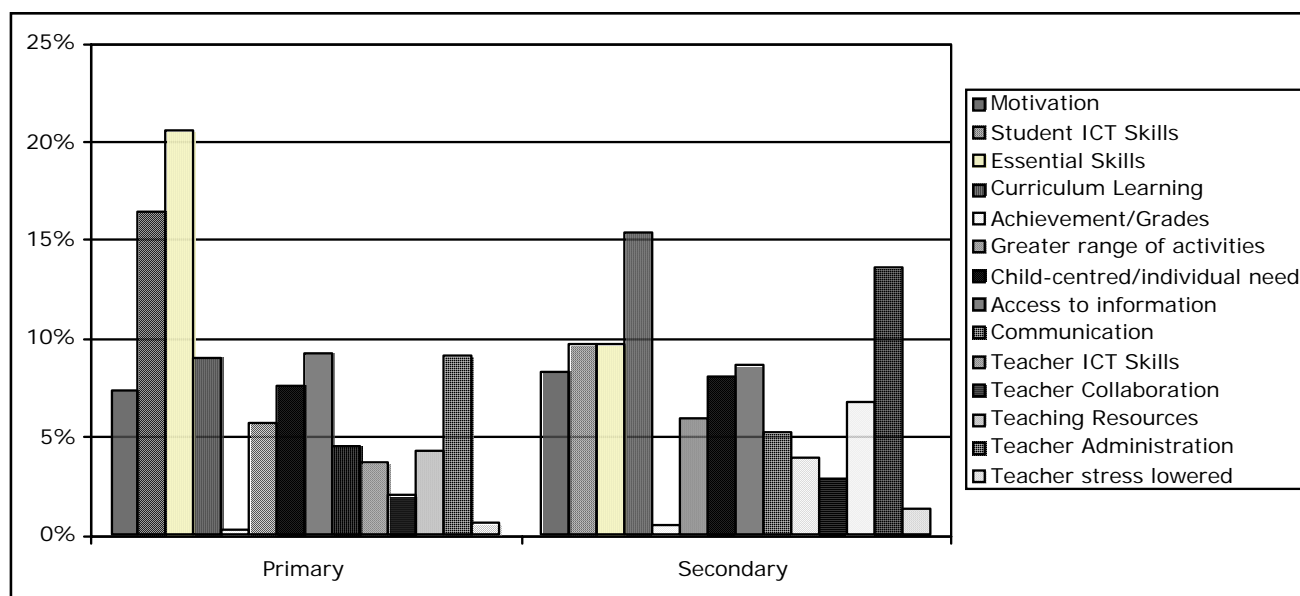
- *changes in teachers' perceptions and understandings about ICT in education*
- *improved teacher competence with ICTs*
- *increased teacher confidence about integrating ICTs into classroom activities*
- *increased classroom usage of ICTs*
- *the range of ICTs students used and*
- *the extent to which ICT-based learning activities related to particular Curriculum Objectives.*

Teachers' Beliefs about the Role of ICTs in Teaching and Learning

Around 65% of the respondents strongly agreed or agreed with the statements that ICTs improved the efficiency of curriculum delivery in the classroom, and improved the quality of curriculum delivery in the classroom. About three quarters of the respondents strongly agreed or agreed that the teaching and learning outcomes of ICTs justify the investment by schools.

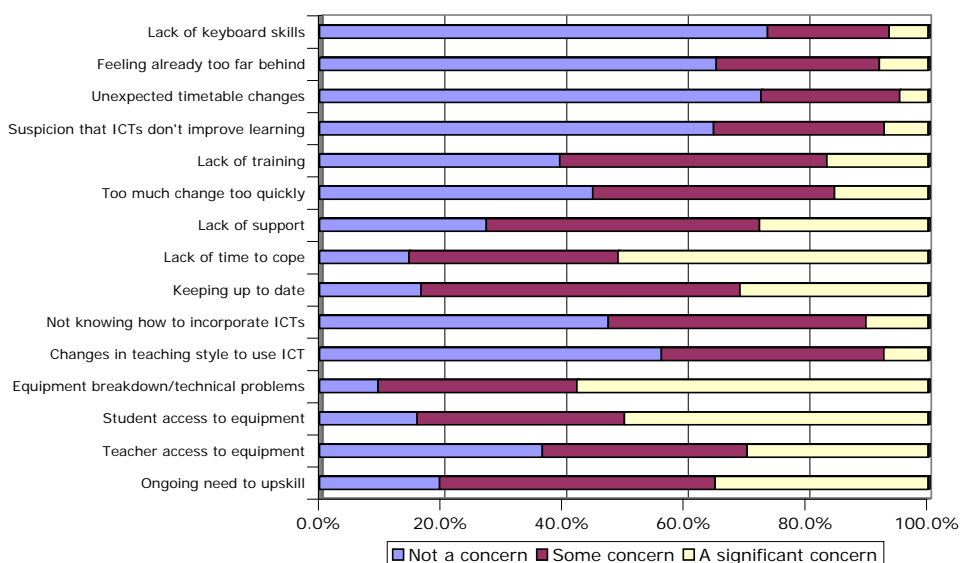
Teachers were asked what they thought were the main benefits to be gained from the use of ICTs in schools. The answers were varied but some common benefits emerged. These were categorised under the following main headings: increased motivation, the acquisition or demonstration of student ICT skills, learning the essential skills (presentation, research, problem solving, thinking skills, social skills and independence), assisting in curriculum learning, improving achievement/grades, providing greater range of activities, encouraging child-centred approaches, improving access to information, fostering communication/ connection to the world, raising teacher ICT skills, fostering teacher collaboration, improved teaching resources, more efficient teacher administration, and lower teacher stress levels.

Figure 6 Reported Benefits of Using ICTs



$\chi^2=78.93, df=26 \quad p<.001$

As can be seen in Figure 6, primary teachers listed Essential Skills and student ICT skills as the main benefits while secondary teachers listed curriculum learning and understanding, and efficient teacher administration as the main benefits. Primary and secondary teachers reported similar levels of benefits regarding motivation, greater range of activities, child-centred/meeting individual needs, access to information, communication, teacher ICT skills, teacher collaboration and teaching resources. Achievement/grades and lowered teacher stress were the least reported benefits of using ICTs. While several of the benefits were mentioned in similar proportion by both primary and secondary teachers, there were a few which were seen differently. Primary teachers, for example, tended to rate benefits related to the acquisition of the Essential Skills and ICT skills more often than secondary teachers. On the other hand, proportionally more secondary teachers stated benefits such as curriculum learning, teaching resources, teacher administration and possibly increased student motivation.

Figure 7 *Teachers' Concerns about Using ICTs in Schools at the End of the Project*

The most significant concerns expressed by teachers were about equipment breakdown/technical problems, followed by lack of time to cope, lack of easy student access to ICTs, the ongoing need to upskill, and keeping up to date. The statements that were reported as having the least concern for teachers were lack of keyboard skills, feeling too far behind already, unexpected timetable changes, suspicion that ICTs do not improve learning, and changes in teaching style to use ICTs.

A comparison of the concerns, from most to least, for the 1999 and 2001 cohort are shown in Table 22 below. These results show a similar trend to that reported on the 1999 cohort where the four greatest concerns listed and the two lowest rated concerns listed are the same. The other concerns listed were similar, moving up or down in the ranking by only one or two places; the exception being the suspicion that ICTs do not improve learning, which dropped three places.

It is noteworthy that the major concerns of teachers regarding their use of ICTs with classes consistently revolved around two core issues in both cohorts: 1) a perceived lack of technical reliability of networks and other ICT equipment (especially among primary teachers), and 2) a perceived lack of time/opportunity to keep up to date in the field. The latter can be seen as breaking down into several issues, prominent among which were a feeling of being left behind by constant new advances in the technologies themselves, keeping up to date with new software products that might be coming on the market or available on the internet, and the extra time it takes to plan and prepare on a regular, ongoing basis for the integration of the increasingly broad range of ICTs becoming available into lessons.

Table 22 *Comparison of Concerns as Reported by Teachers in the 1999 and 2001 cohorts*

1999 cohort (Priority order)	2001 cohort (priority order)
Equipment breakdown/technical problems	Equipment breakdown/technical problems
Lack of time to cope	Lack of time to cope
Students access to equipment	Students access to equipment
Ongoing need to upskill	Ongoing need to upskill
Teacher access to equipment	Keeping up to date
Keeping up to date	Teacher access to equipment
Too much change too quickly	Lack of support
Lack of training	Lack of training
Lack of support	Too much change too quickly
Suspicion that ICTs don't improve learning	Not knowing how to incorporate ICTs
Feeling already too far behind	Feeling already too far behind
Lack of keyboard skills	Changes in teaching style to use ICT
Not knowing how to incorporate ICTs	Suspicion that ICTs don't improve learning
Changes in teaching style to use ICT	Lack of keyboard skills
Unexpected timetable changes	Unexpected timetable changes

Teacher Competence

Table 23 *Percentages of Teachers Reporting High Levels of Competence in ICT Skills at the End of the ICTPD Programme*

Skill level at end of project	File Management	Basic Operation	Word Processing	Spreadsheet	Database
none	1	8	1	20	27
low	9	18	7	37	50
moderate	25	27	28	30	18
high	64	47	64	13	5
	Graphics	Internet (WWW)	Internet (email)	Multimedia presentation	
none	5	2	2	16	
low	16	21	9	39	
moderate	19	27	28	24	
high	60	50	61	21	

As can be seen in Table 23, by the end of the ICTPD programme the majority of teachers were reporting high levels of competence across many ICT skills. The areas of greatest competence for teachers at the end of the programme were: word processing, file management, graphics, internet and email. It is notable that only very small proportions of teachers did not feel they were competent in these areas at the end of the project. It is also clear, though, that teachers' fields of technical competence varied across different ICTs. At the end of the project, for example, there were still quite high proportions of teachers who reported very low levels of competence with regard to spreadsheets, databases, and multimedia applications - most of the latter being secondary teachers.

In assessing whether the high levels of competence reported were a direct result of the ICTPD clusters programmes, we did an analysis of *changes* in competence, comparing pre-programme competence with post-programme competence. This shows that there were significant increases in ICT competence for most teachers over the period of the ICTPD programme, across several though not all the ICTs listed (Table 24).

Table 24 *Increases in Competence Over the Period of the ICTPD Programme*

Change in skill level	File Management	Basic Operation	Word Processing	Spreadsheet use	Database use
No change	38%	35%	43%	49%	58%
Moderate gain	58%	54%	55%	50 %	41%
High gain	4%	11%	2%	1%	1%
	Graphics use	Internet (WWW) use	Internet (email) use	Multimedia presentation	
No change	32%	33%	43%	35%	
Moderate gain	56%	59%	51%	57%	
High gain	12%	9%	6%	8%	

For the 2001 cohort the areas of greatest pre-programme competence were those of word processing and desktop publishing, and, accordingly, the overall proportions reporting high skill levels in these areas did not increase greatly over the programmes' duration. In terms of increased competence over time, (and therefore greatest programme effect), graphics and internet (WWW) use, followed by file management and basic operation skills, were the areas of the greatest gain. Around two thirds of teachers reported an increase in their skill levels in the use of graphics packages and the internet (WWW). Around 62% of teachers also reported increase in their skill levels in the areas of file management and basic operation.

Similarly, the lowest gains were seen in regard to database, spreadsheet and word processing use. The percentages of teachers who reported little or no skill level increase in these areas were 58%, 49%, and 44% respectively.

The areas where teachers identified the greatest pre-programme competence in ICTs, as well as the greatest and lowest gains in competence over the period of the programme, were consistent with those of the 1999 intake, though it was noticeable that the extent of reported gains were generally less for the 2001 cohort than for the 1999 intake by about 10%. This difference is probably explained by the generally higher entry skill levels of the teachers in the 2001 intake.

Teacher Confidence

Generally, teachers *entering* the ICTPD programme were not greatly confident, either about their own personal ICT skills or about the use of ICTs with their classes. On entry, for example, nearly a third of teachers were 'not confident' about their personal skills, and some 45% were 'not confident' or even 'anxious' about the use of ICTs with classes. On entry only a quarter of teachers stated they were 'confident' or 'very confident' about using ICTs with classes. By the end of the project, however, teachers were much more confident in both respects.

The reported confidence levels of teachers regarding using ICTs personally increased significantly during the ICTPD programme. Eighty three percent of the respondents stated that they were ‘confident’ or ‘very confident’ after the programme, compared to 39% before participating in the cluster programme. The majority of these moved from the ‘neutral’ and ‘not confident’ categories. About 8% of the respondents reported a large rise (3 – 4 points) in their level of confidence using ICTs personally, while 60% recorded a small or moderate rise (1 - 2 points) in their confidence level. About a third of the teachers reported no change in their confidence level, but the great majority of these were already at the ‘confident’ or ‘very confident’ level before participating in the ICTPD programme. After participating in the ICTPD programme, only a very small proportion (4%) of the respondents still put their general level of confidence at ‘not confident’ or ‘anxious’.

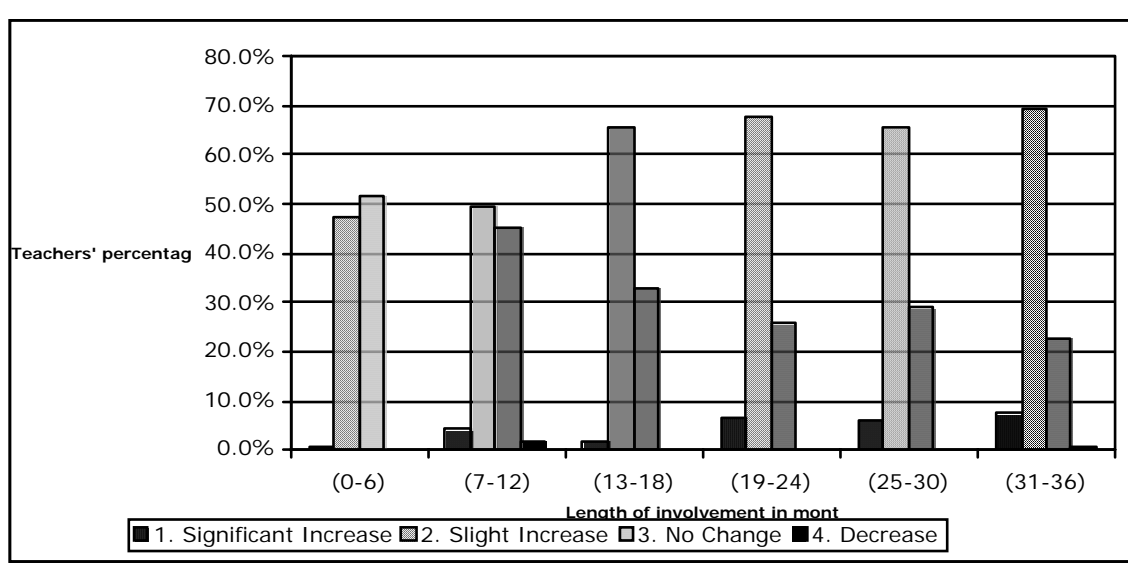
Table 25 *Confidence Levels in Relation to Using ICTs Personally*

Before ICTPD programme		After ICTPD programme	
Very confident	7.8%	Very confident	25.1%
Confident	31.3%	Confident	58.3%
Neutral	25.4%	Neutral	12.9%
Not confident	28.8%	Not confident	3.5%
Anxious	7.6%	Anxious	0.2%

There was a general trend for more experienced teachers to report a greater increase in level of personal confidence than less experienced teachers, possibly because less experienced teachers began the programme with higher levels of confidence in the first place ($X^2=64.85$, $p<.001$, $df=21$).

School sector and gender factors were also statistically significant in regard to increases in confidence in using ICTs personally. A greater percentage of females (70.9%) reported a slight or significant increase in confidence level compared to males (57.8%). Primary teachers reported a higher percentage of slight or significant increase in confidence level (73.2%) compared to secondary teachers (53.6%). The length of time involved in the ICTPD programme also related to personal confidence levels. As can be seen in Figure 10 below, the longer teachers were involved in the programme, the greater the percentage reporting slight or significant increases in confidence level.

Figure 8 *Reported Increase in Confidence in using ICTs Personally, by Length of Time in Programme*



$p < .001$, $X^2 > 37.70$, $df = 15$

$p < .05$

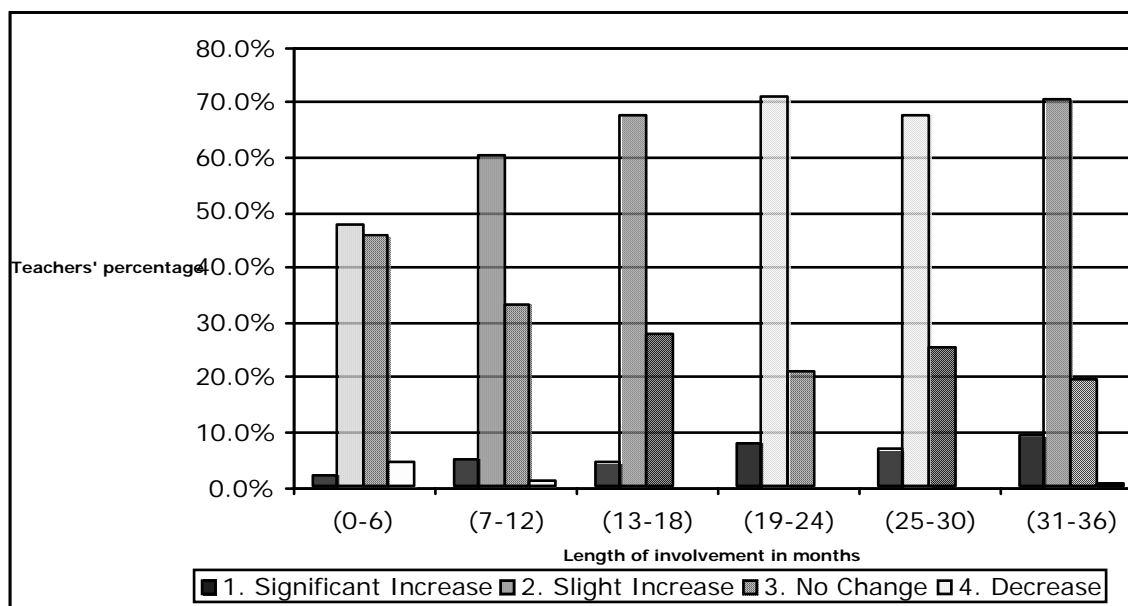
Teachers were generally less confident about using ICTs with classes than they were about their own personal use. A quarter of the respondents reported that they were confident or very confident about classroom use before the programme, compared to three-quarters after being involved in the ICTPD programme. The majority of these moved from the 'neutral' and 'not confident' categories. Ten percent of the respondents reported a substantial rise (3 – 4 points on the question scale) in their level of confidence using ICTs with their classes while 63% recorded a small rise (1 - 2 points) in their confidence level. Twenty seven percent of the teachers reported no change in their confidence level, but 17% were already at the 'confident' or 'very confident' level before participating in ICTPD.

Table 26 *Confidence Level about Using ICTs with Classes*

Before ICTPD programme	1999 cohort	2001 cohort	After ICTPD programme	1999 cohort	2001 cohort
Very confident	5.3%	5.5%	Very confident	23%	18.7%
Confident	20.5%	19.4%	Confident	53%	55.6%
Neutral	31.7%	30.6%	Neutral	18.9%	20.1%
Not confident	31.9%	35.7%	Not confident	4.2%	5.1%
Anxious	10.6%	8.8%	Anxious	1%	0.5%

Gender and school sector were statistically significant factors with regard to increases in confidence levels in using ICTs with classes. Female respondents reported greater increases compared to males ($p < .001$, $X^2 > 16.27$, $df = 3$). Similarly, primary teachers reported greater increases than secondary teachers ($p < .001$, $X^2 = 16.27$, $df = 3$). As with confidence in using ICTs personally, the longer teachers were involved in the programme, the more likely they were to report an increase (slight or significant) in their level of confidence about using ICTs with classes.

Figure 9 *Reported Increase in Confidence in Using ICTs with Classes, by Length of Time in Programme*



$p < .001$, $X^2 > 37.70$, $df = 15$

$p < .05$

All of these results were remarkably similar to those for the 1999-2001 cohort of ICTPD clusters, and, when put together with the figures for classroom usage reported in the next section, tend to confirm the findings of that study that teacher confidence and the length of time spent actively engaged in the PD programme are two of the strongest predictors of classroom usage of ICTs.

Summary

- The teachers in the ICTPD programmes generally believed that ICTs could play a valuable role in teaching and learning, both in terms of helping to improve the efficiency of curriculum delivery, and as a pedagogically justifiable investment of school resources.
- The perceived benefits of ICTs for teaching and learning were felt to relate most to increased student motivation, student skills (both ICT skills and the Essential Skills), and the learning of curriculum content.
- Primary teachers tended to be more focussed on student acquisition of ICT skills as a benefit, compared to secondary teachers.
- Teachers' concerns about the use of ICT for teaching and learning focussed most on issues of technical reliability, lack of time for themselves, and lack of access for their students.
- In all respects the perceptions of benefit and concern among the 2001-2003 cohort of cluster teachers mirrored those of the 1999-2001 cohort.
- The majority of teachers in the 2001 cohort entered the programme already competent in a few ICT skills areas, most notably word processing and desktop publishing, but much less competent in most others. Overall, they entered more competent than their predecessors in the 1999 cohort.

- By the end of the programme a majority of teachers were at high levels of competence in several, but not all, of the ICTs commonly used in schools. The increases in competence were most notable with regard to graphics, internet applications, and basic computer systems. They were least notable with regard to databases, spreadsheets, and, for secondary teachers, multimedia applications.
- In terms of teacher confidence about ICTs, the overall trend was that teachers moved from being generally not confident before the ICTPD programme to being generally confident after participating in the programme, both in terms of personal confidence with ICTs and in terms of confidence about their use with students in classes.
- Teachers were more confident about using ICTs personally than they were about using ICTs with their classes, both before and after the programme. But the greatest effect of the programme was to increase confidence in classroom use.
- Teachers' confidence with ICTs, both personally and with classes, seem correlated with all of:
 - gender (males reported higher confidence levels on entry to the programmes),
 - length of teaching experience (teachers with more experience reported higher increases in confidence),
 - sector (primary teachers reported higher increases in confidence than secondary), and
 - length of time in the ICTPD programme (those who were longer in the programme reported higher increases in confidence).
- The 2001 cohort results tend to confirm the finding of the 1999 cohort evaluation that there is a clear correlation between teacher confidence levels and classroom usage of ICTs in the cluster programmes.
- In all key respects, the trends identified in teachers' confidence in relation to using ICTs personally and with classes reflected those found for the 1999-2001 cohort.

Classroom Effects

From the survey data, three measures, or indicators, were used to assess the downstream effects of the ICTPD programmes on the subsequent classroom practices of the teachers involved. These were:

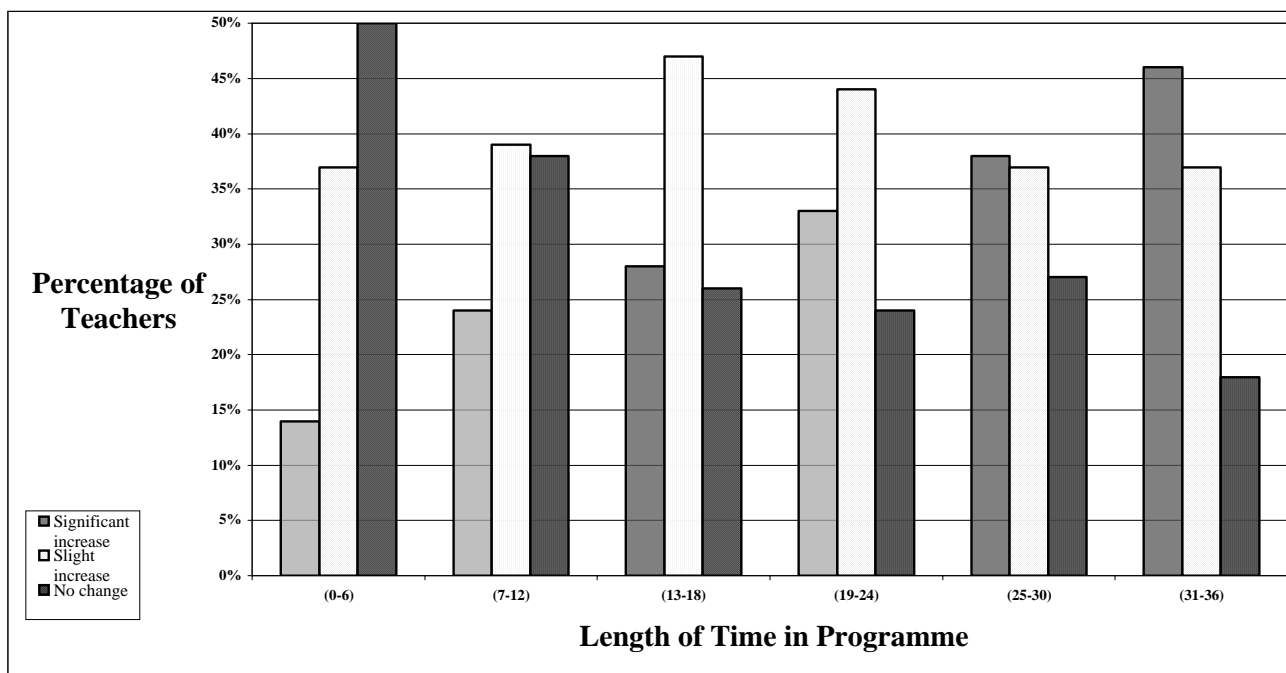
- The frequency of their use of ICTs in cluster classrooms
- The range of ICTs used in cluster classrooms
- The Curriculum range and relevance of students' ICT-based activities

Frequency of Use of ICTs in Cluster Classrooms

In general the teachers in the 2001 cohort programme began the programme with low levels of classroom usage of ICTs, and increased their use of at least some ICTs significantly over the period of the programme. Over the period of the ICTPD programme, for example, the proportion of teachers' units of work that contained ICT-based learning activities increased significantly for most cohort teachers. However, this general increase hides notable variations within the cohort across a number of factors. In the 2001 cohort, for example, there was a significantly greater increase in the integration of ICT in the primary schools compared to secondary, with twice as many secondary teachers (44.4%) as primary teachers (22.5%) reporting no change to the extent of integration of ICT into units of work.

There is also evidence of a clear trend that the longer teachers were in the ICTPD programme, the more significant were the reported increases in integration of ICT into units of work. This trend can be seen in Figure 10. Almost 50% of the teachers who were involved for a period of 0 to 6 months reported that there was no change in the extent of their integration of ICTs. This proportion decreased the longer the teachers were involved in the programme. Conversely, the longer teachers were involved in the ICTPD programme, the greater was the proportion reporting a 'significant increase' in the integration of ICT into their units of work. Over 80% of teachers who had been in the programme for the full three years reported increased integration of ICTs into their teaching units.

Figure 10 *Reported Increase in Integration of ICT in Units of Work, by Length of Time in Programme*



$p < .001$, $X^2 > 18$, $df = 10$

$p < .05$

There were also more significant increases in integration of ICT in units reported by female teachers (35.2%) compared with male teachers (22.9%). Thirty seven percent of the male respondents to the End-of-Project survey reported no change in the proportion of units of work in which ICTs were integrated ($p < .001$, $X^2 = 27.08$, $df = 2$).

Teachers were asked to indicate how often, on average, some or all of their students engaged in a variety of specified ICT activities. The scale used to indicate the frequency for using the ICT activities with students was: daily/almost daily, average 1 to 2 times a week, average of 1 to 2 times a term, average 1 to 2 times a year, or never. As can be seen in Table 26, the regular use of ICTs by students as reported by teachers from both the 1999 and 2001 cohort started from similar points for each of the ICT activities. As with 1999 cohort, there was a great increase in the 2001 cohort teachers' frequency of ICT use with classes over the period of the programme. The figures show more or less the same degree of increase, but a slight tendency for increases in the 1999 cohort to be greater than increases for the 2001 cohort. The pattern of usage did not really change in that activities that had high usage before the ICTPD programme were still high usage after the programme. An apparently lower usage of e-mailing to other students/experts and of CD-ROMs can be seen among the 2001 cohort in comparison with the 1999 cohort. At the end of the programme there were a lot of regular users in both cluster cohorts, especially with regards to word processing, internet use, and drill and practice. In all these cases a majority of teachers were regular users by the end of the programme.

Table 27 *Percentages of Teachers' Reporting Regular Usage of ICTs by Students for Given Curriculum Purposes Before and After the ICTPD Programme*

Curriculum Purposes	1999 Cohort		2001 Cohort	
	Before	After	Before	After
Composing, editing and presenting creative work using word processors and/or graphics	56%	84%	49%	80%
Composing, editing and presenting 'project'- or content-based work using word processors and/or graphics	43%	70%	36%	68%
Accessing or searching for information on the internet	28%	74%	35%	71%
E-mailing other students or experts about a current topic or problem	18%	51%	14%	35%
Presenting their learning in the form of computerised slide shows (mainly or exclusively text and pictures)	12%	42%	11%	40%
Editing and composing multimedia presentations, movies or videos using computer software (including sound and moving images)	6%	24%	4%	15%
Data logging using external monitoring devices connected to a computer	3%	8%	2%	7%
Working through content or concept simulations on computer	6%	16%	5%	15%
Practising skills or reinforcing knowledge using content-specific Drill and Practice programmes (maths games, reading games, etc.)	38%	63%	36%	57%
Learning from a computer-based tutoring program	13%	33%	13%	29%
Writing computer programmes or scripting interactive presentations	3%	10%	2%	7%
Accessing or searching for information on electronic encyclopaedias (e.g.: on CD ROM)	29%	59%	22%	43%
Designing and/or creating web pages to present learning	3%	19%	3%	10%
Recording, calculating or analysing data using prepared databases or spreadsheets	10%	29%	7%	19%
Designing and developing databases or spreadsheets for information	7%	19%	4%	11%
Faxing or phoning other students, experts, etc. about a current topic or problem	17%	39%	7%	24%
Using the electronic catalogue to find appropriate reading in the library	24%	47%	22%	42%

('Regular' in this context means incorporating such activities within units of work at least once or twice a term. Note that some of these activities could involve a short amount of student time, perhaps within a single lesson, while others could involve extended periods of time over several days or longer)

There were some statistically significant factors affecting how often, on average, some or all students in the classes of the respondents engaged in the specified ICT activities. Primary teachers were more likely than secondary teachers to have increased the extent to which their classes were composing, editing, presenting creative work using word processors and/or graphics, developing slideshows, creating multimedia presentations, practising skills or reinforcing knowledge using educational games, learning from a computer-based tutoring programme, and faxing/phoning other students or experts about a current topic or problem. Secondary teachers were more likely than primary teachers to use the internet, use content/concept computer simulations, search for information using CD-ROMs, and develop their own databases/spreadsheets. ICT activities that were used more regularly by secondary teachers with their classes before the PD programmes and are now used more regularly by primary teachers with their classes after the PD programmes, include project or content-based work using word processors and/or graphics packages, producing web pages to present learning, and using the electronic library catalogue. There were no statistically significant differences between the two sector groups with regard to increases in the frequency of the other classroom uses of ICTs reported in the End of Project survey.

The activities that were used more by secondary teachers also corresponded with a higher use of these activities by male teachers. The length of time teachers participated in the ICTPD programme was also a significant factor in the increase in the regular use

of some ICT activities reported by respondents. Presentation of creative work using word processing and/or graphics, e-mailing other students and/or experts, developing slideshows, using content/concept computer simulations, using prepared databases or spreadsheets, and faxing or phoning other students/experts about a current topic or problem all showed a decrease in the percentage of respondents who never used, or only used the ICT activities one or two times per year, with increasing length of involvement in the programme. There was no clear increase in any of the 'regular' use categories (average 1 to 2 times per term, 1 to 2 times per week, or daily/almost daily) but rather in an overall increase across these categories.

Range of ICTs Used in Cluster Classrooms

As was found with the 1999 cohort, teachers in their classroom programmes were using a fairly wide range of ICTs with classes across the clusters as a whole. However, the 2001 cohort seems to have used fewer types of ICTs as individuals than the 1999 cohort. A breakdown of the range of ICTs used by individual cluster teachers reveals that just over one-third of the primary teachers concentrated on using 1-2 ICTs. Around half used 3–5 ICTs, and just over 10% used more than 5 ICTs in their classroom programmes at the end of the project. Among secondary teachers, just over half used 1-2 ICTs, about 40% used 3-5 ICTs and less than 2% used more than 5 ICTs in their classroom programmes.

Table 28 *Teachers' Classroom Usage of ICTs by the Range of ICTs and School Sector (1999 cohort)*

	1-2 ICTs	3-5 ICTs	>5 ICTs	5 of Sector 1-2 ICTs	5 of Sector 3-5 ICTs	5 of Sector >5 ICTs
Primary	181	285	138	29.97%	47.19%	22.85%
Secondary	62	44	13	52.10%	36.97%	10.92%

Table 29 *Teachers' Classroom Usage of ICTs by the Range of ICTs and School Sector (2001 cohort)*

	1-2 ICTs	3-5 ICTs	>5 ICTs	5 of Sector 1-2 ICTs	5 of Sector 3-5 ICTs	5 of Sector >5 ICTs
Primary	357	507	110	36.65%	52.05%	11.30%
Secondary	196	144	6	56.65%	41.62%	1.73%

The teachers in the 2001 cohort, regardless of sector, used a smaller range of ICTs but had more concentrated use of the ones that were utilised than the earlier cohort. Secondary teachers used a smaller variety of ICTs than their primary counterparts (Table 29). The trend remains across the two cohorts for the majority of primary teachers to use 3 or more ICTs in their programmes. In comparison to the usage by participants in the 1999 cohort (Table 28), individual primary teachers in the 2001 cohort appear to use fewer different ICTs in their classroom, while secondary teachers in both cohorts appear to have continued the trend of focussing on using one or two different ICTs within their classrooms.

The variety of specific ICT types that tended to be used by teachers, as well as the general pedagogical purposes for that use, are shown in Table 30 below. The most commonly used ICT was text-based word processing, which alone accounted for 23% of all reported ICT-based activities, followed by the internet. Slideshows, digital cameras, graphics, spreadsheets, multimedia presentations and CD ROMs all had a similar but lower level of use, with all other ICTs being used even less. As was the case for the 1999 cohort, primary teachers tended to report more use of multimedia software, movie making hardware and software, digital cameras and scanners, graphics packages, CD ROMs, and mindmapping. Secondary teachers reported more internet, spreadsheet, and database use compared to primary teachers. Similar levels of use for both sectors were reported for slideshows, desktop publishing, word processing and e-mail.

Table 30 *Types of ICTs Used with Classes and their Main Pedagogical Purposes*

Activity Type	ICT Type	Percentage of ICT-Based Activities (n=5221)
Authoring - Design and Make	Movie making/editing	2%
	Music making/editing	<1%
	Multimedia presentation	7%
	Web authoring	1%
	Static slideshow	9%
	Total	19%
Static Print - Create and Edit	Digital camera/scanner etc	8%
	Graphics	7%
	Desktop Publishing	4%
	Word Processing	23%
	Total	42%
Information Gathering - Research	e-mail	1%
	CD ROM Reference	6%
	Internet search & gather	18%
	Telecomms (audio/video conf. etc)	<1%
	Total	26%
Problem Solving	Mindmapping/Brainstorm etc	3%
	Simulation/Problem solving	1%
	Spreadsheet enquiry/construction	7%
	Database enquiry/construction	1%
	Data Logging etc. enquiry	<1%
	Total	12%
Curriculum Practice	Content/Skill Tutorial	<1%
	Drill and Practice	<1%
	Multimedia Story	1%
	Total	1%

Curriculum Relevance of Teachers' Use of ICTs with Classes

As can be seen in Figure 11, over a third of the classroom ICT-based activities reported by cluster teachers were focussed on Language (English) activities (36%), with Social Sciences, Maths and Science accounting for most of the rest. ICTs were integrated less commonly in Technology, Health/PE and the Arts. Primary teachers reported using ICTs more for Language than secondary teachers, while Secondary teachers used ICTs relatively more often in Social Science and Science units than their

primary counterparts. In comparison with the End-of-Project report on the 1999 cohort, Language was still, indeed even more so, the curriculum area where ICT-based activities were used the most (1999 cohort = 26%; 2001 cohort = 36%). Usage in the other Essential Learning Areas either decreased slightly or remained constant compared to the 1999 cohort.

In terms of the pedagogical purposes of the ICTs being integrated into teachers' lessons, most ICT-based activities were used for static print purposes (see Figure 12, below). Just over a quarter were for information gathering, and a fifth for multimedia authoring. The use of ICTs for problem solving was less common, and, surprisingly perhaps, less than 1% of the activities reported involved skill/content practice with ICTs. Comparing these findings to the findings in the End-of-Project report on the 1999 cohort, the order of purposes was the same. However, in the 2001 cohort, the use of ICT-based activities for problem solving was greater and the use for practising skill/content less. For both cluster cohorts, the most popular combination of purposes for using ICTs was static print/information gathering and authoring/static print. Indeed, popular combinations of ICT-based activities almost always involved word-processing. These combinations included word processing/graphics, word processing/internet, word processing, digital camera or scanner, word processing/desktop publishing, word processing/spreadsheets and CD ROMs/internet.

Figure 11 *Teachers' Reported use of ICTs in the Essential Learning Areas at the End of the ICTPD Programme*

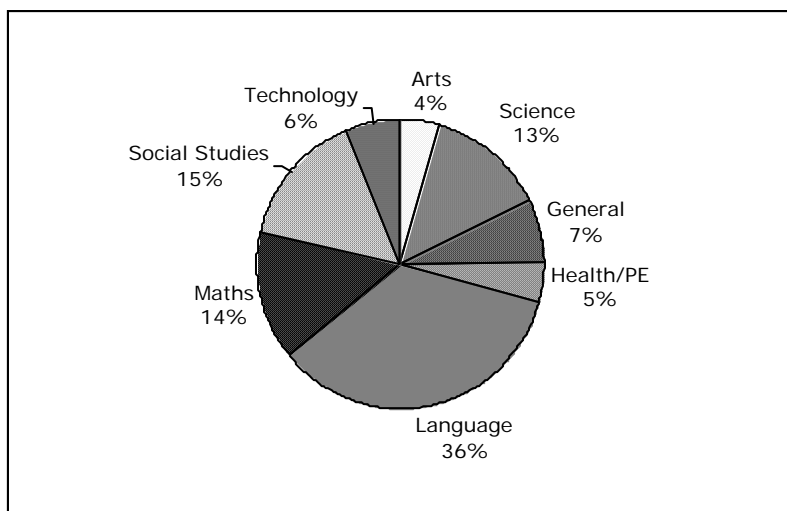
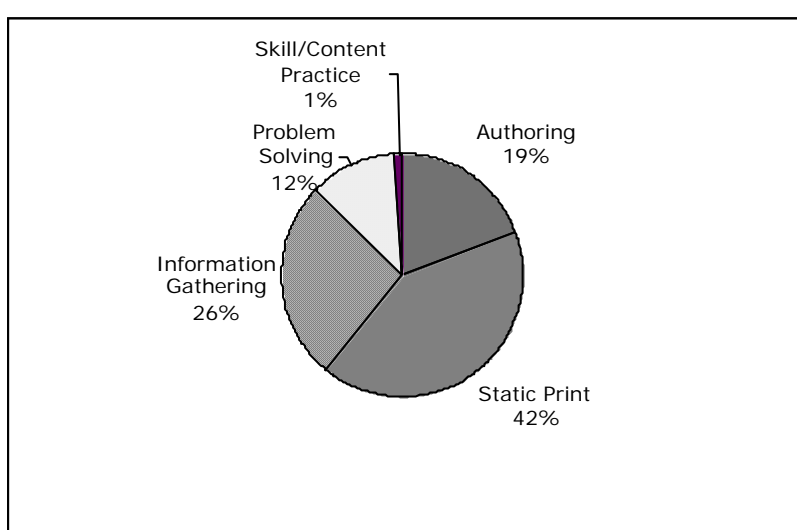


Figure 12 Teachers' Reported Use of ICT Activities by Purpose



Summary

- There was a distinct tendency for teachers in the 2001 cohort to use a smaller range of ICTs than those in the 1999 cohort.
- Consistent with the findings for the 1999 cohort, primary teachers in the 2001 cohort tended to use a wider range of ICTs with classes than secondary teachers.
- In terms of the curriculum relevance of teachers' use of ICTs with classes for teaching and learning, there was a predominant use of ICTs for Language (predominantly English) activities, and to a lesser extent Social Sciences, Maths and Science.
- Word processing for static print presentation continues to be the predominant purpose for the use of ICTs with classes.
- The pattern of curriculum coverage and pedagogical purpose for ICT use was substantially the same for the 2001 cohort as for the 1999 cohort, except for a tendency for more use of ICTs for problem solving, and less for content/skill practice, among the 2001 cohort.

Lens 2

Cluster Case Studies: Ictpd In Two Kura Kaupapa Maori Clusters

By Peter Moeau

Lens 2. Cluster Case Studies: ICTPD in Two Kura Kaupapa Maori Clusters

Introduction

Kura Kaupapa Maori in Education

It is necessary to preface the account of this research with a brief explanation of the genesis of Kura Kaupapa Maori and the intentionally ‘different’ nature of Maori immersion education.

There is among many Maori working in the immersion schools, at all levels, a strong sense that the very nature and stance of mainstream education philosophy, policy and practice is very different, and in some aspects, even opposed to, mātauranga Maori, tikanga Maori and te reo Maori. Indeed, it could be argued that the Kura Kaupapa Maori movement was founded on this very sense of cultural difference. The Kura Kaupapa Maori schools arose from a growing sense that education in Aotearoa has not served Maori well, at virtually any level of the structure of our education system. There is among its advocates a prevailing feeling that the philosophy, pedagogy, curriculum development, teacher training, and resourcing of schools, were, and in many ways still are, created and managed within a viewpoint that does not value or promote things Maori as having validity and credibility in modern education. This dissonance is reflected in society in general, and, among other things, manifests itself in the high proliferation of Maori in the negative statistics of society, and the education system in particular.

Such concerns led to the inception of Te Kohanga Reo in New Zealand in the 1980’s, and subsequently to the development of Kura Kaupapa Maori, Wharekura and Wānanga, as providers of specifically Maori-oriented education, and such concerns still tend to dominate the policy discourse of Maori education. For example, the connection between low Maori achievement and insufficient teacher training or professional development, was forcefully made in the Audit conducted by Te Puni Kokiri in 2001 on Teacher Training, which specifically highlighted concerns about Maori students’ low performance, and raised doubts about the ability of teachers to engage, and effectively teach, Maori students.

The advocates and participants in the Kura, the vast majority of whom are themselves Maori, wish to have the students educated in the ways of Maori, and to be able to relate to the ways of their ancestors. This is seen as a right denoted and protected by the Treaty of Waitangi. For some, the prior failure to provide a specifically Maori education option is seen in the Kura movement as a breach of the Treaty, and there is still an element of appeal to the antiquity and tradition of the Treaty in the justification discourse of the Kura movement. As Durie (1998) argues, Maori searched for ancestral opinions to establish what was right, often challenging officials to heed Maori precedent to maintain that which the translators called a proper line of action.

This search for the validity of things Maori in antiquity, tradition and history still helps fuel the movement for exclusively Maori schools, and is strong in the consciousness of those working in these immersion schools, in which the curriculum is infused with Maori content and values, in which Te Reo is given primacy of status, both as content/subject and as the language of instruction, and in which coherence with the kaupapa of Maoritanga is the yardstick by which all development and innovation is measured.

Historically, Maori have a love of technology and an insatiable curiosity to know why, what and how technologies may be inculcated into the kaupapa. Maori are not naturally techno-phobic. But they do feel keenly what they see as an under-resourcing with regard to ICTs, especially in a system where provision of funding and resource is decided on by a roll-based, population percentage formula. The great majority of schools in the case study clusters draw on very low decile community catchments, and because the pool of resource - both technical resource, and perhaps even more importantly human resource - is so much smaller than that of mainstream schools the impact of such problems is magnified in Kura Kaupapa Maori (as well as Maori medium units in mainstream Kura).

In such situations, circumstances arise which are often absorbed as a natural occurrence in mainstream Kura, but which have a more problematic and more debilitating effect in Kura Kaupapa Maori. The most common of these relate to a chronic shortage of teachers fluent in Te Reo and the downstream effects of high rates of promotion and transfer, taking study leave for academic advancement, leave for pregnancy and family matters, and so on. It is important to note in this regard that there is a far greater significance placed on whānau, hapū and iwi in Maori society, than there is in mainstream, or Pākehā society, and this is also reflected in most aspects of the professional experience of teaching in Kura Kaupapa Maori. There is a far greater collectivity practised in Maori community, which involves being responsible for, and to, a far greater group than just the tamariki of the class or Kura and their parents. Education in kaupapa Maori includes whānau, hapū and iwi, at a philosophical and a pedagogical level, as well as a practical level. To be a teacher in a Kura is to be a member of the greater community in a very real sense.

The collegial and collective worldview manifests itself also in attitudes to professional development. A lack of trained teacher educators fluent in te reo Maori me ōna tikanga and well-versed in kaupapa Maori gives rise to a lack of curricular programme development and subsequently again, professional development programmes. Moreover, any professional development that does become available, is often seen as likely to be mainstream oriented or Pākehā in nature, not taking into account the specialist needs of kaupapa Maori. In this regard, the two case studies reported here represent the efforts of leaders and teachers in Kura to cluster together and provide a professional development programme consciously designed by and for Maori immersion contexts, and conducted according to the values and protocols of tikanga Maori.

Note on Research Methodology

Given the background described above, Kura are often highly politicised environments, philosophically opaque to the uninitiated, and self-consciously 'different' contexts in which to conduct research. As a result, the daily manifestations of imbued values like collectivity and the discourses of shortage, remoteness, and difference have important methodological implications, especially relating to 'access'.

First, and most obviously, there are issues related to access to the language. All the observed professional development events and all of the classes were typically conducted in Maori, and in most the learning contexts under discussion often revolved around Maori contexts and Maori content. So it was important to have a researcher conducting the case studies who was not only familiar with the tikanga, but fluent in Te Reo. (Note that in the rest of this chapter commonly used Maori words and expressions are included untranslated in the text. A glossary of these terms can be found at the end of the Chapter. Direct quotations from interviews conducted in Maori are provided verbatim, with translations following in italics.)

Secondly, it was difficult to gain physical access to many of the Kura, especially in the Urewera cluster. Many of the cluster Kura are small (one to three teachers) in very remote rural areas. Living at least two hours drive from the closest Kura put pressure on the observation/interview visiting schedule, in that, if visits were cancelled after being organized it became a drain on resources and time. Because of the remote, rural nature of such Kura, and the ruggedness of the roads, the weather could also affect visits. It was often necessary, especially in the Urewera case study, to use a four-wheel drive vehicle because of the types of roads being travelled. On several occasions rain and storms cut the telephone lines, or slips and floods blocked the roads, keeping kaiako and tamariki at home and closing the Kura, as well as stranding the researcher. Also, in some areas, and especially in the smaller schools, the tangihanga of significant kaumātua closed Kura in the district, and ICT observations sometimes became inappropriate and unachievable. During the winter months this occurred several times. This was a common occurrence in Kura and is a natural ongoing part of Kura life. Illness, tangihanga, hui; all of these add pressures on schools where there is already a chronic shortage of relievers, and led to changes and disruption in the research visiting schedule.

More subtly, and perhaps more importantly, there are also special validity issues concomitant with researchers accessing the 'culture' of schooling, teaching and learning in Kura. Cultural values also meant that there was, initially at least, a general reluctance and reticence to critique the performance of people and colleagues involved in the project, and a hesitance on the part of participants to be totally open in their evaluation of the programmes. Because of a sense of whakaiti it is not appropriate in Maori culture to criticize a colleague or discuss with any openness either one's own or others' practices to an outside person, if only because that implies a sense of superiority in the critic. Thus, while there was a universal desire to make the most of whatever resources and support were available (ie: the professional development) and not waste it, there was also a sense that too open or critical an evaluation of an event or person might result in the professional development being cancelled.

This harks back to issues of making effective usage of limited resources and limited funds available to Kura Kaupapa Maori, and a sense of manākitanga and kaingakau ki te kaupapa that creates a pride in, and guardianship of the whole kaupapa Maori ethic, and moves away from extolling the individual to manifesting the strength of the collective. For this reason, for example, there was an emphasis on the professional development being available to all and any who were interested, or who happened to be accessible at the time, including non-teaching staff. So the provision of professional development was often a collective enterprise undertaken by whoever happened to be at school on a particular day.

As a researcher, therefore, I had to spend much time initially in persuading the staff that I was not the agent of the Ministry, that the PD could not be withdrawn on my say so, and that I knew something about ICTs and education myself and so could support, and not just judge, the enterprise. It also meant that in order to meet the demands of collective enterprise, it was often inappropriate for me to adopt too strongly a non-participant, ‘fly on the wall’, approach to the research. To get real access to how people were experiencing the PD programmes, I had to work with a wider group of individuals than was the case in the other cluster case studies, and establish credibility as whānau, by actively taking part in the PD events on occasion. It also helped at times that I was able to establish family or iwi connection with the Principals and staff in some of the Kura.

Moreover, all visits, meetings, observations and interviews operated under the mantle of tikanga Maori. This meant that karakia, mihimihi, whakawhanaungatanga and so forth, were always observed, and all interactions in the Kura, both with kaiako and with tamariki were conducted in te reo Maori. As already stated, tangihanga, whanaungatanga, lack of relievers, the specialist nature of the curriculum all served at times to test the systems the schools had put in place to enable observations and interviews to take place. Overall, I was able to complete the planned programme of termly observation visits and interviews for both case studies. However, because of the factors outlined above, I tended to observe and interview many different teachers occasionally, rather than follow through with the original research plan of following the journeys of only one or two individuals from each of up to three schools per cluster in an ongoing way. In the event such longitudinal observation and interview studies of specific individuals were only possible for two or three teachers in each case study cluster.

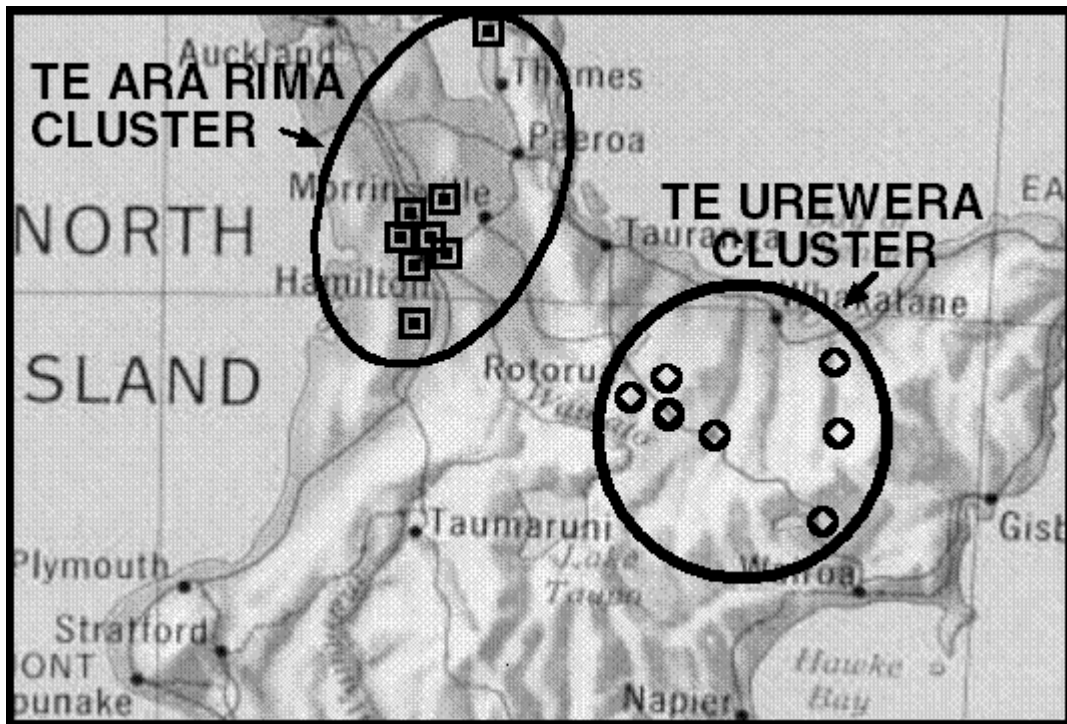
These caveats aside, the methods used for the two Kura case study clusters were the same as those used in the nine other cluster case studies undertaken by the Christchurch College of Education research team as part of the ICTPD clusters evaluation (Ham et al, 2002), and are outlined in the Methodology section of this report.

Research Questions

The three core issues which guided the case studies were:

- The effectiveness of the various models of professional development in terms of administrative efficiency, successful policy development and strategic planning for ICT in participating Kura.
- The effects of the various models of professional development employed in these clusters on classroom teaching in participating Kura.
- The effectiveness of ICT based learning activities developed as a result of the various models of professional development programmes in helping students achieve the curriculum objectives identified by the teachers.

The Two Case Study Clusters



Case Study 1: Te Ara Rima Cluster, 1999-2001

The 'Te Ara Rima' Cluster was centred in the Waikato, and especially around the greater Hamilton region. The Lead School was Te Kura Kaupapa Maori o Te Ara Rima. The schools in the cluster were:

Te Kura Kaupapa Maori o Te Ara Rima (Roll: 125. Decile: 1)

Te Kura Kaupapa Maori o Bernard Fergusson Kura (Roll: 170. Decile: 1)

Te WhareKura o Rākaumanga (Roll: 393. Decile: 1)

Te Kura Kaupapa Maori o Ōpārure (Roll: 42. Decile: 2)

Te Kura o Rangiriri (Roll: 33. Decile: 1)

Te Kura Kaupapa Maori o Whakawatea (Roll: 77. Decile: 3)

Toku Mapihi Maurea Kura Kaupapa Maori (Roll: 79. Decile: 4)

Te Kura Kaupapa Maori o Harataunga (Roll: 19. Decile: 2)

Te Kura Ngati Haua (Roll: 54. Decile: 2)

Professional Development Model

Each Kura in this cluster is a designated Kura Kaupapa Maori whose programmes run entirely in Maori. The cluster employed a full-time external facilitator who dealt with teachers on a school-by-school basis. All of the schools are primary schools, except Te Whare Kura o Rākaumanga which had a small secondary cohort as well. The schools are spread around the greater Hamilton area and represent a mix of urban and rural, medium and small sized schools. The whole staff of each school was expected to participate in the professional development, which planned to have a high curriculum focus (especially Te Reo) and a medium focus on policy development and ICT for school administration. The programme consisted of some initial central workshops at the Lead School followed by ongoing visits of the facilitator to the schools providing a mix of in-class support and withdrawal of teachers for school-based PD events.

Because several of the Kura felt under-resourced in terms of Te Reo and over-stretched in terms of relievers, any professional development programme tended to be snapped up by whomever was available and not too busy at the time of the facilitator's visit. This created a scattergun approach to PD sessions rather than a developmental one, and it meant that although an emphasis would eventually be on teaching practice and pedagogy, essentially the professional development programme made its initial impact in terms of support for lesson or resource preparation and technical skills areas. Because it was not easily predictable who would turn up to each of the PD sessions, much of the first year of the programme therefore focussed on technical needs across a wider group of teachers rather than following through to classroom and pedagogical issues with the same group.

A programme of wānanga was organised where selected kaiako would attend training at Te Ara Rima in their lab. These workshops occurred five times during the year and each was followed up with a visit to each of the Kura in turn. The Kura themselves had

vastly different technology infrastructures, facilities and expertise, and therefore each received individualised attention in terms of the professional development after the collective events took place. Te Ara Rima, Rākaumanga and Bernard Fergusson all had designated computer labs, containing 21, 25 and 8 computers respectively. In Te Ara Rima and Bernard Fergusson, each kaiako was responsible for teaching their own class, while Rākaumanga has a designated kaiako hangarau. Each kaiako received set tasks in order to practise what had been put in place during the professional development session. Each kaiako then received individualised training from the facilitator, focused on their own needs, and the needs and facilities of their Kura. The kaiako in the different schools were thus working on a wide range of technologies, including phone, fax machines, OHPs, as well as computers and software, digital cameras, internet and intranet.

It became apparent throughout the delivery of the professional development that some changes were necessary, and these were mainly in terms of keeping kaiako in touch with what their responsibilities were, keeping the flow going, and keeping the momentum up throughout the cluster. This necessitated a more hands-on approach from the Principal of the Lead School who, even at the end of the project, felt that he could have been more integrally involved with the organisational aspects in the different client Kura. This in turn, he claimed, could have resulted in a much stronger involvement from kaiako who were undertaking professional development.

Shifts and changes in personnel throughout the cluster over this period of time, including the loss of the facilitator at the end of the second year, also had an effect. Movement of staff from school to school meant that personnel attending workshops would change frequently, and people were often coming in with less understanding and ability than what had been achieved previously, which, according to the facilitator, gave a 'stop-start' feel to the programme in the schools where that happened.

Tumuaki: Principals' Perspectives

There was an initial focus in most schools on ICT training in order to improve the general running of the Kura. In general, this centred on school administration, lesson preparation and the development of teaching resources. All of the tumuaki interviewed were ICT literate and also had a strong desire for ICT to become an integral part of the skills and attitudes that their kaiako had and used. This was expressed in a number of ways, such as reiterating the view that ICT was a means to an end, a way in which to accelerate curriculum development and resource production, a way to ease the task of teaching, and an avenue for tamariki Maori to access everything and anything in the world.

Two examples of PD that stood out as particularly effective in the eyes of the Principals were:

Teachers would plan lesson sequences using the application '3D Achieve' and a copy of their plans, both long-term and short, would be stored in a central file. This meant that if the teacher was unforeseeably absent, providing a plan for a reliever was very simple. Such activities were seen as an effective way of easing nervous or anxious teachers into the use of ICTs by giving them familiar tasks which would be useful to others, in a new way. A comment from one of

the teachers highlighted the simplicity and efficacy of this approach: ‘I te tuatahi he uaua. he mea mama te hanga rauemi i nāiane i runga hoki i te taonga nei’. *It was difficult at first – making resources is so easy now on this machine.* Or, as another put it, more succinctly: ‘mahi kai-parāoa’ *Just like eating bread!*

The notion of collective upskilling, the growth of confidence and skills, and the ease of access to the facilitator were important. It was important that the community supporting the Kura benefited as well. Ancillary staff were able to order supplies online and maintain their records of supply through a central source, and local kaumātua were also inspired to become internet-literate.

These were felt to be examples of the professional development benefiting Maori in a way that is unique to kaupapa Maori and Kura Kaupapa Maori. In this case it seemed also to be an example of the leader of the Kura getting behind the programme and really pushing, committing themselves and all members of the Kura, as well as time and space, to getting things done.

Kaiako: Teacher Perspectives

The kaiako interviewed said they gained a far greater facility with technology as a result of participation in the project. Before the ICT professional development, many were hesitant to use technology in case they did something untoward and damaged the machine, thus preventing someone else from being able to use it. For almost all kaiako interviewed this sort of fear was surmounted and they felt far more professionally enabled. This was especially evident in the Kura where planning was logged into a central store. A much higher sense of professionalism and more depth in planning were observed by the tumuaki in relation to these teachers.

Many of the statements made in interviews highlight this appreciation of the new skills and abilities that kaiako have acquired. Such skill acquisition, however, was often put in the context of some greater or wider benefit, such as benefit to the community or to the children. The teachers seemed acutely aware that their own acquisition of skills was ultimately for the benefit of others, or for enabling better sharing of the kaupapa with colleagues in other schools.

Ko te mea nui kia whai wātea ahau ki te whakanui ake i ngā pūkenga me ngā mōhiotanga o wāku tamariki. *The most important thing is that I can expand the skills and understanding of my tamariki.*

Mā te hangarau mōhiohio ka tāea te tamaiti ki te huakina i ngā wini me ngā kuaha ki te āo. *Through the use of ICT tamariki can open the doors and windows to the world.*

Tere rawa te hopu whakaaro. Autāia kē. Ngāwari anō ō rātou whakaaro. *Tamariki are so quick to catch on – really amazing. They have malleable minds.*

Mā ngā tamariki e tuhituhi, e whakatā hoki i ō ā rātou ake tuhinga i runga i ngā mihini nei – he mea whakakaha ake te ngākau o te tamaiti mō āna ake mahi, mō āna ake kupu. Ka kaha haere. *The tamariki write, and publish their own work on the computer, and it builds their self confidence in their own work, in their own words. They are becoming more capable.*

Koina tetahi o nga kaupapa nga take whakaaetia e matou ko te poari ka tukuna atu a Whāea 2 ki ki ana mahi te tuhonohono tera mea te whakawhanaunga matou o tenei Kura me tēnā Kura. *One of the main reasons the Board agreed to allow Whāea 2 to participate in the programme was the notion of collegiality we could develop with other Kura.*

Ka whakaakongia nga kaiako te imeera katoa i nga websites katoa. Te kete ipurangi, ka pehea te whakamahi, ka pehea te whakahaere, me te tuku korero ki ō rātou hoa mahi

Kaiako have learnt about websites, about email, Te Kete Ipurangi, how to operate and manipulate them, and how to communicate with their fellow kaiako in other Kura.

These last two statements exemplify one of the main benefits identified by this particular cluster: the sharing of information, knowledge and resources. Under the guidance of the facilitator, the programme established a sense of collegiality and sharing, inherent in kaupapa Maori programmes anyway. However, ICT was a new area for most kaiako and the constant reference to sharing and the wider support system was notable.

Concomitant with a growth in the understanding of and skills with specifically computer-based technology, was the acquisition of skills with other technologies as well, such as digital still and video technologies. Digital cameras in particular were used far more often to capture information for further use in Kura over the period of the PD programme. Many kaiako, for example, could see something that took their interest, such as participating in Waka Ama, and bringing those images and experiences back to the Kura because the tamariki and their whānau were doing Waka Ama as well.

Hence, slowly, the kaiako reported that the line between Kura and whānau began to break down, and the barriers between knowing and not knowing were being removed. In this process the facilitator was seen as playing a major role, especially in building the confidence of the kaiako to overcome their initial personal fears.

He autāia kē te tangata nei hei whakaatu mai ki āu ngā tino hohonutanga o tēnei ngāngara te rorohiko nei me tōna taunga ki te kaupapa. Amazing facilitator, so capable at demonstrating what this thing can do, and of course his love of the kaupapa.

The ICTPD programme was not able to bring about thoughtful change in all teachers, or in all schools. For example, there were a number of whāea in the Kura who had minimal knowledge of ICT before the programme began, whose confidence was low and who made little progress in the time that they were receiving professional development. One such whāea, who taught in a small rural Kura, had to take leave for

health reasons in the beginning of year three, which precluded her completing the programme.

This teacher began the programme with considerable anxieties about the use of ICTs, both personally and in relation to her students.

Āhua matakū o wāku tamariki, pēnei anō ki āua nei, he mea miharo te tāonga nei ki āu, āhua matakū ahau te rawekeweke kei pakaru te mihini nei. The tamariki were somewhat scared, just like me. This technology is an amazing thing and I'm scared to have a go in case I break it.

In terms of her classroom use of ICTs, a number of lessons were observed that were mainly about familiarization with software and hardware – manipulating the mouse, identifying letters, writing their names, or drawing shapes and simple pictures. A number of these observed lessons were repetitions, and the teacher struggled with the organizational demands of dealing with a group at the one computer at the same time as having to prepare activities for the others in the class. Ultimately she felt that though the visits of the facilitator were helpful, and her Principal was generally supportive, such visits were not long enough or frequent enough for sustained growth.

From my observations, hers was not a unique scenario, and she represents a group of kaiako in the clusters for whom the pressures of teaching in kaupapa Maori, combined with low levels of teaching experience and confidence probably had a more debilitating than enabling effect on their use of ICTs. This occurred for several kaiako who were followed through the programme, some of whom seemed to drop out of the programme over time, some temporarily and some permanently, either because they felt that they were struggling enough with the role of becoming a teacher, without the added stress of having to incorporate ICTs that they knew nothing about, or because their professional circumstances changed. The range of such latter circumstances covered health, as in the case of the kaiako mentioned above, to taking study leave, gaining promotion, shifting out of the district, maternity leave or parental leave. Such teacher movement during the ICTPD programme was a feature of many clusters, both Kura and mainstream, but while loss of staff in mainstream schools can usually be absorbed easily because of the availability of trained teachers, this is not the case in kaupapa Maori. As a result, teacher mobility appeared to be possibly more disruptive to the ICTPD programmes in Kura than in mainstream clusters.

Despite the difficulties of this minority group, however, the majority of the kaiako in the case study schools who were visited and observed felt that much benefit was gained from the ICTPD programme. This was most often expressed in terms of their growing confidence about ICTs, and indeed about teaching generally, which they attributed particularly to the workshops and facilitator in-school support, and to the sharing that occurred with other Kura such as at conferences.

For this group of teachers, the nature of ICTs and their many applications became more apparent as the programme progressed. Many of them, for example, were by the middle of the project providing more assertive feedback in terms of their own needs. Several kaiako in mid-project interviews said that their confidence in particular had been uplifted by their participation in the programme, and part of this was commensurate with their growing confidence and ability as a classroom manager.

Several also commented that once they developed their confidence they were able to act more independently in terms of classroom use.

A whāea who was perhaps typical of this group had been teaching for five years and had observed the use of ICT during her training years. The opportunity to explore the use of ICT was not given to her until this programme, and because of her involvement in Kura Kaupapa Maori, she had had neither the time nor the resources in order to do so. Her interview statements were typical of many who spoke of an initial fear of technology, both from a lack of knowledge and the spectre of ‘breaking’ the machine or inconveniencing others, but then of growing confidence over the duration of the programme.

He mataku nōku nō te mea he kore-mōhio ahau, kei pakaru te mihini nei, kei ngaro atu i tētahi atu. *I’m fearful because I don’t know, so I don’t damage the machine, or deprive someone else from using it.*

For her and those like her, their lack of skill and facility initially fostered a reticence to explore and involve themselves in this area. A perception of the need to carefully manage a scarce resource also played a big part in this attitude. Consciousness that the dollar in Kura Kaupapa Maori has to do many things and that the impact of the loss or non-availability of a resource through misuse was important in their thinking. Many kaiako expressed such conservative anxieties with regard to resources and hardware.

However, with the encouragement and teaching from the facilitator, this particular kaiako became voracious in her need for more growth, and her initial preoccupation with her own lack of knowledge and confidence around ICTs began to be replaced in interviews with a more confident, contributory language. Towards the end of the project she used the example of taking photos with the digital camera on a field trip and giving the pictures to the tamariki so that they could write about the experience. Although this is an immediate and fairly low-key application of technology in relation to the whole spectrum of what is available, it does represent a good case in terms of the professional development programme being successful in empowering the kaiako and expanding their ability to provide learning experiences for the tamariki. The language more typical of the later interviews with kaiako were statements which seem to provide some evidence of a sense of a greater professional strength through being empowered. As reported by the facilitator, this led to the removal of fear, reticence and hesitation to explore, and a growing hunger for knowledge which fuels the motivation to move ahead.

Ngāwari noa atu. Kai parāoa! *Simple. Easy as eating bread!*

Hiakai nōku mō tēnei mātauranga. *I am hungry for this type of knowledge.*

Ahakoā kua rarua ahau, kei reira tonu āku mahi hei awhina ki te kairiwhi. *Even though I may be absent, my planning is there for the reliever*

He hua i puta – kaore nga kaiako i te noho i roto i te kuware ki te whakamahi i nga mihini. *One result in particular – the kaiako no longer sit in ignorance about how to operate the machines.*

One teacher’s experience in a school which had an interesting model for dealing with the reliever shortage was also notable. As part of the ICTPD process, the designated

kaiako-rorohiko at the school was given the responsibility for teaching each class while the kaiako of that class was involved in the professional development with the facilitator. In this way, the teacher was freed from the responsibility of providing a programme for a reliever, perhaps for someone who did not have Te Reo. It also meant that the kaiako-rorohiko himself began to build a profile of the tamariki of the Kura. As a result he now began to ask questions about the validity and efficacy of his own teaching and the pedagogic stance that is implicit in Kura Kaupapa Maori - not in a doubting manner, but more in the way of articulating the how and why of kaupapa Maori, of developing a pedagogy which is specifically Maori, in kaupapa Maori, for Kura Kaupapa Maori. 'Pēhea taku mōhi me kua tika, kua hē rānei?' he asked toward the end of the programme. *How do I know if I'm [doing] right or wrong?*

Towards the end of the programme, time became tight and pressure to maintain enough time for PD in each Kura was apparent. Teachers began to express the view that they still needed more time, especially in terms of embedding their new information and knowledge, and further promoting their ability to maintain what they had already learnt, and then implement strategies in their classrooms. It was a common statement in the final term of interviews that more time was needed, especially in-class time with a facilitator or knowledgeable colleague sitting beside them.

He pai engari me pai ake ma te noho roa. *It's okay, but it needs to be longer.*

Pai ake ki aau nei, me noho ia mo te katoa o tetahi wiki, whakahaerehia. *It would be better in my opinion for the facilitator to stay for the duration of the week, working with kaiako.*

It was notable that in one of the more successful Kura, the impetus came strongly from the tumuaki of the Kura. Because this was part of their professional development, the kaiako in the Kura were strongly supported in order to overcome their fears and anxieties. This was evident in the ease with which information and help was given during informal times on the computer in the staffroom. I observed many staff giving assistance to others, nearly every time I went into their staffroom. The tumuaki of the school characterized this as both a movement from anxiety to use, and a broadening of pedagogical horizons. He tauhou katoa rātou ki tēnei mea te rorohiko. *They were all strangers to computers, but now they are confident enough to use them in the classroom, and 'hei hiki tō rātou tirohanga', to uplift their view of the world.*

Notwithstanding this, there were still some concerns that the kaiako who participated in the professional development had not yet had enough time to fully develop themselves, and their practice as teachers in the classroom using ICT. As one principal put it, 'Kaore ano ratou kia eke ki etahi taumata, kaore ano kia kitea etahi o nga mea tino whakamiharo nei kia kitengia ana i roto i etahi atu o nga kura e whai kiko ana'. *They've [still] not yet reached the levels that others have reached, have not seen the many amazing things that other Kura are able to do.*

Tamariki: Students' use of ICTs

An analysis of the 47 observations made of students' ICT-based activities shows that the majority of such activities were of a simple information gathering or text/graphics editing nature, with generally lower order cognitive skills being practised. The

majority of activities also related to language (Te Reo) and consisted of presentations in print format. A number of kaiako were not much more advanced than the tamariki in terms of ICT familiarity, and so the pace was set accordingly. Cooperative learning and group work were often evident, and this is commensurate with kaupapa Maori. In all these respects the types of activities undertaken, albeit often given Maori-specific content, were similar in profile to those reported in the mainstream clusters (see Ham et al, 2002).

The following activities, selected from the direct observation of 47 ICT-based lessons or activities in classrooms in the Te Ara Rima cluster schools, are outlined to represent the range and variety of learning experiences provided to students by teachers during the PD programme.

a. A 'research and design' project on rollercoasters

The whāea of this class utilised the interest from one child's overseas trip as a focus for project work. I observed Year 5 tamariki researching and analyzing information on the net. They had been given the assignment of designing a rollercoaster and had to be able to justify the design elements they used. This was preceded by researching the net for relevant safety standards for rollercoaster design, and then correlating those with significant rollercoaster designs already constructed.

The initial motivation of the project came from a trip overseas where one of the tamariki and his whānau had visited and gone on a number of rollercoasters. This gave rise to an interest in where he had been and the types of things that make one rollercoaster better than another. There was a lively debate among three tamariki about the best points of one design over another. The dialogue was in Maori, interspersed with technical terms that had not yet been translated and taken on board. Motivation for tamariki was very high, personal and instrumental. Tamariki who were not as effusive as others in expressing themselves and their opinions nevertheless had strong ideas on what was 'good design' of a rollercoaster, and were able to discuss them with me.

Pai ake te Stinger ki tēnā – he tere rawa!

The Stinger is better than that one – it's faster!

Engari, kāore i te 'safe' tōna hanga!

But the structure isn't safe, because...!

Information gathered online was being discussed in terms of its efficacy and application. The use of technical terms did not slow the pace of the debate. In the discussion, reference was made to other designs where some elements had failed or needed modification. A presentation project then followed whereby the tamariki presented their information and design in poster and book form.

I observed a range of higher order thinking in practice, in the research itself, analysis in the selection of internet material, the synthesis in the presentations, and some evaluation, especially in the students' debate. The roles that ICT played were to support the thinking that took place in order to formulate hypotheses, to be a source of

information and specifications, to be a production tool for their designs of rollercoaster, and then the medium for publishing the project.

The kaiako felt the work was learner-oriented with the locus of control resting with the individual and their group. She had become a facilitator, giving encouragement help and direction when necessary. Moreover, low levels of kaiako-tamariki interaction in the computer activity meant that she had time to move around the rest of the class and evaluate progress.

The primary ICT activity involved was researching on the net, largely gathering information about the design and construction of rollercoasters. The kaiako spoke of the activity in terms connecting learning with the learner's experience (for one student in particular) and translating that into a focal point for learning, whilst utilising ICT as an underpinning 'tool' for the project.

b. Symphony Orchestra Project: Internet and Powerpoint

This group of tamariki had selected and researched different instruments from the symphony orchestra and had downloaded information from the web, as well as from books. They had included in their projects pictures of the instruments and information about each. The observed activity involved the tamariki researching the groupings in the orchestra on the web and copying the information into note form for their workbooks. They were able to identify the different groups and indicate where their particular instrument fitted in.

Many had printed pictures from the websites visited, as well as included photocopies from reference material they had gathered. This material was presented in their project workbooks, in both photocopied and handwritten form. Tamariki discussed with me the aspects of the instruments that appealed to them:

He rerekē te tangi o te hāona. Ka kata au.

The sound of the horn is different. I laughed!

He pai ki au te whira ... ae, ka pīrangi te purei.

I like the violin ... yes I would like to play one.

Tamariki had had some time to digest the initial information gathered or presented on their individually chosen instrument and were now able to identify and discuss the instrument. Having produced part of their project already, they were now looking for the next level of information that compared their instrument to the rest of the instruments in the orchestra, and grouped them accordingly.

There was a strong sense of independence within each pair in finding and retrieving information. Comparison of attributes of different instruments was a highlight of the discussions and tamariki enjoyed knowing about and talking about the instruments. It seemed that the joy of 'knowing' was an integral part of their success, with several comments being made about whom in the class knew more about different instruments.

c. Motokā: motorcar. Graphics

This was an activity for Year1/2 tamariki who were completing and matching graphics to a story they had written describing a car. Although the teacher's main objective for the activity was 'te raweke hāere i te kiōre hei hana pikitia', *manipulating the mouse to construct a picture*, the learning outcomes went well beyond that. There was an excitement about creating the parts of the car with the graphics software and a high degree of sharing information, especially about putting one circle inside another to make a tyre. The teacher's approach, with students paired at the computers, meant that the tamariki did a lot of exploring of one another's work and there were many deletes and erases so that they could try what they had seen somewhere else, on someone else's picture. There was a level of what might be called passive participation—watching their partner, following and analyzing their progress and giving advice. Their motivation was high and support for each other was evident. The activity had a high buzz level of noise commensurate with a high interest level and the amount of fun that the tamariki were having.

Not many pictures were completed in the 20 minutes observed. This is perhaps inevitable when a class has to share computers and computer time. This school's pod of computers was under pressure because of the high use rate by teachers. The teacher commented that there were simply not enough computers nor enough time. She also said she was very conscious of the confidence given to her by the facilitator and lead teacher in her Kura, through the ICTPD programme. If not for that, she said, she would not have attempted to utilize the computer so much, being quite new to ICT.

d. Pāngarau. Maths drill and practice

The tamariki in this particular lesson were completing maintenance activities on the times table. They had done this particular activity a number of times before. When asked their opinion of the work, one tamaiti replied that 'he ngāwari ... tino ngāwari ... Pai ake te purei kēmu pēnei ki te playstation' *This is easy ... really easy.... It's more fun playing games, like on the playstation*. However, most of his sums were incorrect. Some of this group were distracted and disruptive and had to be frequently refocused by the teacher into their task. The tamariki who remained on-task did so somewhat under duress, and the work rate was not very high.

The teacher commented that the time taken to complete a small amount of work indicated a need to provide something that was more incremental and challenging for the tamariki, using a range of activities for variety. She felt this would give more inspiration and remove the distractive elements. The kaiako lacked familiarity with the programme and felt bad about being inexperienced with ICT.

e. Music and Games: The Web

The tamariki in this Year 6/7 group were surfing the web looking at sites about music and games, and other things that interest young people. The group was observed several times over the period of the unit. Throughout, although there was strong student interest in the material, there seemed to be little structure or purpose in their work, other than ad hoc surfing of the web. The tamariki did not spend a great deal of time in any particular place and did not take any notes or other record from the activities.

The kaiako stated that the objective was to familiarize the tamariki with the web and what was of interest to them as young people. Part of the rationale for this was to open their minds life outside their kura, their kāinga, their marae. As well, another goal was to uplift their aspirations about their own work. The tumuaki commented that this was a significant need in that the tamariki pakeke were subjected to social pressures and demands that were not pleasant, and that the fallout from this often manifested itself in their behaviour in school. The aim therefore was to get them interested and motivated 'to find out something of interest', since when they went out to secondary school their motivation often dropped. The ICT programme was seen as one possible way of providing some motivation in a particular direction, and lifting their sights or aspirations in relation to the world beyond.

This desire to use the technology to overcome the physical isolation of the Kura and to broaden the 'life experience' of the tamariki was mentioned by many of the kaiako in the clusters. Indeed, for many there was a sense that the use of the technologies in and of itself was of benefit.

Case Study 2: Te Urewera Cluster, 2001-2003

The 'Te Urewera' Cluster was centred in the greater Rotorua-Bay of Plenty district. The Lead School was Te Kura Kaupapa Maori o Te Whaiti. The Schools in the cluster were:

Te Kura Kaupapa Maori o Te Whāiti (Roll: 46. Decile: 1)

Te Kura Kaupapa Maori o Huiarau (Roll: 84. Decile: 1)

Te Kura Kaupapa Maori o Minginui (Roll: 45. Decile: 1)

Te Kura Kaupapa Maori o Tāwhiuau (Roll: 94. Decile: 1)

Te Kura o Kutarere (Roll: 42. Decile: 2)

Te Kura o Kōkako (Roll: 27. Decile: 1)

Te Kura Maori-a-Rohe o Waiohau (Roll: 42. Decile: 1)

Professional Development Model

As was the case for the Te Ara Rima cluster, each Kura in this cluster was a designated Kura Kaupapa Maori running an immersion programme in Maori. Like the Te Ara Rima cluster too, the schools drew on low decile communities, with most of the schools being Decile 1. Compared to those in the Te Ara Rima cluster, the schools in the Te Urewera cluster tended to be smaller and more rural in catchment. Several of the schools, including one selected for interview and observation visits, were particularly remote and difficult to access.

In terms of technical infrastructure, one Kura used a mobile pod of laptops, two Kura had a lab (however, in one the large majority computers were non-functional), three Kura had a pod of computers set up in the library, and all had one or more computers set up in several classrooms.

Whole staffs participated in the professional development, which in the initial proposal had a high curriculum focus (language/Te Reo), with a lesser focus on policy and administration. In the event however, much of the focus in the first half of the programme was on the latter.

A private provider was initially contracted to share the delivery of the PD programme with the Lead School. Facilitation occurred in a number of ways. Facilitators from the private provider were responsible for the provision of professional development to a number of Kura, while in other instances whole Kura groups attended seminars. One-on-one workshops for more advanced staff members were also planned. Initially the private provider had responsibility for the providing professional development for the majority of the schools (Kutarere, Huiarau, Tawhiuau and Kokako). The professional development programme was decided in negotiation with each teacher in order for their specific needs to be more fully addressed. The remainder of the schools had a more individualized professional development programme based on lead teachers.

A schedule of visits was established where individual kaiako would meet with their tutor and identify what their needs were. In the main this was managed and delivered

by one facilitator. It was intended that this would in turn lead to a wider range of topics being covered and implemented within the professional development programmes. Each kaiako would receive individualised training according to their own special needs, and the needs of their Kura, ie, technical knowledge or expertise, lack of equipment, inadequate computer configurations, and so forth. As with the Te Ara Rima cluster, this meant that the kaiako were working on a wide range of ICTs, including phone, fax machines, OHPs, as well as computers and software, digital cameras, internet and intranet. As well, there were a number of collective seminars in which larger numbers attended. These focussed on the 3D Achieve administration package, and skills with MS Word. Schedules were established for lead teacher workshops, seminars for groups of teachers, and individualised training sessions.

A number of problems were highlighted in year one of the programme, including: the number of non-operational or under-specified computers in some schools, the remoteness of the Kura and distance from effective technological support, and the frailty of the power and telephone systems in these rural areas. One Kura, moreover, was unable to participate due to staffing difficulties, and during the second year of this research project, Te Kura Kaupapa Maori o Minginui was subsumed into Te Kura Kaupapa Maori o Te Whaiti.

More broadly, it also became apparent in year two that there was a mismatch in the understandings of the Lead School and the provider, over what was to be delivered and the funding structure of the professional development. Many of the Kura were grappling with issues and needs in the fields of management, administration and governance issues, and for them the ICTPD project was seen as an opportunity for the Kura to become up-skilled and more effective in these areas. Accordingly several schools readily took up the opportunity for training in the administration package 3D Achieve. However, many of the kaiako felt that getting movement beyond this skills component was problematic, despite the original commitment to individualised PD programmes and a focus on classroom applications. A number of the kaiako in the cluster were also quite advanced technically, having more experience than most. One, for example, used her professional development release time in order to spend time with a local photographic shop in order to learn more about Photoshop – this particular software being out of the field of those being offered by the provider. At the same time, some teachers were relinquishing their professional development days in order that someone else could take advantage of them, and therefore did not get the benefit of the full programme.

In the cluster's Milestone 6 Report, therefore, it was proposed to change the operational structure and focus of the programme. From that point on, Te Whaiti Kura took on sole responsibility as the provider of the professional development, and the tumuaki o Te Whaiti, became the lead facilitator for the cluster. Especially during this second half of the project, a prominent aspect of the programme was the promotion of Tuhoetanga as the base curriculum stance. Essentially the objectives of the programme in its second and third year were refocused to:

1. further add to the technical skill-base of teachers, and then
2. be able to increase the standards and levels of education for the tamariki especially in relation to the philosophical and pedagogical implications of providing effective education in Tuhoetanga.

Tumuaki: Principals' Perspectives

The view of the participants interviewed was that the efficacy of professional development, clarity about the objectives and outcomes of the project, and the general sense of achievement and success were heightened after these structural changes. As was also the case in the Te Ara Rima cluster, these improvements were felt to be the result of strong interventionist leadership on the part of key tumuaki. However, the changes also meant that some kaiako felt they were (re)starting the programme nearly 15 months into what could have been a three-year cycle.

It should also be noted that many of the tumuaki in this cluster were, perhaps unusually, intimately involved with the professional development programme because these Kura were much smaller than those of the Te Ara Rima cluster. Many of them taught, and, being still at the chalk-face, themselves took part in the PD as kaiako rather than as managers. This also meant that the motivation and drive from the professional leader happened in a more subtle, and perhaps more immediate, way. Unlike the Te Ara Rima cluster, the Urewera cluster also adopted a Lead Teacher approach in order to provide more onsite support. The Lead Teacher hui was felt to have been very influential, for example in providing a checklist of core ICT competencies and skills for tamariki, and the appropriate age-levels assigned to those skills.

Two of the tumuaki in particular felt that the funding had enabled them to get up-skilled and more adept with technology personally. They also felt that the notion of individualizing the programme at one level while conducting collective seminars at another was an effective way to provide the training.

Kaiako: Teacher Perspectives

Although a number of teachers in the cluster had advanced skills in ICT, the majority of those interviewed or observed were very new to ICT and some quite new to teaching. Some felt disadvantaged by being asked what they would like to learn in their professional development sessions, as this implied that they were aware of the range of information and technology available to them and that they 'knew what they didn't know'.

As a result some became frustrated and motivation for the professional development lessened. This, coupled with troublesome hardware was a real burden for these teachers. Dissatisfaction was expressed at the reliability of the computers provided for them, as well as at the unreliability of the server. One Kura had a lab in which the majority of the computers were not functioning at all. Also, the telephone lines in the region were susceptible to rain and storm damage and this led to regular frustrations and disruptions regarding getting online. This was somewhat ironic since by far the single most important aspect of the use of ICTs to these kaiako was adding to each child's education by opening up the world to them, and bringing the world a little closer despite the distance, the weather, the roads and so forth. For the more remote Kura, their sense of isolation was more often than not reinforced rather than ameliorated by such technical infrastructure difficulties.

Many of the fears and concerns expressed in the previous report (Ham et al, 2002), especially about the newness of it, and fears of breaking the machines, were reiterated by this cluster.

He uaua tēnei mahi – he āo hou tēnei, specially mō ngā tamariki. *This is difficult. It's a new world, especially for the tamariki.*

Kua koroua kē ōku hinengaro, Mahi uaua tēnei, ehara i te mahi kaiparāoa. Heoi anō, mahi mā ngā rangatahi tēnei. *I'm old. This is tough, it isn't easy. This is a job for the young ones!*

Aue, hika mā he reo kē tēnei nana! *Man, this is a completely different language!*

Pakupaku noaiho nga rauemi me nga pukapuka me nga ta onga nui rawa te utu p̂nei ki nga rorohiko nei. *There are so few resources, books, expensive equipment like these computers.*

Me ka pakaru, ka ore e ta ea te mahi, ahakoa, a , ka ĥha nga tamariki. *If the computer's broken, you can't use, no matter what. The tamariki soon get frustrated.*

P̂nei tonu nga kaiako ñ me i kore i a ia pukapuka nui, ma na an̂ hei hanga pukapuka nui.

This is how kaiako Maori are. If they don't have a large book, they'll make one.

Kua pakari haere nga kaiako. Ma nga kaiako, ae, kua kite atu au, na wai ra ka puawai nga tamariki. *The teachers have improved. Before long, the tamariki will blossom.*

When the shift in facilitation occurred, it created a new dynamic – one that was more focused and more progressive for kaiako. More kaiako reported being able to see where they were going and what was important within the professional development, as well as increasing their confidence and facility in teaching because the lead teachers now had a more hands-on role and were able to guide the other kaiako.

I te timatanga he uaua. I nāianeī he mārama te mahi - nā Miss i whakamārama

In the beginning it was difficult. Now it's clear - Whāea I cleared it up.

One of the biggest benefits by far, according to the kaiako, was having access to other Kura, their kaiako and their experiences, and the ability to interact with, and observe other teachers in professional development programmes. I attended a number of Lead Teacher hui and was able to garner some understanding of the growth in confidence and sense of achievement in the cluster. The re-focus of leadership also put the onus on the lead tumuaki to become more involved in the delivery of professional development to kaiako, and the response from the kaiako was very positive and constructive:

Mārama katoa te huarahi ināianeī. *Our path is completely clear now.*

Kua tau nā āwanawana. *Anxieties and fears have been allayed.*

Ka tiro whakamua tātou, ā, ka tukuna. *We projected ahead and then got into it!*

Some individuals' stories, which follow, help explain how the ICTPD programme played out for kaiako in the cluster.

At the beginning of the professional development programme, Whāea X envisaged being able to do many things for the tamariki in her class. She had strong views on the use of ICT in order to benefit tamariki and their learning and was dedicated to learning for herself in order to provide new opportunities for the tamariki. However, the shift in the structure of the programme, and a change of facilitator, meant that her confidence was shaken. She was not sure about her success and a number of events conspired to further weaken her confidence, such as problems with the server, antiquated hardware, shortage of time and lack of resources. All of these things happened to nearly everyone involved in the programme at one time or another, but in her case, there was a particularly marked effect on her confidence. Accordingly, Whāea X's uptake of ICTs in her classroom was slow in developing. There was little evidence of the work that tamariki had completed around her classroom, most of the computers were often not in use (at times because they had broken down), and the tamariki were not greatly confident when it came to using ICT. During observations, the classroom had a 'chalk and talk' feel to it and the computers were an add-on in many respects.

After the teacher had voiced her anxieties over these issues, more one-on-one time with the lead teacher or facilitator was instituted, concentrating on more specific tasks within the programme (such as Powerpoint as a teaching tool, and Word for word-processing and story writing). In our subsequent discussions, she expressed a growing sense of ability with ICT. However, it was a slow, arduous process, exacerbated by the amount of extra responsibilities she had in both the school and the community.

Hers was probably the worst-case-scenario among those interviewed and observed in the cluster, but in one respect or another her experience was shared by a group of kaiako across the two clusters. The pressures of workload and demands for relievers, exacerbated by the small pool of available kaiako, which were reported for the Te Ara Rima cluster, were if anything even greater among the Urewera cluster schools. This was perhaps not surprising given their greater isolation and generally smaller size. It was also indicative of the fact that life in such communities gives rise to the need for kaiako to interact more readily and more often with the community around the Kura than is probably the case in urban Kura or mainstream schools. This is an accepted and acknowledged aspect of kaupapa Maori especially in rural areas. However, it does imply a call on the time of the kaiako, even during the working day, beyond the classroom.

On the other hand, for some kaiako, such as Whāea Y, such things were just another challenge to be overcome. There was some frustration felt by Whāea Y, because she was not being pushed in her work. She felt she was not being challenged by the professional development and needed more input. Obviously there was a limit on what each kaiako could receive in terms of professional development, and not all needs would be met. It meant that Whāea Y had to be clear in knowing what she wanted to get out of the programme and be creative enough to realign her thinking. Accordingly, she became more proactive over time in terms of defining her own needs and taking action to achieve them.

One of the first challenges she assigned herself was to take onboard more management tasks, and explore software such as 3D Achieve to a higher level than had been worked on before. This meant that streamlining planning in the school and its management was now more possible than before for her, while most other kaiako were still coming to grips with the basic operation of the software. With one kaiako concentrating on it, becoming expert in it, there was a greater awareness of what it could do, what kaiako could do with it, etc. This led to acknowledging the need for a new approach to applying 3D Achieve in her particular Kura. Whāea Y was the person to lead that move. At the conclusion of the programme, the full implementation of staff use of 3D Achieve for school administration had not been completed but it was in line to be carried out the next term.

Secondly, and this came from the Lead Teachers' hui, Open Days were set up for the community so that the whānau could come into the Kura and see the work that the tamariki had done. Again, it needed some initiative to pull this together and it was an opportunity for Whāea Y to practise some of the ideas that had been discussed in workshops, such as graphics and art, the publishing of work, recording music, using the web for research, recording personal information and stories. These needed to be collated and presented to the community and this was one of the tasks that Whāea Y took on.

Like the kaiako-rorohiko in the Te Ara Rima cluster who gained a closer feeling for the learning needs of the children as a result of relieving for the teachers undertaking PD, Whāea Y reported that as a result of taking these initiatives she had developed a better understanding of the overall picture of where the tamariki of her Kura were at as learners. She could now, for example, identify easily the levels of achievement that they had reached in their classes. This, she said, also pointed her to the needs and possible interventions for those children in need. In this sense she was beginning to explore the whole notion of a strategic planning for the education of those tamariki. She had evidence of where they were at, across the levels of the Kura, and could see ways of adding to what was there in order to improve performance and achievement.

These two kaiako in different ways represent the extremes of the dilemmas provided by ICTPD to kaiako in Kura all around the country, and two extremes of response to them. Their needs and aspirations were basically the same – and ultimately little different in substance to the needs and aspirations of teachers in all the schools. However, their participation in kaupapa Maori education means that, at least in their own perception, there was more pressure on their time, energy and focus. On the other hand, where the professional development programme had perhaps its main benefit in Kura Kaupapa Maori lay in empowering the kaiako to make the conceptual links between the use of ICTs, their day-to-day teaching practices, and the general purposes of kaupapa Maori.

A particularly good example of this can be seen in a collaborative project undertaken by a number of kaiako from one particular cluster school. Their task was to create a Powerpoint presentation about their Kura and present it to colleagues from the rest of the cluster. The Kura had a song of its own and this became the focal point of the presentation. They were able to use Powerpoint to its fullest extent, importing digital photos and images and also recording sound to the presentation. In essence, the statement of whakapapa, which is what this waiata was about, took its place amongst

all other curriculum activities in a simple, well received Powerpoint presentation which, for them, exemplified how ICT can augment and promote kaupapa Maori.

Another example, perhaps, was the impact of the Computers in Homes scheme that operated in a number of these Kura. One in particular reported that because they were able to have one at home they were able to change the thinking of their tamariki from just seeing the computer as another toy like the playstation, to considering it as a worthwhile educational tool. The tamariki saw parents and siblings doing a far wider range of activities than just games, including web surfing and emailing, which opened the spectrum of things available to them and expanded their horizons. As one of the whāea put it: *Kua oti te patupatu haere pēnā ki te 'arcade game'. They don't just bang it around like an arcade game anymore.*

As was the case in Te Ara Rima cluster, the teachers and principals of Te Urewera cluster also ended the programme feeling that although they had come some way as a result of the programme, their journey had not yet ended and they still needed more PD to embed the learnings gained. In particular they expressed a desire for more extended time with the facilitator.

*Te noho ki te a ta whakamāhio atu ki te kaiako me pewhea, he paku noa iho
The time to sit beside each kaiako to explain things, [was] very short.*

*Poto rawa te wa mā te whai ma ramatanga. He kuia ahau nā a ta haere!
The time is too short to really understand it. I'm old - slow down.*

*Me kua timata anātia tenei kirimana ma matou e ki kia rua wiki te roa o te
nohotahi o te tangata If we got to do this again we would say, sit with each
kaiako for two weeks.*

*Ko te huarahi kia whakatikangia atu tūra kirimana, kia roa nei te noho o te
kaiako, a wai ake ki te taha o nga kaiako i roto i te Kura. An improvement to the
programme would be to lengthen the time for facilitator, whoever that was, to
sit with each kaiako in the Kura.*

Tamariki: Students' use of ICTs

Many of the tamariki in the classrooms visited in this cluster were quite overawed by my presence in the room, and at times it felt as if the kaiako were too. These Kura are far more remote than those in the other case study cluster, and the daily traffic of manuhiri seen in more urban Kura did not happen. So my arrival and participation in classes was often a 'bit of an event'.

It was clear from the observation visits that a number of the tamariki had benefited from computers-in-homes programmes and were able to continue at home the things they learnt at Kura. The teachers felt that this seemed to give them an advantage over the others, and a concern was expressed that the majority of the tamariki in the cluster did not have access to a computer at home, and as such were susceptible to the hype about playing games and downloading music as the main uses of computers.

The actual pattern of usage of ICTs in the activities observed in Te Urewera cluster classrooms was very similar to that in the classrooms observed in Te Ara Rima cluster.

By far the majority of ICT-based learning activities involved word-processing with a language (Te Reo) focus, interspersed with a few examples of multimedia presentation and some drill and practice. This reflects the primacy of language teaching activities in Kura, where the major focus is teaching in and about Te Reo Maori me ōna tikanga. The activities tended to be lower order thinking skills, except for the evaluative elements of some creative writing and editing work, and some synthesis involved in the presentation activities. Children often worked in pairs at the computers and, whether it was planned or not by the teacher, collaborative (and non-collaborative) discussion around the ICT activity was common.

Examples of the range of ICT-based activities observed

a. Tāonga Pūoro. Music CD

This was a multi-faceted activity in which Year 7 tamariki wrote descriptive passages regarding themselves and the Kura. They had been given guidelines and timelines by kaiako and were directed to produce action plans, gather information and photographs, write and edit text and then desktop publish a final product. Authentic purpose was given to the activity in that the writings were used in publicity for a Tāonga Pūoro Music CD published by the school. Waiata had previously been recorded on to CD, by the tamariki, using sound recording equipment lent to them by a whanaunga. Tamariki had then taken a wide variety of photographs using a digital camera, and presented them using Photoshop, in order to make CD covers. Many different ‘trial’ covers were made by the tamariki, and two were chosen for the music CD.

The activity also provided copy for the Leavers’ CD - given to the school leavers in lieu of a paper ‘school magazine’ as their koha from the Kura. They wrote about themselves, especially what was good about their Kura, their hoa, their whanaunga, and their whakapapa. Each had at least one photo added to the text. The students gained practical experience in planning, designing and authoring something like a music CD or an information CD. The plan for this project had been put together by the kaiako, but the tamariki were responsible for all aspects of the creation of the CDs. It meant hands-on experience with a number of ICTs, and was geared towards topics of interest that they had identified in previous research.

The CD project was also an activity of inherent interest. Hip-Hop, music recording, art and ngā mea Maori were all high on their list of priorities, as is the case with many young Maori today. It was presented by the kaiako as modern, relevant and personal to them in terms of career paths and future visioning.

Students explained their motivation as high because it involved knowledge of themselves and their Kura, their whānau, hapū and iwi, and because it gave the opportunity to produce a real music CD. Some talked about the project in terms of an interest in a career in the music recording industry. For others, it was the performance side that had most interest. They talked with pride about having produced something personal, modern and marketable.

b. Powerpoint presentations

This class of Year 2/3s and Year 5/6/7s were presenting Powerpoint presentations. The brief was to choose a topic from a list provided, go online to research and collate information, then present the end product in a Powerpoint presentation.

There was a strong sense of pride in each of the projects in that tamariki enjoyed explaining the types of effects they were able to use in Powerpoint and took pains to point this out. Presentations included photographs and information downloaded from the web and typed into Powerpoint, as well as illustrations that had been scanned in. The students focussed in their learning on things like transitions, timing, animations and text-building skills.

Their facility with the technology available was evident (they worked on a pod of laptops) in that they showed me how to do things, like add transitions and text-building into their work. They could describe how they shaped text, edited and changed it to add to their presentation.

Once tamariki understood the task, they worked independent of the kaiako in order to research the information initially and then through all aspects of the Powerpoint production. This sense of independence and pride in achievement was strong. They talked about their own techniques in creating their presentation, and how they saw things that others had done and ‘copied’ them. The other tamariki were impressed by the trailblazers in the group who first discovered new features or tricks. Those few commented on how they would just try things to see what the software could do. It was also evident that collective learning was occurring when one would discover a technique and then others would take it onboard.

There was a sense of purpose in their description of their projects in how they achieved the work and what they did if they struck a problem. That purpose was more often expressed in terms of their technical facility than in terms of the cognitive challenge of the task, or for that matter its content.

c. Te Rā Hāngi

Hāngi Day was the culmination of a long thematic study which looked at the ways in which this particular iwi related to te āo tūroa and how they managed their own kaitiēkitanga. It involved tamariki learning about the hāngi and the hākari, in the sense of relating to the natural environments and the control systems that exist within the dynamics of tikanga and kawa, as well as the more practical issue of preparing for an important social function. Tamariki were actively involved in studying food-gathering and preparing, building fires for the hāngi, which included identifying different woods and their uses, cooking kai using a hāngi, preparing and presenting the hākari (including making putiputi, kono and rourou), serving and entertaining, and whakatikatika.

Members of the whānau of the Kura took responsibility for teaching tamariki about the different areas of knowledge, and guiding them through the different areas of responsibility. This range of activities had taken place over most of the term, with relevant recording activities happening in the Kura.

Most of the activities were recorded on digital still or video camera and the vision was to utilize these resources as classroom teaching resources. On the particular days observed, tamariki were working in groups under the guidance of mātua and kaumātua, on a wide range of ICT and non-ICT activities. The former included taking digital photos, recording spoken commentary, writing about the experience using a word processor, editing video and other raw ‘data’ for future use as teaching resources.

The rationale for the activity was seen very much in terms of a dual function. Each Kura Kaupapa Maori is responsible for the development of their curriculum statements and this particular session was seen as both part of that resource production process, as well as part of educating the tamariki experientially on their heritage. This represents the long-term vision of the tumuaki in that particular school that the curriculum in the Kura should closely reflect the society in which it resides, and thus promulgate the attitudes of kaitiēkitanga, manaakitanga and aroha for the traditional ways, with a view to providing for their own future in a modern world. ICT was seen as playing an integral role in that it was a useful vehicle for collating, collecting and transmitting such knowledge. Kaitiēkitanga, manaakitanga and aroha are significant tikanga Maori that are more easily taught in a practical manner. But in this case ICTs were also used to capture the information and learning for further curricular and resource development.

d. Tuhia te Waka-rererangi

In this activity, Year 3/4 tamariki were given the task of drawing a plane and other objects using Paint. The objective was to identify and manipulate shapes (tapatoru, tapawhā, porohita, tapawhā roa, tapawhā rite¹) in order to build pictures and tell stories about them. It could be construed that increasing familiarity with keyboard and mouse was the objective, though this was not evident in the discussion with the kaiako, who largely justified the purpose of the activity in terms of maths (shape identification) and language (creative writing) objectives. The students worked two to a computer and then printed off their picture with their story underneath.

The issues outlined by the teacher when reflecting on the activity were partly to do with connection of purpose and partly to do with organisational issues. The activity was seen to have little connection with others happening in the classroom and because of the need to ‘cycle’ the students through the activity, the time lag for the tamaiti waiting for the computer was quite large. Often those wanting their turn simply sat waited and did nothing. This time period could be up to 10, 12 minutes if the tamaiti on the computer decided to rearrange, redraw, erase and so forth. Moreover, the connection between drawing the picture and then writing the story was felt to be tenuous and not well understood by the students. The plane picture existed in isolation from the story and the technicalities of manipulating the screen objects to assemble it did not seem to stretch the children, even though they were fairly new to ICT.

¹ tapatoru, tapawhā, porohita, tapawhā roa, tapawhā rite – *triangle, quadrilateral, circle, rectangle, square*

Conclusion

Thus, as was found in the 1999 cohort generally (Ham et al, 2002), the ICTPD programmes in the Urewera and Te Ara Rima clusters had a significant impact on the skill levels, and even more importantly the confidence levels of most, though not all, teachers in the Kura. For the great majority of teachers in most of the Kura, it resulted in more frequent use of ICTs, and the use of a wider range of ICTs in classrooms. However, the range of use observed in these regards varied considerably from kaiako to kaiako, and from Kura to Kura. There seems to have been a group of kaiako, many older and often less experienced in teaching, for whom all the other demands of teaching in a Kura context took priority in their PD needs. For this group increased skills were achieved, but at the end of the project they were still hesitant about incorporating ICTs into their teaching. On the other hand, another group seemed to deal with the barriers they faced as a challenge to be overcome, both in a technical sense and in the sense of using the inclusion of ICTs into their teaching as an occasion for reviewing their core pedagogical assumptions. This group experimented thoughtfully with several ICTs in several contexts over the PD period, often reflecting quite deeply on issues of curriculum relevance, especially in relation to Maoritanga and Te Reo, classroom organisation, and the ways in which the use of ICTs could be made more subservient to, and more truly integrated into, kaupapa Maori.

In most practical respects, the patterns of classroom usage, curriculum coverage and learning outcomes observed in the two Kura case study clusters were little different from those reported for the cluster programmes in general. The predominant uses were for language related activities using word processors or the internet, leading either to print-based presentation or occasionally multimedia slideshows. Most activities observed involved students on lower or middle order thinking skills, though there were some clear exceptions to this. Collaborative activities were common, and the general levels of technical skill evidenced by students were high. The major problems reported by the kaiako related to increasing the connectedness of ICT activities to other things happening in the classroom, practical strategies for organising the rotation of students through ICT activities given the small number of them available, and, above all perhaps, frustrations at the often low levels of technical reliability of the equipment.

In these respects the experiences of the kaiako in the Kura case study schools reflect trends reported throughout the clusters generally (Ham et al, 2002), with perhaps two exceptions. The first is that the shortage of relievers and staffing movements in the Kura made it difficult to provide ongoing, long term PD programmes accessible to everyone equitably. Such problems, which are more easily absorbed by mainstream Kura and larger urban Kura, are magnified and exacerbated by the specialist nature of Maori medium education and what is still seen as a lack of support from mainstream education. The other exception is that the fragilities of the technical infrastructure in many of these small, low decile, isolated schools seem to have had a disproportionately diluting effect on the effectiveness of the PD compared to most of the other clusters. Problems with server reliability, inadequate or unreliable internet access, bandwidth issues, unrepaired computers, and so on, were significant, and often disheartening to kaiako who found themselves unable to properly implement activities they had learned in PD sessions.

While the overall feeling in both the case study clusters was that the ICTPD programmes had been extremely effective in ‘getting them off the ground’ in terms of the effective uses of ICTs for teaching and learning, most at the end also expressed a sense of incompleteness in terms of meeting their full needs as immersion schools.

As one participant put it: ‘kāore Nawhe’, *not enough*:

- not enough professional development;
- not enough time to get to classroom teaching and learning in the PD process;
- not enough trained or relief teachers fluent in te reo;
- not enough teacher training programs or facilitators to train teachers;
- not enough resources for teaching in Maori medium education; and so on.

Glossary Of Maori Terms – Te Rārangi O Ngā Kupu

- ahakoa: although; in spite of; though; while
- ako: learn; lesson; practice; teach
- āo: world
- aotearoa: New Zealand
- ara: course; path; pathway; road; system; walk
- aroha: affection; charity; compassion; concern for; love; pity; sympathise
- hākari: banquet; feast
- hangarau: technologist; technology
- hāngi: meal cooked in earth oven
- hapu: clan; pregnant; sub-tribe
- hē: err; error; fault; incorrect; invalid; mistaken; wrong
- hoa: companion; friend; mate
- hoki: also; and; because; return; too
- hui: conference; gathering; meeting; seminar
- iwi: ethnicity; nation; people; tribe
- kai: food; meal
- kaiako: teacher
- kāinga: dose; eat; food; meal
- kaingakau: love of and adherence to
- karakia: chant; grace; incantation; pray; prayer; service
- kaumātua: elder; leader
- kaupapa: idea; policy; programme; project; subject; theme; topic; purpose
- kawa: etiquette
- ki: against; at; into; toward
- kia: get; let; so that; to; when
- koha: cost; gift; present
- kono: curve; loop
- kua: become; have
- kura: school

mahi:	action; actively; business; deal; did; do; function; industry; labour; make
manaakitanga:	support and collegiality
manuhiri:	guest; visitor
maoritanga:	the ways and customs of Māori
mātauranga:	academic; education; knowledge; requirement
mātua:	first; main; main body; must; master; parents
mea:	did; mayor; means; moment; object; say; thing
mihimihi:	speech in greeting
nei:	here
ngā:	breath
nui:	amount; big; important; large; much; plentiful; quantity; ratio; size
ona:	her; his; its
pakaru:	broken; damaged; shattered; smashed
pākehā:	Caucasian; European; not Māori
pakeke:	adult; age; difficult; grown up; mature; stiff
pakupaku:	little; small
parāoa:	bread; flour
pēhea:	how
porohita:	circle; circular; wheel
pūkenga:	competence; experience; export; lecturer; mastery; professional; skill; skilled; wisdom
puoro:	music; sound
putiputi:	flower; flowers
rā:	by way; by way of ; day; date; over there; passed; sail; sun; wed
rānei:	or; whether
rātou:	their; them; they
rauemi:	income; resource
rawa:	possessions; property; quite; resource; thing; very
reo:	language
rite:	alike; draw; equal; equilateral; equivalent; fulfilled; like; ready; relationship; same; similar
roa:	age; duration; length; long; long time; tall
rorohiko:	computer; machine
rourou:	contribution; food basket
runga:	above; over; south; top; up
tāea:	achieve
taku:	margin; mine; my
tamaiti:	boy; child
tamariki:	child; childish; children; young
tangihanga:	funeral; weeping
taonga:	accessory; fittings; furniture; goods; jewellery; object; property; thing; treasure
tapatoru:	triangle
tapawhā:	diamond; quadrilateral; square
tēnei:	this

tika:	accuracy; accurate; appropriate; care; correct; efficient; fact; fair; just
tikanga:	attitude; belief; condition; convention; custom; definition; formula; general; habit; meaning; method; mode; must; practice; principles; procedures
toku:	my; mine
tuhia:	correspond; draw; point out; record; write
tuhituhi:	text
tuhoetanga:	culture; customs ways of the Tuhoe iwi
tumuaki:	principal
utu:	compensate; cost; fee; pay; price; revenge; reward; salary; wages
waiata:	psalm; singing; song
waka:	canoe; car; feather box; tribe; vehicle
wānanga:	academic; seminar; threatening
wātea:	available; clear; empty; free; open; unoccupied
whaea:	aunt; mother
whakaaro:	consider; consideration; expression; idea; thinking
whakaiti:	humility
whakapapa:	genealogy
whakatā:	pause; rest
whakatikatika:	correct; prepare; set out; stand up; straighten
whakawatea:	clear; declare; resign
whakawhanaungatanga:	interrelationships
whānau:	birth; born; family
whanaunga:	relation; relative
whanaungatanga:	relation
whare:	building; cottage; house
wharekura:	secondary level Māori immersion school

Lens 3

Teacher & Facilitator Case Studies:

Action Research Projects

Lens 3. Teacher & Facilitator Case Studies: Action Research Projects

Introduction

A range of action research or self-study projects was undertaken as part of the evaluation of the 2001 cohort ICTPD programme. In these studies, teachers or cluster facilitators volunteered to investigate their own ‘best practice’ in relation to some aspect of ICT use in the teaching and learning process, or some aspect of facilitating teacher professional development in that area.

The action research projects involved the teachers or facilitators in gathering and cyclically analysing data on their own professional practices in relation to ICTs over extended periods of time. These periods of time ranged from a few terms to the whole three years of their involvement in the ICTPD clusters programme. With ongoing guidance and support from the College research team, the teachers and facilitators took a problem based approach to their action research project. They each identified a problematic aspect of their use of ICTs with classes or their role in facilitating ICTPD, and conducted an evidence-based evaluation of the various strategies and practices that they tried over time in order to solve those problems.

Most of the twenty or so researchers who completed their investigation produced formal written reports on the experience. Most were written by the researchers themselves, while the others were written by the evaluator as ‘ghost writer’ on the basis of verbal presentations of their results, and their archived data. Two page summaries of those studies which resulted in a written report are provided below. The full reports themselves are submitted as a separate Supplement document accompanying this report.

Taken as a group, the action researcher reports provide some case study evidence illustrative of national trends identified in the first part of this report. Graham’s account of the technical and infrastructural problems encountered as he tried to get his students classroom access to the internet, for example, reflects and enhances our understanding of why so many teachers place technical problems at the top of their list of barriers to the effective integration of ICTs in the surveys. Similarly, Lyn’s account of her attempts to really get to know what her teachers’ needs were, reflects the tension reported in the cluster case studies and the surveys between the teacher’s initial desire to acquire technical skills in ICTPD and the facilitator’s desire to embed these in a deeper understanding of pedagogy.

However, perhaps the most striking features of the action researcher reports are not so much to do with how their authors fit or otherwise the profile of the averaged participant in the ICTPD programme as shown though the surveys, as they are about how the reports personalise both the average and the exceptional, fill in the gaps, and tell some of the stories that the numbers do not tell.

Moreover, nor are the stories told by the action researchers essentially ICT-focussed, and in this they are possibly not the stories of the ‘average’ participant in ICTPD

either. What strikes the reader of the reports is that they are not stories about a growing technical facility or confidence, nor are they even about greater or more frequent classroom use of ICTs per se. Rather they can be read, primarily, as stories of educational professionals coming to grips with what constitutes ‘quality’ and ‘value’ in teaching, and ‘productive learning’ when students use ICTs in classes. For virtually all of them, the core phenomenon at the centre of their self-studies is not the ICTs themselves, nor is it their own journeys of coming to grips with working hardware and software. These provide a common context for the studies, but not their substance. The reports are really about the writers’ evolving understandings of teaching and learning. In this respect, the core foci in the reports are pedagogical rather than technological phenomena. The core phenomenon was ‘equity’ in the classroom for Sue, for example, just as it was the real meaning of ‘integration’ for Pip, or what constitutes ‘quality teaching’ for Paula. Similarly Mike’s study can be read as being primarily about challenging traditional forms of sequential narrative more than it is about Hyperstudio, just as Jill’s is about information literacy rather than computer literacy. Karen’s email projects are about authenticity in student writing, and Kieran’s study is about the impact of peer tutoring as a skill building technique. Equally, all of the facilitator stories are about building the professional (rather than the ICT) confidence or competence of colleagues, either in terms of the visual language curriculum and whole school development contexts as in Shelley’s study, or in terms of ensuring the sustainability of the professional development programme beyond the input of the facilitators or the term of the contract in the studies of Lyn, Craig and Rochelle, and Sue and Audrey. The reports are thus detailed, often quite personalised, descriptions of ‘what worked and what did not’ as pedagogy, or as staff development, more than they are about what worked and what did not as ICT. Thus, they perhaps exemplify in themselves some of the ‘best practice’ effects of the ICTPD programme.

The studies for which written reports were produced are:

Teaching and Learning

- What Are Some of the Practical Strategies to Consider When Integrating ICTs into a New Entrant Classroom?
- How Can I Optimise Computer Use in My Classroom?
- The Way IT Was!
- Characteristics of Information Seeking Behaviour: A Comparative Study Around the Use of ICT and Print.
- Non-Linear Narratives: Where Might I Click to Start?
- Email@classroom.school.nz: How Can I use Email Effectively to Enhance the Information and Communication Skills of my Students?
- Peer Tutoring For The Development of ICT Skills. Can Peer, rather than Teacher Tutoring, Become the Dominant Methodology? What Works Best? How Do I Know?
- How Can I Increase the Equity of my Students’ Use of One Computer in a Class of 30?

Facilitating ICTPD

- Maintaining the Momentum: Life After the ICTPD Facilitators Leave.
- Meeting Teachers’ Needs (When I don’t know what they are ... and nor do they!)
- Developing Confidence in Lead Teachers.
- Towards Progression in Textual and Visual Literacy.

Project Summaries

Action Research Study 1 - Teaching and Learning

What Are Some of the Practical Strategies to Consider When Integrating ICTs into a New Entrant Classroom?

by Pip Cleverley, primary school teacher and assistant principal.

Context

A New Entrant class in a medium sized, urban decile 5 Contributing Primary School in Timaru.

The Problem

As a junior class teacher some of the hardest things about implementing Information and Communication Technologies (ICTs) with my classes over the years have been: finding computer programs that are user friendly for five and six year olds, managing the routines, rosters and teaching sessions and integrating the use of ICTs in junior class programmes in terms of curriculum objectives. Even though there was a lot of emphasis in PD placed on integrating technology into classroom programmes, most of my colleagues and I were building units around the computer programs rather than using the computer as a tool to enhance learning opportunities for our pupils. Most programs I had tried had been too difficult for children of this age to use independently. I had tried using word processing programmes with limited success due, in the main, to the fact that they were too complicated for children at this stage of writing.

The task I set myself was to investigate how I could truly 'integrate' ICTs by looking at how I could use one single software package (KidPix) in a variety of units of work over the year.

Gathering Evidence

The research was carried out over a year with my own New Entrant students. I collected data over 10 two-week cycles, each representing a different learning activity using kidpix. Copies of lesson plans which included an ICT component, were collected, as were copies of all my written instructions and templates used when setting up activities. I recorded at least 15 minutes of video and/or audio randomly during each activity so that I could later study both my own actions and interactions and some of the students' interactions and conversations while I was not present. I also videoed the classroom generally to show what was happening with the non-computer groups at the same time. Comments made by parent helpers were noted and dated as the cycles progressed.

Samples of the children's plans and work from each activity were collected and at the end of each cycle I made formal entries and reflections in my journal, which included suggestions for the next cycle. Formal recorded interviews with a couple of colleagues, in which we discussed issues and progress to date, were recorded midway through the research.

Conclusions

What I learned as a result of the research went well beyond the pragmatic considerations of teaching strategies and management techniques. My own beliefs now are that for ICT to be truly integrated it must be a planned part of everyday teaching and learning, and must be embedded in teaching which fosters creativity and higher order thinking. I believe that the keys to successful integration are not just the use of a wide range of teaching strategies, systematic inclusion of ICT in planning, and careful consideration of management and routines, but also the use of ICT as an information source, as a means of communication and presentation and as a context for thinking. Indeed all the things that made the integration of ICTs effective for me were in fact also the keys to good practice in *any* teaching and learning activity.

Research Plan

Sub-Questions	Data on Teaching	Data on Learning	Sampling & frequency
What are my current and evolving understandings and definitions of 'Integration of ICT'?	~Define integration as I see it now by describing a lesson/unit in which KP IS integrated and some lessons in which it is NOT integrated. ~Formal recorded discussions with colleague or evaluator once or twice per term to discuss 'integration' of KP to date.		~Write down my current definitions in journal once a month. ~Ongoing collection of written materials.
What do students use KP for in my class? What are my objectives and what do they actually do? How does the KP activity relate to other activities going on at the same time? How does the KP activity relate to other activities which happened before or will happen later?	~Copies of all lesson/unit plans with ICT(KP) components ~Copies of all written instructions etc given to class when setting up ICT activities. (Write verbal instructions etc as journal entries. Or tape record those instances). ~Journal entries answering these questions on the basis of observation data once a fortnight. My thoughts on progress, feelings etc.	~Copies of work produced on computer (files on disk etc) encourage saving each session's work under new name. ~Set aside 'special' observation days to record (audiotape or videotape) students' conversations while using the computer & the rest of the class activities.	~Choose a different day/or half day each week when students are using KP and tape record up to 15 mins minutes of KP activity AND the classroom activities going on around it over the day. ~Do two types of recording: up to 5 mins focussed on computer users including audio then up to 5 minutes of the whole class. Could do the computer group with audiotape only and the whole class with video in corner that I turn on & off every so often?

Action Research Study 2 - Teaching and Learning

How Can I Optimise Computer Use in my Classroom?

by Paula Poulter, primary school teacher.

Context

A mixed Year 3-4 class in a medium sized, urban decile 5 Contributing Primary School in Timaru.

The Problem

At our school we were developing our Pedagogical Statement. Part of this statement was that *powerful learning* occurs when learning is placed in a meaningful context to children and different ways of knowing and thinking are recognised and used. It is most *powerful to learn* information literacy, higher thinking skills, communication skills and social and co-operative skills. Also, *powerful teaching* is when teachers provide quality feedback and feedforward, have high expectations, use a variety of teaching approaches and ways of knowing, and use reflective practice to improve teaching.

My research question revolved around putting some of those ideas into practice in relation to computer based activities, and whether this meant that I was indeed 'optimising' computer use in my classroom. In this regard, I decided to define optimising as: 'what I could do to increase the frequency, variety and quality of computer use in my classroom'.

Gathering Evidence

Data was gathered on one day a week on random days for 20 school weeks in all, covering a number of different units of work each involving a number of different ICTs. Children completed logs of their time at the computer and I also kept a record of my time interacting with the students at the computer. I also recorded my curriculum and other reasons for using ICTs by writing regular reflections in a journal.

Conclusions

Increasing the frequency and variety of ICTs used in my annual teaching programme was the most straightforward aspect of the study, though I have decided that using computers in my classroom needs to become part of my regular planning to have the most effect.

Increasing the *quality* of computer use in my classroom was more problematic, though it helped that I worked on the assumption that effective integration of ICT resources involves incorporating the key ideas from our pedagogical statement about powerful learning in children's units involving ICTs. Optimising quality in my ICT use, then, involved fostering active participation and motivation among learners, deliberately developing social and co-operative skills, allowing learners to create, interpret and organise knowledge, and encouraging visual forms of presentation.

For me as the teacher, moreover, *powerful learning* was seen in my using conscious reflective practice to improve my teaching.

Research Plan

Sub-Questions	Data Me	Data Them	Sampling & frequency
<p>What do I do to increase the frequency with which students use ICT?</p> <p>What do I do to increase the variety of ICTs used by students?</p> <p>What do I discover about the quality of student use of ICTs?</p>	<p>~Copies of all lesson/unit plans with ICT components.</p> <p>~Copy of school Pedagogic Statement. Readings on powerful learning.</p> <p>~Copies of all written instructions etc given to class when setting up ICT activities. (Write verbal instructions etc as journal entries? Or tape record those instances)</p> <p>~Journal entries answering these questions once a week? Feelings? Etc.</p>		<p>~Ongoing collection of written materials.</p> <p>~Weekly review of questions about me in journal.</p>
<p>How often do students use ICTs in my class, and for how long?</p> <p>Does the variety of ICTs used by my students increase over time?</p> <p>What kinds of activities do students use ICTs for over time?</p> <p>What sorts of things do I interact with the students about when they are using the computer?</p>	<p>~Random days of recording includes my interactions with students at computer.</p>	<p>~Students at computer complete a LOGSHEET on which they register the date & time, their name, the software they are using, what the task was, how long they were using the computer.</p> <p>~Copies of work produced on computer - encourage saving each session's work under new name.</p> <p>~Observation times to record (audiotape or videotape) student conversations at the computer</p>	<p>~Students fill in the Logsheet every time they have a computer session.</p> <p>~Choose a different day each week and tape record max. 30 minutes of computer activity. (Recording 5 minutes every so often for several students over the day)</p>

Action Research Study 3 - Teaching and Learning

The Way IT Was!

by Graham Woodhead, primary school teacher.

Context

A Year 8 class in an urban, decile 2 Full Primary School in a North Island provincial city.

The Problem

Before the ICTPD programme the children had little by way of technology in their homes; some don't have many books. My classroom had one PC and the school IT suite had 12. At that time nothing was connected to the net, but the plan for the first year of the PD programme was to link the suite first and later, the classroom PCs, so that teachers could use the internet in their learning programmes.

Accordingly, I originally chose to investigate the use of the internet in my classroom, with a specific focus on how it might be a powerful learning tool for pupils. I thus embraced the plan for installing the Net in classes with enthusiasm as I saw the internet as a means by which children could achieve at least two major learning objectives:

- developing new learning skills and enhancing some that they already had.
- gaining rapid access to the potential wealth of information available on the net.

However, what was to have been a story showing how the children and I achieved learning goals in a 'wired' environment, turned into one of dealing with ongoing technological barriers and hurdles.

Gathering Evidence

Initially my research methodology was to observe and record children working with me with the aim of investigating the achievement of learning goals. The observation data would be enhanced by video footage and some photographs of us working together. Data collection would also consist of keeping a full diary over a two-and-a-half year period of all significant incidents that occurred in the process of getting the internet working effectively in my classroom.

In the event, however, the close observation of students could not happen until the very end of the ICTPD cluster period. For reasons that become clear in the story of the latter two years of the cluster programme in our school, the main evidence-base for my 'revised' action research became my reflective journal and meeting logs.

Conclusions

We learned much at the school about establishing a network and internet system for teaching and learning. We learned that before setting up any system in a school it is necessary to undertake thorough and extensive research before making a commitment.

We learned to shop around. We learned that it is worth the effort to seek *independent* advice. We learned the need to look ahead into the likely demands to be made on systems and what technology development is in the offing. And we learned to ensure that the system *works* and to budget realistically for maintenance. However, above all, perhaps, I still believe ICT can be a core part of education, and we learned not to let technical barriers to allow us to give up, even if they mean we have to wait longer and suffer more frustration than we should.

Research Plan

Sub-Questions	Data Me - teaching	Data Them - learning	Sampling & frequency
What are the current problems I'm experiencing with getting classroom internet access?	~Make list of barriers and difficulties already experienced. ~Write description of my ideal scenario for internet access and use in the school & my class.		~Make lists Early Term 2. Log actions I take re getting better access over T2 and into T3 if necessary. ~When, and if, access is possible, gather data on class usage (possibly T3 & T4 if access issues solved).
Getting access What do I do to improve my class's access to the internet?	~Journal of decisions made, feelings about progress of research ~Minutes of meetings re access. ~Log of interactions with (other staff), management, suppliers etc re class access. ~Copies of any written instructions, handouts re internet use etc.		~Brief journal entry each time decisions made about access. (avg. c. twice a week?) ~Log kept for every action at this stage – find out if this is manageable. ~Ongoing collection of written material in a folder.
Usage: (When I do get access for classes) What do I have to do to set up internet access? What do I do in class to encourage effective use of the internet by students? What problems do my students face in using the internet?	~Copies of any unit plans incorporating internet strategy ~Set one internet 'lesson' to be recorded as 'self observation'. ~Audio tape one whole class demo. Also video one or two 'extension' class internet activities. ~Copies of task sheets given to extension class.	~Recorded observations of two-three students working at computers (video and/or audio tape next to a computer). ~Versions (saved and/or printed copies) of work done by selected students at computer – esp. work done during observation time. Copy the 'Histories' or the internet files.	~Observation of them will be either c. 15 –30 minutes of recording, depending on whether it's a class demo or a library extension session. ~Record the whole of the session (1 class demo 1-2 extension classes).

Action Research Study 4 - Teaching and Learning

Characteristics of Information Seeking Behaviour: A Comparative Study Around the Use of ICT and Print

by Jill Stotter, secondary school teacher and Director of Information Services.

Context

Two Year 10 classes in a medium sized, urban, decile 7, multicultural Secondary School in Auckland.

The Problem

The international research literature suggests that any successful information use by students requires the teaching and learning of specific information skills within a process and within an authentic learning task. It also suggests the need for planned information leadership within the school.

But what are the specific ‘information skills’ acquired in an ICT context? What do teachers and students see as the “value added” by using ICT based information resources? How do ICTs compare as sources of information with print and other media in teachers’ and students’ minds, and how can schools plan for sound integration of ICTs into teaching and learning? This research looks at one small aspect of this larger issue.

Gathering Evidence

As the Director of Library Information Services in the school, part of my job was to work with staff to incorporate information and research skills into their teaching programmes. In the research, the teacher and I collaboratively developed two Biology units with a significant Information Processing (IP) component and taught them to two different classes. The two units studied were a) Reproduction and Genetics, and b) Ecology. In the first unit, Reproduction and Genetics, Class A used only ICT resources to access, use and present their information, and Class B used only print resources. For the second unit, Ecology, Class B used only ICT resources and Class A used only print resources. In this way, each class received the same learning and teaching opportunities but could compare their print-based experience with their ICT-based ones. Both classes completed their two studies using a 6-stage information process in which information skills such as questioning, notetaking, analysing, organising, and presenting were taught to students throughout the process.

Data was collected through teacher and researcher journals, classroom observations, recorded teacher-researcher conversations, informal interviews with students during the process, and formal interviews of a randomly selected group of students from each class at the end of each unit of work.

Conclusions

We were surprised at the relatively low level of literacy skills and strategies and information literacy demonstrated by both classes, especially when using online resources. To this extent the study if anything confirmed a suspicion that students may

have been allowed to “run before they learnt to walk” with ICTs. It also confirmed our belief that although Information Skills have been included as one of the eight Essential Skill Areas in the NZ Curriculum since 1993, information skills are not yet well taught at all levels or subject areas to **support** literacy and the use of information technologies. Unless there is shared knowledge and understanding of the need for an information literate school community, and the information literacy skills are actually taught and practised as part of whole school process, learning with ICTs may still be shallow learning.

On the other hand, student comments about the unnaturalness of using *only* print or ICT resources, was heartening to both the teacher and the researcher. It indicated that these 21st century students might glimpse a world of learning in which learners and teachers will choose the tool most suitable to the particular task.

Research Plan

Sub-Questions	Data Us - Teaching	Data Them - Learning	Sampling frequency
What are the comparative advantages and disadvantages of print and ICT resources in teaching and learning Information Skills?	~Identify teacher and classes to share teaching/research with.	~Survey or talk to all teachers who I teach for/with on why they use me –note results.	~Make lists Early Term 2. ~Investigate each of the 3 types of session for TWO classes over 2-3 terms.
Strategies compared over two types of IP lessons: In class intro – in library sessions – in class follow up. For each lesson: What did we SAY/DO to promote IP capability or independence in lessons? What IP abilities or processes did the students &/or teachers demonstrate using the two different types of resources?	~Journal of decisions made, conversations held with teacher, feelings about progress of research. ~Copies of lesson plans for each type of IP lesson. ~Copies of any written instructions, handouts etc.	~Minutes or notes made during collaborative planning sessions with teacher. ~Hard copy or e-copy of samples of student work.	~Brief journal entry each time decisions made about structure, planning content etc of the IP sessions, and after each ‘observation session’. ~Others: ongoing collection of documents in a folder.
How did each class compare to the other in terms of Q1 & Q2? After examples of all lesson types have been observed: How did each lesson type compare in terms of Q1 & Q2?	~Six ‘self observation times’ with two selected classes – Log interactions (content focus) with students, which was about either ICT or print or IP issues. Either Video/audio tape or colleague completes an observation checklist.	~Recorded observations of students working in each unit & with each resource set. ~Interviews with students on their IP strategies during and after the lessons.	~Record the class for ONE teaching session per lesson type, for two classes. (ie: 6 recorded observations in all, 3 with each of the same 2 classes). ~Choose dissimilar classes doing the same units but using different resources.

Action Research Study 5 - Teaching and Learning

Non-Linear Narratives: Where Might I Click to Start?

by Mike Whiteman, primary school teacher and cluster facilitator.

Context

Teachers and classes from Year 2 to Year 8 in a medium sized, urban decile 9 Full Primary School.

The Problem

Most of the writing that students are exposed to and create while at Primary School is linear in nature. That is, the sequence is predetermined by the writer. A second reading will not alter any of the events.

Encouraging interaction with, and the development of, non-linear narratives can help students think carefully about choices and possible consequences that might follow according to decisions made. A variety of terms have been used to describe this form of communication, such as pick-a-path, twist-a-plot, interactive fiction, and tree fiction. One engaging aspect of non-linear narratives is that they contain secrets that are not revealed by turning to the last page. The development of the literary process takes on a different manner to that with traditional text. It proceeds in response to an interactor.

Teachers interested in developing this form sometimes wonder where to begin, hence this small scale action research in which I worked with several teachers and classes to investigate four classroom organisers that might be used to initiate student experiences with non-linear narratives.

Gathering Evidence

A number of teachers who expressed interest in working with this form, agreed to work with me in trialling the techniques. We undertook short workshops that focused on one of the approaches for each teacher, then we used a particular approach with each of their classes.

During the class involvement we observed the students working and held ongoing formal reflective discussions on the introductory method used, and the impact of this on classroom implementation and achievement.

Conclusions

Helping students reflect on the consequences of the choices they make is an important aspect of teaching. It can often be the omitted step which 'raises the bar' in terms of fostering higher order thinking in relation to reading and writing activities of all sorts. We found that using non-linear narratives can help with this development and also add to the range of text forms experienced by students.

Research Plan

Sub-Questions	Data Me - Teaching	Data Them - Learning	Sampling & frequency
What are the strategies students currently use to plan interactive narratives?	~Teacher meetings / discussions / interview notes.	~Student interview / observation.	~Ongoing during the trial of each strategy.
What previous experiences support the planning process?	~Identification and provision of range of experiences - Lesson plans / resources.	~Audio / video capture of student interaction / reaction. ~Student interviews.	~Ongoing.
What resources can I put in place to support the planning process?	~Journal entries – trial range of resources.	~Student observation.	~Ongoing.
What teaching strategies best support the planning process? What works to foster questioning / collaborative groups / presenting hypotheses?	~Video observations of teaching.	~Student interviews & questionnaire.	~Ongoing.

Action Research Study 6 - Teaching and Learning

Email@classroom.school.nz: How can I use Email Effectively to Enhance the Information and Communication Skills of my Students?

by Karen Newbrook, primary school teacher.

Context

A mixed Year 5-6 class in a medium sized, decile 10, Full Primary School in a semi-rural setting in Taranaki.

The Problem

In 1998, when I was studying part-time for a Diploma in Computer Education, one of my Year 3 pupils had an uncle who was “wintering over” in Antarctica. During the middle term, the class made contact with him through the school email, keeping in touch with him once a week for three months.

When he returned to New Zealand in October, just after sending us an amazing photo attachment of the first sunrise for the Antarctic year, he came to New Plymouth to visit us in person, so the students were able to meet the person they had been writing to all that term. They were totally overawed at his surprise visit, but still had many questions to ask, once they were face-to-face with him.

This became the incentive for an intensive study on Antarctica, using first hand knowledge gained from the ice, and so began my interest in emailing people in other countries. It still left me with a lot of questions, though. What software, websites etc were best to use? How could we improve student contact time on the computer for emailing? How best to monitor student progress and achievement? What are the language learnings involved? How to find appropriate correspondents, and so on.

As our ICTPD action research, therefore, the teacher librarian and I decided to do a more formal investigation of these aspects of international email projects with students.

Gathering Evidence

During the two years of action research, the librarian and I used a variety of monitoring techniques to record our progress:

- Anecdotal records of students’ progress contained in reflective journals.
- A logbook of what happened each week, and problems that arose.
- Document analysis of records of ICT team meetings, Board of Trustees minutes, and school newsletters.
- A tracking sheet of the class to monitor their time on the computer for emailing.
- Checklists for each student to keep track of the emailing steps.
- Survey of the classroom teachers about their emailing skills.
- Help sheets for following the process of sending an email.

Conclusions

Our investigation into the use of email as a means of communication and information gathering turned into a real learning experience for everyone involved – principal, teachers, librarian, students and even our faithful technician, who got many calls of distress for help with the network throughout the whole procedure. Now we look forward to the next giant leap forward – how to use cell phones with blue tooth capabilities to send wireless emails. We suspect that, as usual, it will be the students who will be still one step ahead of their teachers when it comes to the technology. Our task will be to stay one step ahead of them in relation to the various communication skills involved.

Research Plan

Sub-Questions	Data Me - teaching	Data Them - learning	Sampling & frequency
Starting Out: What is the best programme to use?	~Minutes of staff/group meetings of ICT concerns and plans. Contract notes for each programme tried. Pros and cons of each programme. Issues involved -privacy, inappropriate material, ease of use.	~Copies of emails the children send and receive on the different email programmes.	~Weekly notes on children involved in emailing that week and reflections from the librarian on how the children coped with each programme.
The Process of using email: How effectively do the children use their email address?	~Journal entries re. advantages of each programme - ease of use, availability/access/ duration on line during daytime.	~Ability to get into/check their own email address. ~Unsuitable information arriving with their mail. ~Copies of anything sent to them over a certain time period. Checklists of emailing skills.	~Log entries on class list of who goes and what they achieve in that time. Do they use their time effectively?
Managing the email: When do I fit this into my class programme? When are the computers available to be used? How will having the classrooms networked affect the success/ease of use?	~Timetable for library computer use. Details of skills children learn/accomplish (in conjunction with the librarian/supervisor).	~Copies of their emails written to gain information.	~Weekly group to hand in their skills sheet with dates of skills covered. ~Observation/ or interview with librarian to look at her role in helping the students.

Action Research Study 7 - Teaching and Learning

Peer Tutoring For The Development Of ICT Skills. Can Peer, rather than Teacher Tutoring, Become the Dominant Methodology? What Works Best? How Do I Know?
by Kieran Browne, primary school teacher.

Context

A Year 6 class in a medium sized, urban, decile 9 Contributing Primary School in Taranaki.

The Problem

The children in my class are quite technically competent. They were used to producing written work on word processors and multimedia programs, seeing ICT as one of a range of options, and were well aware of expectations regarding originality (eg NO clip art) and procedures (eg drafting straight on to computer, not merely ‘presenting’). There is an understanding that a child needing a machine can roam the school and, on finding an available machine, enter the room and commence work without disturbing the classroom teacher. I have always believed in the superiority of the model of teaching alongside, rather than in front of, pupils and apply this whenever I can through ‘Just In Time Learning’ of skills and other things. My own interventions, however, did not seem to explain their high levels of competence alone. So I set out to investigate more about how the children become competent, possibly talented, users of ICT. As part of an ICT cluster which regularly shares pupil work across its six schools and beyond, I knew that we were producing some good work. But I didn’t know much about how they have gathered their skills. Who learns what from whom? And what are the students’ attitudes to these ways of learning?

Gathering Evidence

I gathered data about students’ interactions and skill learning for two trials per term. Data were gathered about the students’ ICT skills acquisition in relation to Hyperstudio and some other applications, which were chosen because they have advanced features that need learning beyond a superficial introduction.

Data came from my own extensive journalling, direct observation of the students, surveys of students at various points through the year, and notes from student ‘conferencing sessions’ about their work.

Conclusions

I became aware that I was dealing with a rather special group of children. A culture of cooperation and mutual respect was already well-established and the majority were self-motivated and well supported in their work. They *expected* to help each other out, and knew how to do so. Within this context my surveys proved to me beyond any doubt that peer tutoring ensured a much wider spread of computer skills than I could have achieved unassisted. Perhaps more importantly, peer tutoring seemed to reflect and strengthen a school-wide culture of cooperation - a learning community, indeed.

In creating this expertise sharing culture, students identified that ease of access to peer support was crucial for their learning. They needed to be working in a room where it was acceptable to go and ask anyone for help, and they needed to share each others' work regularly in order to see new things. They also needed to become aware of who in the class could do what, including the teacher. Students also felt that an expert (perhaps the teacher) is especially needed to kick start the use of a new piece of software.

Research Plan

Sub-Questions	Data Me - teaching	Data Them - learning	Sampling & frequency
What have I tried so far and to what effect?	~Journal entry listing strategies tried so far and perceived/ actual outcomes.		
What can I try over the next few terms?	~Brainstorm possible contexts for and systems of peer tutoring.		
At what points do skills get too watered down?	~Journal entries and participant observation of two trials per term.	Survey children at different stages of the learning process.	~Two trials per term per term.
Which activities create their own momentum?	~Comparisons of success.	~Return to conference children after a break - was the learning really established?	~Conferencing of sample group after each trial.
Which methods fail to gain whole class involvement?			
Is whole class involvement always necessary or desirable?			

Action Research Study 8 - Teaching and Learning

How Can I Increase the Equity of my Students' use of One Computer in a Class of 30?
by Sue Cattell, teacher.

Context

A Year 4 class in an urban, decile 10 Primary School in Auckland.

The Problem

We cannot, we are constantly told, achieve excellence in teaching and learning without 'equity'. But what is 'equitable' in terms of students' access to and use of ICTs? Making sure that all students have the opportunity to work on the computer, for example, can be very difficult in most primary school classrooms. Moreover, equitable access may not mean 'equal amounts of time', as students may need differing amounts of time to complete activities. How does a teacher know what is equitable? How do we provide equity in use when there is only one computer available in the classroom and 30 students to use it; when all have unique teaching/learning styles; when we use technology differently in our classrooms?

These were some of the questions which guided my study of three different strategies which were aimed at fostering more 'equitable' use of ICTs in my own classroom.

Gathering Evidence

I gathered data on three different strategies for increasing equitable use of the computer in my classroom over a period of 3-4 Terms. Each strategy was tried for some time within a whole unit of work. Observation times were set aside in which I gathered data about my interactions with the students and their interactions with each other. I kept an ongoing journal of my reflections on how the strategies were going, as well as archives of all student work and notes on my conversations with them about 'fairness' issues etc in the way computer access and use was organised.

Conclusions

The paired situation was the most successful strategy in terms of student satisfaction and completed product. As an extra activity, I tried the group collaboration method. I found that three students around a table were easier to manage, given the space I had. I found that there was more interaction between the students, although the activity took longer, ... and the noise level also increased!

In terms of equity, I realized that equity does not consist of control of the keyboard, and that learning was not confined to the most 'active' user. I also concluded that 'equitable' time does not necessarily mean 'equal' or identical time or access, and that it was more a matter of dealing flexibly with diversity than it was about imposing uniformity on all of them. Indeed, equity was something about what I, and more importantly perhaps, the students, regarded as 'fair' and 'reasonable' for individuals in terms of getting the tasks done, rather than being too 'rule' and 'roster' bound.

Research Plan

Sub-Questions	Data Me - teaching	Data Them - learning	Sampling & frequency
What rotation or usage strategies could I try?	~Make list of strategies tried already and possible future ones. ~Decide an order of implementation		~Make lists Early Term 2. ~Try at least one strategy for 1-3 weeks in Term 2, then others over T3 & if necessary T4.
Then, for each strategy: What did I SAY/DO to promote equity of use in this strategy?	~Journal of decisions made, feelings about progress of research. ~Copies of any unit plans incorporating computer rotation or usage strategy. ~Copies of any written instructions, handouts etc.		~Brief journal entry each time planning decisions made about equity of use, and after each observation session. (avg. c. twice a week?) ~Others: ongoing collection in a folder.
How EFFICIENT was the strategy? How FAIR was the strategy? At end of each 2-3 weeks of trying a strategy, review the data with these questions in mind – decide on next strategy.	~Set one day or half day per fortnight to be ‘observation time’. ~Log any interaction with computer students which was about equity (efficiency or fairness) in any way over the day/morning etc? The day in which the computer task & rotation system is set should be one. Journal reflection that lunchtime or evening.	~Logs of time individual students spend on computer. ~Versions (saved and/or printed copies) of work done by selected students at computer FOR EACH session. ie: a product for each session at computer, even if incomplete.	~Either log all students’ time on computer and product completed in that time say one or two days each week; OR choose sample of c. 6 students of differing abilities and log their computer time and products every time they have a turn for a given unit of work or task.

Action Research Study 9 - Facilitating ICTPD

Maintaining The Momentum: Life After the ICTPD Facilitators Leave
by Craig Price & Rochelle Jensen, cluster facilitators.

Context

A mixed rural-urban, all primary school ICTPD cluster in the Tauranga region.

The Problem

Reflecting on our initial experience as facilitators of an ICTPD cluster, we felt very happy about the fact that we were delivering a professional development programme that was engaging and gave new skills to participants for immediate use within the classroom. Our concern, however, was the ongoing element of transferral and continuing flow on effects of our practicum approach. We wanted to ensure that we utilised effective systems to try to maintain the progress and integration of ICTs made by teachers as a result of participating in our practicums. We wanted to ensure that our practicum participants' development continued once they had received the intensive support offered by our professional development project, and that it wasn't neglected when the support from us wasn't as high. Were we providing something that was sustainable in the longer term 'when we left the building'?

Gathering Evidence

We used a collaborative cyclical action research model of action-observation-reflection as we investigated the flow-on effects of each of the four key aspects of our ICTPD model: Lead Teacher practicums, 'Techie Brekkies', facilitator support at Syndicate meetings, and 'Think Tanks'.

Data were drawn from the cluster baseline surveys, end of practicum evaluation sheets, end of project and individual school evaluations, copies of schools' ICT equipment booking sheets, teachers' unit plans developed with the facilitator during the practicum, as well as plans developed independently up to six months after the practicum, facilitators' journals, and transcripts of interviews conducted periodically with classroom teachers throughout the 3 year contract.

Conclusions

In reflecting on our three years of facilitating ICTPD, some key ideas have emerged that have helped us to ensure maximum momentum and sustainability in the programme. Some of these are things within our specific locus of control as facilitators, but others relate more to the general 'culture' of the school or cluster in which we were operating, and the extent of 'buy-in' from influential others such as the school management.

In particular, we have concluded that to ensure that momentum is sustained during an ICTPD project we must: help give ICTPD a 'place of importance' in the schools; provide professional development opportunities that are multi-level and evolve with the needs of the teacher-learners; try consciously to grow a team of ICTPD leaders in each school; give teachers a sense of ownership of their own PD; explore the visions

and possibilities of ICT and not just the practicalities; ensure that everyone participating is accountable to someone for doing something; and focus on facilitating changes in practice that stem from teachers’ values and beliefs about teaching and learning, rather than simply on delivering handy technical hints or ad hoc ‘lesson ideas’.

Research Plan

Sub-Questions	Data Me - teaching	Data Them - learning	Sampling & frequency
What aspects of TBs and Practicums are intended to have flow on effects? What are the expected flow-on effects?	~Make list of strategies tried already and possible future ones. ~Decide an order of implementation.		~Make lists late Term 1 ~Gather data on at least one or two TBs and one Practicum in Term 2, then others over T3 & T4.
Then, for each selected TB or Practicum: 1. What did we SAY/DO to promote flow-on during this TB/Practicum?	~Journal of decisions made & options considered re flow-on, feelings about progress of research. ~Copies of any TB & Practicum plans (highlight maintenance components). ~Copies of any written instructions, handouts etc from TBs & Practicums. ~‘Self-Observation sessions’ One observes other for set period of time, or video in back of room?		~Brief journal entry each time decisions made about maintenance, and after each observation session. (avg. once a week?) ~Others: ongoing collection of hard copies in a folder. ~Observations: choose max. of FIVE TBs or FIVE PRACTICUM DAYS per term & Log actions specifically related to encouraging follow up. ~Self interviews after each observation day?
During each selected class visit: What evidence do we have that flow-on has occurred? What particular aspects of TBs & practicums (skills, ideas etc) have ‘flowed on’? At end of each few weeks of trying a strategy for maintenance, review the data– decide on new or revised strategy for next TB or Practicum.	~Frequency & type of ICT use?	~Any written material expected of teachers. ~Field notes taken during class visits? ~Notes & possibly tape recordings of interviews with teachers. ~Video tapes of selected teachers’ end of year presentations? ~Questions on maintenance issues in PD evaluations etc.	~Choose 2-3 individuals from 2-3 schools.. Follow selected individuals in at least two schools over length of PD project (not random selection but representing the ends of the keen-reluctant and/or inexperienced with ICT-experienced with ICT continuums). ~Written evaluations by all participants for each practicum etc.

Action Research Study 10 - Facilitating ICTPD

Meeting Teachers' Needs ... when I don't know what they are ... and nor do they!
by Lyn Garrett, cluster facilitator.

Context

I was the primary school facilitator in a mixed secondary and primary school ICTPD cluster in South Auckland.

The Problem

As Facilitators in ICTPD we often say, and are often told, that we have responsibility for meeting the ICTPD 'needs' of the staff in the programme. Our programmes often begin with what we somewhat glibly call a 'needs analysis', or some sort of survey of the teachers as to their stated goals etc for the programme. However, it could be argued that 'meeting teachers needs' in an ICT context is a particularly difficult enterprise. ICT is arguably unique in that most of us are "digital immigrants". We did not grow up with computers and have had to learn a new language and new skills to cope with them. This has taken many teachers out of their comfort zones into new and largely uncharted territory. This in turn creates (at least) two major dilemmas for facilitators. The first dilemma is often discussed by facilitators and teachers as the "we/they don't know what we/they don't know" dilemma. How do we devise a PD programme based on their needs when they don't know what they are? The second, related but somewhat different, dilemma, especially as commonly discussed among facilitators, is what could be called the: 'they *want* this but they *need* that' dilemma. When I try to find out what teachers 'need' in terms of ICTPD, how do I reconcile the differences that crop up between what I think they 'need' and what they say they 'want'?

My action research study followed my experiences in trying to resolve some of these issues, and how I tried to effectively define, and meet, the 'needs' of the teachers in our cluster programme.

Gathering Evidence

In gathering data on the various ways I worked with teachers on their needs, I kept a journal of decisions I made and ideas I considered, as well as copies of any written material sent to them seeking feedback on needs (emails, logs of dates of communications, handouts given to schools etc). My co-facilitator and I also held regular (at least termly) meetings to discuss these and other issues of facilitation, and did some retrospective analysis of content of PD workshops. I also held termly interviews with selected teachers about how they had found the various 'needs analysis' processes.

Conclusions

I began the study because the usual superficial survey of teachers asking them what they wanted/needed from the programme was clearly not working for me. As a result of trying various techniques for getting more valid knowledge of teachers' needs, I have concluded, among other things, that at the start of a Cluster contract there will probably be certain things that everyone needs to be on board with. These will

include the underlying reasons for using ICT in schools, and also probably some basic skills in using computers. A specific programme tailored for novice users may be necessary. This might also pick up technophobes who try to avoid computers and PD at all costs.

Other practical strategies I tried that showed promise in resolving ‘needs analysis’ issues included:

- Holding syndicate meetings, where ICT activities directly related to upcoming classwork are planned.
- Working as much as possible in schools with individuals specifically focussing on defining needs.
- Getting teachers to choose from a selection of ICTs or ICT activities for workshops was both easier to organise and more valid than allowing the teachers either open or completely closed choice.
- Being assertive in my own language when arranging meeting and session topics or dates.
- Being prepared to invest a lot of preparation time at the start of the contract to create a wide range of instruction sheets etc for teachers rather than wasting time on this during workshop sessions.

It also seems obvious now, though it wasn’t then, that over such a long period as that involved in the ICTPD clusters, both their views and mine on what they want and need are going to change. Indeed the programme is probably only successful IF that happens. In this respect, a ‘needs analysis’ is not just something to be done at the beginning of the PD process and not repeated. Rather it is a constantly recurring requirement of the PD process itself.

Research Plan - Implemented over Terms 1-4, 2002

Sub-Questions	Data Me - teaching	Data Them - learning	Sampling & frequency
<p>What have I tried so far to increase speed and frequency in feedback?</p> <p>What have I tried so far to improve the quality/validity of feedback on their needs?</p>	<p>~Make a list of strategies tried and difficulties experienced already.</p> <p>~Brainstorm possible techniques to try & prioritise them.</p>		<p>~Make lists Early Term 2.</p> <p>~Implement strategies from mid T2 onwards.</p>
<p>Did the speed and frequency of feedback on needs from the schools/teachers increase?</p> <p>Did the quality/validity of feedback on teachers’ PD needs improve?</p> <p>Did the PD events cover all the identified needs?</p>	<p>~Journal of decisions made and ideas considered, feelings about progress of research.</p> <p>~Copies of any emails, logs of dates & content of conversations, visits etc. where seeking feedback on needs was involved.</p> <p>~Reflective discussions with colleague. Monthly?</p> <p>~Copies of any written instructions, handouts given to schools & teachers on feedback/needs analysis.</p> <p>~Retrospective analysis of content of PD workshops etc.</p>	<p>~Copies of any written feedback obtained (surveys, emails, etc.).</p> <p>~Log of timing and content of emails, phone calls etc.</p> <p>~(Termly) interviews with selected teachers about how they found the process.</p>	<p>~Keep logs etc for all relevant activities and interactions if possible. If not possible then think of sampling logging of certain schools or some of the teachers, and follow them through the rest of the programme.</p>

Action Research Study 11 - Facilitating ICTPD

Developing Confidence in Lead Teachers

by Sue Ogden & Audrey Harvey, cluster facilitators.

Context

We are the facilitators of an urban ICTPD cluster of six primary schools and one intermediate school in north-west Auckland.

The Problem

Our cluster vision was to make ICT an integral part of teaching and learning in each of the schools, and to motivate students to become independent learners. Equally though, throughout the contract our other main focus was to develop the confidence of the lead teachers in the schools to enable them to continue the vision and the development process within their own school at the completion of the three year contract.

The focus of our action research study, therefore, was to investigate what we as facilitators did that worked well, or did not work so well, in terms of building levels of confidence and independence in the Lead Teachers, so that the schools would be able to sustain aspects of the PD programme after the original three years of funded PD ended.

Gathering Evidence

Information on our own thinking and decisions came from our reflective journals and notes from planning meetings. During our 'in school visits' and during Lead Teacher workshops we gathered data in the following forms:

- Lead Teachers' Reflective journals.
- Examples of Lead Teachers' written plans.
- Examples of activities done by Lead Teachers with other teachers, and notes on progress made with children and other staff.
- Notes from discussions/interviews with lead teachers in their schools.
- Transcribed notes from tape recordings of some of the workshops.
- Observations from 'sharing time' in the schools.
- Notes from shared planning sessions.
- Examples of activities designed during workshops.
- Minutes from cluster management meeting minutes.

Conclusions

In conducting the study, we became conscious that Lead Teachers do not necessarily have the same vision as facilitators, and so the discussion of such things needs to be part of our development programme with them. In this regard, we confirmed the value of developing confidence in the Lead Teachers and focussing on their role as change agents, rather than just promoting in them technical expertise. Also, both we

ourselves, and some of the Lead Teachers too, could have very high and possibly unrealistic expectations of the extent of ‘change’ that a PD programme can achieve in a relatively short time span. We noted that practically all Lead Teachers at the end expressed a view that they needed to take stock of their own personal pedagogical modes and preferences before trying to inspire others.

It was also interesting to note that there remains a strong desire to continue networking and meeting together after the completion of the contract. We would like to think that this indicates the extent to which our contract work has tied these teachers together and given them a common developmental purpose. If so, it is a very satisfying outcome.

Research Plan

Sub-questions	Data – me	Data – them	Sampling & frequency
Increasing confidence and motivation in the LT role.	~Becoming a Lead Teacher. ~Survey their goals & school goals. ~Workshops. ~One-on-one in their classrooms.	~Results of what took place within their classrooms. ~Discussions and sharing of ideas.	~Twice a term at workshops. ~Twice a term one-on-one in their classrooms. ~Cluster management meetings.
Increasing their understandings of learning.	~Becoming a facilitator. ~Workshops. ~Assisting with in-school facilitation. ~Data as below.	~In-school surveys. ~Planning of syndicate facilitation. ~Discussions and sharing of ideas. ~Data as below.	~Once a term at workshops. ~Twice a term in their syndicates. ~Once a term under their direction. ~Cluster management meetings.
Increasing their independence.	~Developing an in-school facilitation programme. ~Data gathering will be done through: ~Workshops – videoed, discussions, examples, planning. ~In school – discussions, planning, examples, journal log, observations. ~Cluster management meeting minutes.	~Discussions and sharing of ideas. ~Data gathering will be done through: ~Workshops – videoed, discussions, examples, planning. ~In school – discussions, planning, examples, journal log, observations. ~Cluster management meeting minutes.	~Minutes/notes from Cluster management meetings as they occur. ~NB: Sue will focus on what is happening in an Intermediate school situation. ~Audrey will focus on what is happening in a primary school situation.

Action Research Study 12 - Facilitating ICTPD

Towards Progression in Textual and Visual Literacy

by Shelley Cook, Lead Teacher.

Context

Whole school development in a medium sized, rural, decile 2 Contributing Primary School in Taranaki.

The Problem

The ICTPD professional development programme has been a whole-school journey focussed especially on developing some indicators of progression in textual and visual literacy. The indicators will facilitate and enable continuity of the students' experience throughout years 1-6. The particular ICT focus of this study by the ICTPD Team Leader in the school, was on how to promote the effective use of graphics and text applications with ICT as part of the curriculum, and not as a curriculum in itself, on a school-wide basis. It tells the story of how one school established and trialed a set of *indicators of progression* in relation to text and visual literacy in the use of ICTs, throughout the school and across the various year levels.

Gathering Evidence

The Team Leader and cluster facilitator produced a starter paper for years One and Two, Three and Four and Five and Six, identifying aspects and types of ICTs which could be used within the Text and Visual Literacy Programme, and what the expectations might be at each level. Teachers then trialed, reviewed and amended these *indicators of progression* with students at each level within the school over a two year period.

Data were gathered in the forms of: the various editions of the list of indicators, the exemplars of activities for the various levels, observations of and discussions with students in classes, and journalised records of interviews and meetings with staff on their classroom trials.

Conclusions

As a result of the development of the indicators and exemplars, the staff now have an agreed, and fairly robust, set of criteria or benchmarks by which to assess progression in students' use of ICTs for curriculum goals related to textual and visual literacy. We have 'set the scene', and have completed the ICTPD programme, but of course we have not finished the broader planning process. For example, we still need to constantly review the documents, maintain the exemplars committee and timetable sessions for consideration of new samples for possible inclusion (at least once per term), put in a long term plan for ensuring new members of staff have sufficient training, and so on.

Research Plan

Sub-Questions	Data Me - Teaching/Leading	Data Them - Trialling /Learning	Sampling & frequency
What techniques / technical skills do our students currently have in using word processing / graphics programmes?		~Survey; students observed carrying out selected tasks.	~2/3 times per term.
What techniques / technical skills (word processing / graphics) do our students need – as tools – to enhance learning and improve the quality of written language.	~Notes of meetings with teachers; teacher journals capturing thoughts and perceptions.	~Observations of students ‘at work’; recordings of teacher/student discussions about work being undertaken / completed.	~Ongoing.
What are effective ways of teaching the skills identified above.	~Notes from teacher meetings; Journal entries – reflections from observations of children at work – what works, what doesn’t; notes from syndicate meetings with facilitator.		~Ongoing.
What constitutes ‘quality writing and graphics’ and how do they complement each other?	~Notes from meetings / discussions informed by readings / literature reviews.	~Students’ work; Observation of process of student composing / compiling work.	
How can school-wide examples of student work in graphics and written language assist us in the planning & assessment of learning enhancement related to ICT.	~Data from meetings with teachers based on their observations / journals; discussions to establish school-wide standards; access exemplars & ideas from TKI; teacher interviews...what is happening? How is it improving/ Next step?	~Students’ printed work – from drafts through to final copies – annotate & date & use to moderate at syndicate and whole staff level.	

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Appendices

Appendix 1. Baseline Survey Questionnaire, 2001

ICT Professional Development Programme 2001 SURVEY

This questionnaire is designed to contribute to independent research into the ICTPD School Cluster project. Individual responses will be kept strictly confidential to the cluster Facilitator and a Research team contracted to the Ministry, though the results of statistical and other analyses of the data may be published in non-attributable and aggregated form.

The survey is in 5 Parts. Please complete the relevant sections of all 5 PARTS.

PART 1. Demographics

PART 2. Professional Development in ICT.

PART 3. Development of ICT Skills

PART 4. ICT for Planning, Preparation, Administration etc

PART 5. Use of ICT with Students

PART 1 DEMOGRAPHICS

1. Name: _____

2. School: _____

3. Current position(s) of responsibility (DP, HOD, Syndicate Leader, etc.) _____

4. No. years teaching experience: 0-2 yrs 3-5 yrs 6-10 yrs 11-15 yrs
 16-20 yrs 21-25 yrs 26-30 yrs 30+ yrs

5. Gender Female Male

Primary Only

6. Year Levels this year Year Level(s) being taught this year: _____

<i>Secondary/Intermediate Specialist Teachers Only</i>	<u>Subject taught</u>
7. Subject/s taught this year:	Yr 7 _____
	Yr 8 _____
	Yr 9 _____
	Yr10 _____
	Yr 11 _____
	Yr 12 _____
	Yr 13 _____

8. How long were you actively involved with the ICT Professional Development Course?

- Less than one year
- One year
- Two years
- Three years

PART 2. PROFESSIONAL DEVELOPMENT IN ICT**9. Which of the following did you find to be the most effective ways to learn ICT skills?**

Please rate each option in the right hand box as it applies to you. Enter a 3,2,1 or 0 rating,

3 = strong preference. 2 = a preference. 1 = no view either way. 0 = would rather not work this way

		<i>Rating</i>
A	On my own, with written support material	
B	One to one with a tutor	
C	Working regularly with a partner	
D	In a small group	
E	In a large group <i>ie. lab situation</i>	
F	Other (specify)	

10. When working in a group within this Professional Development programme, which situation did you find most effective for learning ICT skills?

Please rate each option in the right hand box as it applies to you. Enter a 3,2,1 or 0 rating,

3 = strong preference. 2 = a preference. 1 = no view either way. 0 = would rather not work this way.

		<i>Rating</i>
A	to work with others at the same/similar levels of learning or experience re. ICT	
B	to work in groups with a mixture of levels of learning or experience re. ICT	
C	to work with staff from other schools	
D	to work with staff from my own school	
E	to work with members of my own department or syndicate	
F	to work with members of other departments or syndicate	
G	to work in separate primary or secondary groups	
H	to work in mixed primary-secondary groups	
I	Other (specify)	

11. Please list 3 or 4 specific goals or objectives that you had at the beginning of this programme. Please indicate how well they were achieved by writing a number 1-3 in the box alongside each objective.

- 1= This goal was fully achieved.
- 2= This goal was partially achieved.
- 3= This goal was not achieved at all.

<i>OBJECTIVES (BE AS SPECIFIC AS POSSIBLE)</i>	<i>RATING (1-3)</i>
a _____ _____	<input type="checkbox"/>
b _____ _____	<input type="checkbox"/>
c _____ _____	<input type="checkbox"/>
d _____	<input type="checkbox"/>

12. To what extent did ICT Professional Development programme meet your own personal expectations for ICT?

- A My goals were fully met
- B My goals were partially met
- C My goals were not met

13. Preferred PD Activities

Facilitators in the ICT Clusters are planning to use a range of types of professional development activities. Please read the following explanation of each type, and indicate your preferred option/s in the grid below. Note that clusters are not necessarily contracted to offer all of these types of PD. This is to get some idea of your current preferences.

Please indicate in the right hand the boxes how much each option appeals to you.. Write in each box a number 0-4 representing the extent of appeal of the activity. 4 = has strong appeal. 3 = has some appeal. 2 = no view either way. 1 = does not appeal. 0 = I would hate it

Rating 0-4

A	Study Groups: Teachers join a study group of three or more members with common interests and goals. The group meets regularly (eg lunchtimes, after school, evenings) to explore new and better ways of teaching, to share tips, resources, stories and to develop trial projects. The results of these trials form the basis of discussion at subsequent meetings. Project directors would provide ongoing advice and support.	
B	Technology Coaches: Every teacher could become a technology coach - good at something and prepared to help and support others accomplish this. The idea is that everyone can make a contribution to the ongoing learning culture in the school. Responsibility is shared broadly so that each teacher has an area of expertise and everyone is an expert in something	
C	Technology Mentors: Teachers who are highly skilled in certain areas are paired for a short time with less skilled teachers in order to pass on their expertise	
D	Tutorials: Short bursts of on-site learning – perhaps an early morning session on inserting graphics into text or organising bookmarks in a browser for those unsure of the methods. The agendas for these short tutorials would be based on teachers' needs	
E	Workplace Visits: Visits to ICT intensive workplaces would be organised so that teachers can see the impact of ICT and better understand the implications for learners and classrooms.	
F	Release Time: Time given to discuss and translate new ideas and strategies into practical classroom unit plans with the help of a mentor	
G	Professional Reading: A regular selection of reading material will be available, which describes the latest developments in teaching and learning with ICT and also developments which could have an effect on schools in the future. Those choosing this option will receive hard copies of key readings for personal study.	
H	On-the-spot Support: Facilitators will be available to provide classroom support for those teachers who feel unsure when first trialing the use of ICT with their classes	
I	Listserv Membership: This is an informal discussion group using email where teachers in the cluster can talk over problems and successes, ask questions and offer solutions. Teachers can gain confidence and may wish to join one or more of the many other listservs available for teachers.	
J	Workshops/Seminars: These will offer a varied programme of activities and will be scheduled outside school hours.	
K	School Visits: Visits to other schools both within and beyond the cluster to investigate initiatives that are being, or have been implemented	
L	<i>Other suggestions:</i>	

PART 3. DEVELOPMENT OF ICT SKILLS

14. Please indicate your level of achievement in each of the following ICT competencies before and after your professional development course in ICT. Tick the boxes which best reflect your skill level for both before and after the PD. IF YOU CURRENTLY DO NOT USE A COMPUTER AT ALL, PLEASE TICK THIS BOX & PROCEED TO PART 5.

For example:

a. BASIC COMPUTER OPERATION	Before PD	After PD
I use the computer to run one or two software programs that are available.		
I run two programs simultaneously. I have several windows open at the same time and can transfer information between documents.	√	
I troubleshoot successfully when basic problems with my computer or printer occur. I learn new programs on my own and can install software from a CD-ROM.		
I can install most types of software. I can download updates and executable files from the Internet. I can unzip compressed program files. I can update hardware drivers.		√
I can handle the basic administration of an NT, Novell or Macintosh network.		

a. BASIC COMPUTER OPERATION	Before PD	After PD
I use the computer to run one or two software programs that are available.		
I run two programs simultaneously. I have several windows open at the same time and can transfer information between documents.		
I troubleshoot successfully when basic problems with my computer or printer occur. I learn new programs on my own and can install software from a CD-ROM.		
I can install most types of software. I can download updates and executable files from the Internet. I can unzip compressed program files. I can update hardware drivers.		
I can handle the basic administration of an NT, Novell or Macintosh network.		

b. FILE MANAGEMENT	Before PD	After PD
I do not save any documents I create on the computer.		
I select, open and save documents.		
I save work in a variety of locations eg. local hard drive, a specified network location, floppy disk. I create my own folders to keep my files organised.		
I move files between folders and drives. I understand about directory paths and the use of folders.. I can use the find feature to locate files on the hard drive		

c. WORD PROCESSING	Before PD	After PD
I do not use a word processing program.		
I occasionally use a word processing program for simple documents. I generally find it easier to hand write most written work I do.		
I use a word processor for much of my written professional work <i>ie. memos, tests, activity sheets and home communication</i> . I edit, spell check and change the format of a document.		
I use a word processor for all my professional written work. I use editing and formatting tools with confidence <i>ie. tabs, headers/footers, auto-insertion, tables, footnotes, auto-numbering, bullets, hanging indents etc.</i>		

d. SPREADSHEET USE	Before PD	After PD
I do not use a spreadsheet.		
I understand the use of a spreadsheet and can navigate within one. I create simple spreadsheets and charts/graphs.		
I use spreadsheets for a variety of record-keeping tasks. I use labels, formulas, cell references and formatting tools in my spreadsheets. I choose charts which best represent my data.		
I am confident in the creation of complex spreadsheets with multiple formulae and circular references.		

e. DATABASE USE	Before PD	After PD
I do not use a database.		
I understand the use of a database. I can locate information from a pre-made database such as a library catalogue or school journal database.		
I create my own databases. I define the fields and choose a layout to organise information I have gathered. I can use my database to answer questions about my information.		
I can create complex databases with extensive search and analysis facilities.		

f. GRAPHICS USE	Before PD	After PD
I do not use graphics in my word processing or presentations.		
I open/create and place simple pictures into documents using a drawing program and/or clipart and/or a scanner.		
I can create and enhance graphic images using simple editing tools eg. Resizing, recolouring, cropping, rotating.		
I capture and edit images from a wide variety of sources eg. scanner, digital camera, Internet.		
I use sophisticated image handling software with confidence eg. Corel, Photoshop.		

g. INTERNET USE (WWW)	Before PD	After PD
I do not use the World Wide Web.		
I can access Internet websites to find information. I follow links from these sites to various other resources.		
I can successfully enter my own URLs and make profitable use of keywords in Web search engines to explore educational resources.		
I understand the significance of URL name structures and use 'and/or' queries and other advanced features of search engines		
I can create web pages using either HTML or an editing program such as Front Page.		

h. TELECOMUNICATIONS USE (E-MAIL)	Before PD	After PD
I do not have an e-mail account.		
I have an e-mail account but I rarely use it.		
I send and receive e-mail messages. I check my e-mail regularly and keep the size of my mail folders manageable.		
I am confident in the use of e-mail. I use attachments, store addresses and nicknames, have a signature, forward mail and use listservs.		

i. ETHICAL USE	Before PD	After PD
I am not aware of any ethical issues surrounding computer use.		
I know that some copyright restrictions apply to computer software.		
I am very clear about copyright restrictions as they apply to the use of software on both personal and school computers. I understand the function and significance of approved use policies and contracts.		

j. PRESENTATION SKILLS/MULTIMEDIA	Before PD	After PD
I do not use a computer presentation program.		
I am able to create a simple linear slideshow in presentation applications such as Powerpoint, Claris Works, KidPix or Hyperstudio. incorporating text and graphics		
I am able to create presentations which incorporate text and graphics, but also various multimedia elements such as sound, video clips and simple animations..		
I can create branching presentations incorporating methods of making presentations interactive such as buttons, timed links, or basic scripting etc.		

PART 4. USE OF ICT FOR PLANNING, PREPARATION, ADMINISTRATION, ETC

15. Please indicate in both columns the frequency with which you use ICT as part of your planning, preparation and presentation of classroom materials before and after the Professional Development course.

Enter a rating 1,2,3,4 or 5 for both before and after for each statement.

5 = Always 4 = Often 3 = Sometimes 2 = Rarely 1 = Never

Freq 1-5

	Before PD	After PD
I use Word Processors or a Desktop Publishing package to produce task sheets, tests, handouts etc.		
I access the internet for finding and collecting lesson ideas.		
I access the internet for assessment items		
I access the internet to get official documents from the Ministry, NZQA etc.		
I get lesson content materials from electronic encyclopaedias on CD ROM.		
I produce lesson materials using digital cameras, video editing, digitising, scanning etc		
I access the internet for professional readings, subject association newsletters etc.		
Other use of ICT for planning, preparation etc. Specify.		

16. How frequently have you used ICT before and after the Professional Development, for the following administration purposes?

Enter a rating 1,2,3,4 or 5 for both before and after for each statement below.

5 = Always 4 = Often 3 = Sometimes 2 = Rarely 1 = Never

Freq. 1-5

	Before PD	After PD
Recording or calculating assessments, marks and grades.		
Recording students' running records.		
Accessing staff notices.		
Email correspondence with colleagues on administrative matters		
Writing Reports for parents.		
Recording absences..		
Other (Please specify)		

17. How much do you attribute any personal shift in frequency of ICT use to the Professional Development course?

Tick the box

- Any change in my use of ICT is completely attributable to the Professional Development course
- Any change in my use of ICT is partly attributable to the Professional Development course
- Any change in my use of ICT is not at all attributable to the Professional Development course

PART 5. USE OF ICT WITH STUDENTS

18. Please tick one box in each column that best describes your level of confidence in using ICT in your classroom, before and after the Professional Development course.

	Before PD	After PD
I am not confident in using ICT in my classroom		
I am starting to gain confidence in using ICT in my classroom		
I am very confident in using ICT in my classroom		
I am extremely confident in using ICT in my classroom		

19. Please tick the boxes that best describes the overall extent to which you have integrated ICT into your classroom programme before and after the ICTPD.

	Before PD	After PD
I have not yet blended the use of any computer-based technologies into my student learning activities.		
I have once or twice included an ICT based learning activity into units of work that I plan.		
I include an ICT learning activity into several of the units of work that I plan.		
Most units of work that I teach contain learning activities which involve student use of ICT tools.		
All or almost all units of work that I teach contain learning activities which involve some student use of ICT tools.		

20. In which subject(s) (Secondary) or Learning Areas (Primary) have you used ICTs with students the most?

Name the subject or learning area and the type of software you used (e.g. internet, word processing...)

21. Please indicate the average frequency (using the 1-5 scale below) with which some or all students have done any of the following before you took part in the ICT Professional Development, and after your completion of the ICT course.

NB: Only put an entry in frequency section if students HAVE used ICT for such purposes. If they have not, then leave that activity blank.

Key to frequency entries:

*5 = Daily or almost daily 4 = Avg. 1-2 times a week 3 = Avg. 1-2 times a month
2 = Avg 1-2 times a Term 1 = 1-2 times over the year*

	Freq. 1-5	
	Before PD	After PD
Composing, editing and presenting creative work using Word Processors &/or graphics packages		
Composing, editing and presenting 'project' or content-based work using Word Processors &/or graphics packages		
Accessing or searching for information on the internet		
E-mailing other students or experts about a current topic or problem		
Presenting their learning in the form of computerised slide shows (mainly or exclusively text & pictures)		
Editing and composing multimedia presentations or videos using computer software (ie: including sound and moving images)..		
Data logging using external monitoring devices connected to a computer		
Working through content or concept simulations on computer		
Practising skills or reinforcing knowledge using content specific Drill and Practice programmes (eg: Maths Games, Reading Games etc)		
Learning from a computer based tutoring programme		
Writing computer programmes or scripting interactive presentations		
Accessing or searching for information on electronic encyclopaedias (eg: on CD ROM)		
Designing and/or creating web-pages to present learning		
Recording, calculating and analysing data using Databases or Spreadsheets.		
Faxing or phoning other students or experts about a current topic or problem		
Using the electronic catalogue to find appropriate reading in the library		
Other (specify)		
Other (specify)		
Other (specify)		
Other (specify)		

22. For the following statements, circle the words that best describe your situation as a result of participating in the Professional Development programme.

- (a) Using ICT, I now use *less/more/the same/* time planning than I did before I undertook the ICTPD.
- (b) Using ICT, I now use *less/more/the same/* time evaluating than I did before I undertook the Professional Development course.
- (c) As a result of participating in the ICTPD, I now offer *more less/the same/* creative ways to learn.
- (d) Using ICT, teaching has become *more/less/just as/* stressful as it used to be.
- (e) ICT has *increased/decreased/not altered/* my workload since I took part in the ICTPD.
- (f) Because of ICT, learning has become *extremely/quite/only a bit more/no more/* enjoyable and interesting than it used to be.
- (g) The introduction of ICT in my classroom has made learning *a lot/ only a bit/no more/* effective than prior my participation on the ICTPD.
- (h) ICT has made it more *easy/only a bit more easy/no more easy/* for me to teach the class as a whole.
- (i) ICT has enabled me to teach *much more/a bit more/no more* effectively than before I took part in this course.
- (j) Introducing ICT into my classroom has enabled me to teach *more/less/no differently* towards the students needs.
- (k) ICT has *improved/reduced/not changed* my students grades.
- (l) The enthusiasm of the students to learn has *increased/decreased/not changed* as a result of my use of ICT.
- (m) My own enthusiasm to teach has been *increased/decreased/not changed* as a result of my participation in the ICTPD.
- (n) As a result of ICT in my classroom it has been *easier/unchanged/not easier* to individualise teaching for my students.

23. In my opinion the main benefits to be gained from the use of ICT in schools are:

24. My greatest concerns about using these new technologies are:

Please rate each of the following as it applies to you, on a 0-2 scale.

2 = significant concern 1 = some concern 0 = no concern

		<i>Rating (0-2)</i>
A	The ongoing need to upskill myself in using new software packages	
B	Access to equipment for my own professional use	
C	Access to equipment for my students' use	
D	Equipment breakdown/ technical problems	
E	The need to change my teaching style	
F	Not knowing how to include the use of ICT in my teaching programmes.	
G	Keeping up to date with new developments	
H	Lack of time to cope with it all	
I	Lack of support	
J	Too much change, too quickly	
K	Lack of training	
L	My suspicion that they don't actually improve learning	
M	Unexpected changes to the daily timetable	
N	Feeling already too far behind	
O	Lack of keyboard skills	
P	Other concerns. Please specify :	

25. Please circle the response that best matches how strongly you agree or disagree with the following statements:

(a) ICT is making major improvements to the **efficiency** of curriculum delivery in my classroom.

Strongly agree agree disagree strongly disagree

(b) ICT is making major improvements to the **quality** of curriculum delivery in my classroom.

Strongly agree agree disagree strongly disagree

(c) Overall, the investment by schools in ICT can be justified by the teaching and learning outcomes.

Strongly agree agree disagree strongly disagree

Thank you for completing this survey. We appreciate the attention you have given it. This questionnaire has been developed by Vince Ham, Christchurch College of Education. It is based heavily on the Needs Analysis questionnaire developed by Liz Probert and Angela Longney for the Pakuranga ICT Cluster in the 23 ICT Cluster Schools Project 1999-2001. If you have any queries or comments regarding the questionnaire, please contact: Dr. Vince Ham, Christchurch College of Education. Box 31 065 Christchurch. Email: vince.ham@cce.ac.nz

Appendix 2. End of Project Survey Questionnaire, 2003



2001-2003

ICTPD School Clusters Professional Development Programme END-OF-PROJECT EVALUATION

This questionnaire is being distributed to all teachers who have been involved in the ICT School Clusters Professional Development Programme, so that you may contribute to the end-of-project evaluation of the Programme. It is part of an ongoing, independent research project on the ICTPD School Clusters.

Individual responses will be kept **strictly confidential** to the Research team, though generalised results, quotations and statistics may be published in non-attributable and aggregated form.

Please seal your completed questionnaire in the envelope provided, write your name and school on the back of the envelope, and return the sealed envelope to your cluster facilitator.

*Return completed questionnaire in its envelope to cluster facilitators before **FRIDAY 19 September***

The survey is in 5 Parts. Please complete the relevant sections of **ALL 5 PARTS.**

- PART 1. Demographics**
- PART 2. ICT Cluster Professional Development Programme**
- PART 3. Development of ICT Skills**
- PART 4. ICTs for Planning, Preparation, Administration etc**
- PART 5. Use of ICTs in teaching and learning**

PART 1: DEMOGRAPHICS

Cluster Name or Lead School: _____

Your Name: _____

(Needed for comparison with the baseline survey done at the beginning of the project)

School: _____

(Needed for comparison with baseline survey.)

Current position(s) of responsibility: _____
(DP, HOD, Syndicate Leader, MU etc)

No. years teaching experience: 0-2 yrs 3-5 yrs 6-10 yrs 11-15 yrs
 16-20 yrs 21-25 yrs 26-30 yrs 30+ yrs

Gender: Female Male

Year Levels taught this year: 0 1 2 3 4 5 6 7 8 9 10 11 12 13
(please circle year levels)

Subjects taught this year: _____
(Secondary / Intermediate Specialist Teachers Only)

Length/Duration of your involvement:
On the timeline (right) draw a line to indicate the timespan over which you received active ICTPD support as part of the cluster programme (Active support includes workshops, facilitator visits, conferences, seminars, etc)

2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D
<i>Example:</i> —————		

PART 2: THE ICTPD CLUSTER PROFESSIONAL DEVELOPMENT PROGRAMME

1. Please rate the effectiveness of each of the following strategies in helping you learn ICT skills in your particular ICTPD Programme?

Please rate each option in the right hand box as it applies to you. Enter a 4, 3, 2, 1 or 0 rating, 4 = Very effective. 3 = Effective. 2 = Partly effective 1 = Not effective 0 = Not applicable

		Rating
a	On my own, with written support material	
b	One to one with a tutor	
c	Working regularly with a partner	
d	In a small group	
e	In a large group <i>ie. lab situation</i>	

2. If you worked in groups within your PD Programme, which groupings did you find most effective for learning ICT skills?

(Please tick the appropriate box for each of questions a-d.) **Did you find it more effective to work in groups with...**

a	<input type="checkbox"/> others at the same/similar levels of skill or experience re. ICT	or	<input type="checkbox"/> a mixture of levels of skill or experience re. ICT	or	<input type="checkbox"/> either / no preference
b	<input type="checkbox"/> staff from my own school	or	<input type="checkbox"/> staff from other schools	or	<input type="checkbox"/> either / no preference
c	<input type="checkbox"/> members of my own department or syndicate	or	<input type="checkbox"/> members of other departments or syndicates	or	<input type="checkbox"/> either / no preference
d	<input type="checkbox"/> separate primary or secondary groups	or	<input type="checkbox"/> mixed primary-secondary groups	or	<input type="checkbox"/> either / no preference

3. Please list 3-4 specific goals or objectives that you had at the beginning of the ICTPD Cluster Programme, & indicate how well each was achieved by writing a number 1-3 in the box alongside each objective.

3 = Objective fully achieved. 2 = Objective partly achieved. 1 = Objective not achieved

GOALS (BE AS SPECIFIC AS POSSIBLE)

RATING (1-3)

a	_____	[]
b	_____	[]
c	_____	[]
d	_____	[]

4. Overall, to what extent has the ICT Cluster Professional Development Programme met your expectations?

Please tick ONE box only.

Overall, my expectations of the ICT Clusters PD Programme were:

Exceeded Fully met Largely met Partially met Not met

5. Preferred PD Activities

Facilitators in the ICT Clusters have used a range of professional development activities and strategies. Please read the following explanation of each strategy, and RATE HOW EFFECTIVE YOU FOUND THE ONES THAT APPLIED. Note: different clusters used different strategies.

Write in each box a number 1-4 representing the effectiveness of that activity, or 0 if not used in your cluster
4 = Very effective 3 = Largely effective 2 = Partly effective 1 = Not effective 0 = Not applicable

Rating 0 or 1-4

a	Study Groups: Teachers join a study group of several members with common interests and goals. which meets regularly (eg lunchtimes, after school, evenings) to explore ICT issues & practices.	
b	Technology Coaches: Every teacher could become a technology coach - good at something and prepared to help on casual basis and support others accomplish this. Responsibility is shared broadly so that each teacher has an area of expertise and everyone is an expert in something.	
c	Technology Mentors: Teachers who are highly skilled in certain areas are formally paired for a while with less skilled teachers in order to pass on their expertise.	

d	Tutorials: Short bursts of on-site learning – perhaps an early morning or after school session on inserting graphics into text, or organising bookmarks in a browser, etc. Eg: ‘Techie-Breckies’.	
e	Workplace Visits: Visits to ICT intensive workplaces (not schools) so teachers can see the impact of ICT in the ‘real’ world and think of the implications for learners and classrooms.	
f	Retreats or Intensive Practicums: Teachers given several days out of classroom at one time for intensive PD or training. May be followed by occasional further single release days.	
g	Release Time: TRDs (2 or more separate days of release spread over a period of time) to attend workshops, seminars etc, or work with a mentor/facilitator.	
h	Professional Reading: A regular selection of up to date reading material on teaching and learning with ICT and/or ICT policy/planning developments in schools.	
i	On-the-spot Support/Classroom visits: Facilitators were available to provide in-classroom support for those teachers who feel unsure when trialling the use of ICT with their classes.	
j	Listserve Membership/ e-communities: Online discussion groups & lists using email or online communities where teachers in the cluster discuss problems, successes, ask questions and offer solutions.	
k	Practical Workshops/Seminars: A programme of practical workshops &/or discussion sessions scheduled outside school/teaching hours.	
l	School Visits: Visits to other schools both within and beyond the cluster to investigate initiatives that are being, or have been implemented there.	
m	ICT Conferences. Staff supported financially & encouraged professionally to attend or present at ICT Conferences in NZ or overseas as part of the PD programme.	
n	Lead Teachers: Teachers with particular interest or expertise put through a PD programme & then expected to provide ongoing mentoring, run workshops etc for others on their staff.	
o	Other PD Activities undertaken by your cluster. (please specify and rate)	

PART 3: DEVELOPMENT OF ICT SKILLS

6. Please indicate your level of achievement in each of the following ICT competencies BOTH BEFORE taking part in the PD Programme AND your skills as they are ‘NOW’

Place a tick in the ‘BEFORE PD’ column alongside the statement which reflected your skill level *before* the PD programme, and a tick in the ‘NOW’ column by the statement which describes your skills *now*.

EXAMPLE: a. BASIC COMPUTER OPERATION	Before PD	NOW
<i>I use the computer to run one or two software programs that are available.</i>		
<i>I run two programs simultaneously. I have several windows open at the same time and can transfer information between documents.</i>	√	
<i>I successfully troubleshoot basic problems with my computer or printer... etc.</i>		
<i>I download files from the Internet, unzip compressed program files, update hardware drivers, change the file types of files etc.</i>		√
<i>I can handle the basic administration of an NT, Novell or Macintosh network.</i>		

a. BASIC COMPUTER OPERATION	Before PD	NOW
I use the computer to run one or two software programs that are available.		
I run two programs simultaneously. I have several windows open at the same time and can transfer information between documents.		
I successfully troubleshoot basic problems with my computer or printer. I learn new programs on my own, install software from a CD-ROM etc.		
I download files from the Internet, unzip compressed program files, update hardware drivers, change the file types of files etc.		
I can handle the basic administration of an NT, Novell or Macintosh network.		

b. FILE MANAGEMENT	Before PD	NOW
I do not save or open any documents on the computer.		
I can select, open and save documents.		
I save work in a variety of locations eg. local hard drive, a specified network location, floppy disk, and create my own folders to keep my files organised.		
I move files between folders and drives, follow directory paths, understand the use of folders, use the find feature to locate files on hard drive etc.		

c. WORD PROCESSING	Before PD	NOW
I do not use a word processing program.		
I occasionally use a word processing program for simple documents but generally find it easier to hand write most written work.		
I use a word processor for much of my written professional work <i>ie. memos, tests, activity sheets etc.</i> I edit, spellcheck and change the format of documents.		
I use a word processor with confidence for all my professional written work, including editing and formatting tools <i>ie. tabs, headers/footers, auto-insertion, tables, footnotes, auto numbering, bullets, hanging indents etc.</i>		
d. SPREADSHEET USE	Before PD	NOW
I do not use a spreadsheet.		
I understand the use of a spreadsheet and I navigate within one. I create simple spreadsheets, charts/graphs etc.		
I use spreadsheets for a variety of record-keeping tasks. I use labels, formulas, cell references & formatting tools in spreadsheets. I can make a variety of charts & graphs		
I am confident in the creation of complex spreadsheets using features such as multiple formulae, conditional statements etc, and the resolution of circular references etc.		
e. DATABASE USE	Before PD	NOW
I do not use a database.		
I understand the uses of a database. I can locate information from a pre-made database such as a library catalogue or school journal database.		
I create my own databases, defining the fields and layouts. I can use my database to answer questions about my information.		
I can create complex databases with extensive search and analysis features.		
f. GRAPHICS USE	Before PD	NOW
I do not use graphics in my word processing or presentations.		
I open/copy and place simple pictures into documents using clipart or graphics files etc.		
I create and edit graphic images using simple editing tools <i>eg. resize, colour crop, rotate</i>		
I capture & edit images from a wide variety of sources (scanner, digital camera, Internet)		
I use sophisticated image handling software with confidence <i>eg. Corel, Photoshop.</i>		
g. INTERNET USE (WWW)	Before PD	NOW
I do not use the World Wide Web.		
I can access Internet websites to find information & follow links to other resources.		
I can successfully enter my own URLs and make profitable use of keywords in Web search engines to explore educational resources.		
I understand the significance of URL name structures and use 'and/or' queries and other advanced features of search engines.		
I can create web pages using either HTML or an editing program such as Front Page.		
h. TELECOMMUNICATIONS USE (E-MAIL)	Before PD	NOW
I do not have an e-mail account.		
I have an e-mail account but I rarely use it.		
I regularly send and receive e-mail messages and manage my mail folders.		
I am confident in the use of e-mail. <i>eg: I use attachments, store addresses and nicknames, have a signature, forward mail and use listserves.</i>		
i. PRESENTATION SKILLS/MULTIMEDIA	Before PD	NOW
I do not use a computer presentation program or multimedia editing tools.		
I am able to create a simple linear slideshow in at least one presentation applications (<i>eg: Powerpoint, Keynote, KidPix, Hyperstudio etc</i>) incorporating text and graphics.		
I am able to create linear presentations incorporating text and graphics, & various multimedia elements such as sound, video clips and simple animations.		
I can create and edit movies using iMovie or similar software.		
I can create branching presentations incorporating various methods of making presentations interactive such as buttons, timed links, or basic scripting etc.		

PART 4: USE OF ICTs FOR PLANNING, PREPARATION, & ADMINISTRATION

7. Please indicate, in both the ‘BEFORE PD’ and ‘NOW’ columns, the frequency (1-5 scale) with which you use(d) ICT as part of your planning, preparation and presentation of classroom materials.

Enter a rating 1,2,3,4 or 5 in EVERY box in BOTH columns.

5 = Always 4 = Often 3 = Sometimes 2 = Rarely 1 = Never

EXAMPLE	Before PD	NOW
I use(d) Word Processors or Desktop Publishing package to produce task sheets, tests, handouts etc.	2	3
I access(ed) the internet for finding and collecting lesson ideas.	1	4

Frequency (1-5)

		Before PD	NOW
a	I use(d) Word Processors or a Desktop Publishing package to produce task sheets, tests, handouts etc.		
b	I access(ed) the internet for finding and collecting lesson ideas.		
c	I access(ed) the internet for assessment items.		
d	I access(ed) the internet to get official documents from the Ministry, NZQA etc.		
e	I get/got lesson content materials from electronic encyclopaedias on CD ROM.		
f	I produce(d) lesson materials using digital camera, video editing, digitising, scanner etc.		
g	I access(ed) the internet for professional readings, subject association newsletters etc.		
h	Other use of ICT for planning, preparation etc. (please specify and rate)		

8. How frequently did/do you use ICTs for each of the following administration purposes? Please answer with reference to both BEFORE the Professional Development and NOW?

Enter a rating 1,2,3,4 or 5 in EVERY box in BOTH columns.

5 = Always 4 = Often 3 = Sometimes 2 = Rarely 1 = Never

Frequency (1-5)

		Before PD	NOW
a	Recording or calculating assessments, marks and grades.		
b	Recording students’ running records.		
c	Accessing staff notices.		
d	Email correspondence with colleagues on administrative matters.		
e	Writing reports for parents.		
f	Recording absences.		
g	Other (Please specify and rate)		

9. To what extent is any increase in your use of ICT for planning, preparation or administration attributable to the ICTPD Professional Development Programme?

Please tick ONE box only

- Completely attributable Largely attributable Partly attributable Not at all attributable

PART 5: USE OF ICT IN TEACHING AND LEARNING

10. Extent of ICT Integration

Please tick ONE box only

(a) What proportion of your units of work contained ICT based learning activities **BEFORE** your participation in the ICT PD Programme?

- All or almost all units Most units Several units One or two units No units

(b) What proportion of your units of work contains ICT based learning activities **NOW** (ie: in the last two terms)?

- All or almost all units Most units Several units One or two units No units

11. In which Subject(s) or Learning Areas have you used ICTs with students the most?

Identify the subject or learning area (eg: Maori, Science), the type of ICT software etc you used (eg. internet, word processing, digital camera), and the lesson activity/topic in which it was used.

Subject/Learning Area	Software	Activity/Topic/Purpose
<i>Examples: English/Language Economics</i>	<i>Word Processor graphics Spreadsheets</i>	<i>Creative writing/composition. Graph interpretation of supply and demand curve.</i>

12. How often, on average, did/do some or all of your students engage in the following ICT activities?

Using the 1-5 scale below, please indicate a frequency for both BEFORE you took part in the ICT Professional Development, and NOW (ie: over the last two terms).

5 = Daily/almost daily 4 = Avg. 1-2 times a week 3 = Avg. 1-2 times a Term
2 = Avg. 1-2 times a year 1 = Never

		Frequency (1-5)	
		Before PD	NO W
a	Composing, editing, presenting creative work using Word Processors &/or graphics		
b	Composing, editing and presenting 'project' or content-based work using Word Processors &/or graphics packages		
c	Accessing or searching for information on the internet		
d	E-mailing other students or experts about a current topic or problem		
e	Presenting their learning in the form of computerised slide shows (mainly or exclusively text & pictures)		
f	Editing and composing multimedia presentations movies or videos using computer software (ie: including sound and moving images).		
g	Data logging using external monitoring devices connected to a computer		
h	Working through content or concept simulations on computer		
i	Practising skills or reinforcing knowledge using content specific Drill and Practice programmes (eg: Maths Games, Reading Games etc)		
j	Learning from a computer based tutoring programme		
k	Writing computer programmes or scripting interactive presentations		
l	Accessing or searching for information on electronic encyclopaedias (eg on CDRom)		
m	Designing and/or creating web-pages to present learning		
n	Recording, calculating or analysing data using prepared Databases or Spreadsheets.		
o	Designing and developing their own databases or spreadsheets information		
p	Faxing or phoning other students, experts etc about a current topic or problem		
q	Using the electronic catalogue to find appropriate reading in the library		
r	Other (specify)		

13. Effects of the ICTPD Programme on your teaching.

For each of the following statements, please CIRCLE the italicised word or phrase that BEST describes the effects of your involvement in the ICTPD programme on your teaching.

- I now spend *much more* / more / no more / less / *much less* time planning than I did.
- I now spend *much more* / more / no more / less / *much less* time evaluating my teaching than I did.
- My own enthusiasm for teaching has *increased* / not changed / *decreased* as a result of my participation in the ICTPD Programme.

- (d) Ideas and skills gained from the ICTPD Programme have helped me teach *much more / more / no more / less / much less* effectively than I did.
- (e) In what other ways, if any, has taking part in the ICT Cluster Professional Development Programme changed your teaching, or your thinking about teaching and learning?

14. Effects of incorporating ICT based activities into units of work on your teaching.
For each of the following statements, please CIRCLE the italicised word or phrase that BEST describes the effects on your teaching of incorporating ICT based activities into your units of work.

- (a) Using ICTs with my classes has meant that my workload has *greatly increased / increased / not changed / reduced / greatly reduced*.
- (b) Incorporating ICT activities with my classes has made it *much easier / easier / no easier / more difficult / much more difficult* for me to teach the class as a whole.
- (c) The use of ICT based activities in my classroom have made it *much easier / easier / no easier / more difficult / much more* to individualise teaching for my students.
- (d) Using ICTs with my classes has meant that teaching is *much more / more / no more / less / much less* stressful
- (e) Introducing ICT based activities into my classroom has allowed my teaching to be *much more / more / no more / less / much less* student-centred.
- (f) In what other ways, if any, has incorporating ICT based learning activities into students’ units of work changed your teaching?

15. **Effects of incorporating ICT based activities into classes on students’ learning.**
For each of the following statements, CIRCLE the italicised word or phrase that BEST describes the effects on students’ learning you have observed when incorporating ICT based activities into classes.

- (a) ICT based activities have helped make learning experiences *much more / more / no more / less / much less* varied for my students.
- (b) The introduction of ICT based activities has *greatly increased / increased / not increased / reduced / greatly reduced* the range of skills and abilities that students learn or demonstrate in my classes.
- (c) Overall, the incorporation of ICT based activities into their programme has *improved / not changed / reduced* my students’ achievement levels in formal assessments.
- (d) Overall, the incorporation of ICT based activities has *increased / not changed / reduced* the amount of creativity demonstrated by students in my classes.
- (e) Overall, the incorporation of ICT based activities has *increased / not changed / reduced* the amount of higher order thinking demonstrated by students in my classes.
- (f) My students’ motivation to learn has *increased / not changed / decreased* as a result of their using ICTs in classes.
- (g) In what other ways, if any, has incorporating ICT based learning activities into units of work affected student learning in your classes?

16. Please indicate with a tick in the appropriate box the extent to which you agree or disagree with each of the following statements

- (a) ICTs can make major improvements to the effectiveness of lesson planning and preparation.
 Strongly agree Agree Not sure/neutral Disagree Strongly disagree

- (b) ICTs can make major improvements to the effectiveness of school administration.
 Strongly agree Agree Not sure/neutral Disagree Strongly disagree
- (c) ICTs can make major improvements to the efficiency of curriculum delivery in my classroom.
 Strongly agree Agree Not sure/neutral Disagree Strongly disagree
- (d) ICTs can make major improvements to the quality of curriculum delivery in my classroom.
 Strongly agree Agree Not sure/neutral Disagree Strongly disagree
- (e) Overall, the investment by schools in ICTs can be justified by the teaching and learning outcomes.
 Strongly agree Agree Not sure/neutral Disagree Strongly disagree

17. What, in your opinion, are the main benefits to be gained from the use of ICTs in schools?

18. Confidence about using ICTs.

Please tick the appropriate box.

- (a) How confident were you about using ICTs **personally** BEFORE the ICT Cluster PD Programme?
 Very confident Confident Neutral Not confident Anxious
- (b) How confident are you about using ICTs **personally** NOW?
 Very confident Confident Neutral Not confident Anxious
- (c) How confident were you about using ICTs **with your classes** BEFORE the ICT Cluster PD Programme?
 Very confident Confident Neutral Not confident Anxious
- (d) How confident are you about using ICTs with your classes NOW?
 Very confident Confident Neutral Not confident Anxious

19. What are your greatest concerns about using ICTs in schools?

Please rate each of the following as it applies to you, on a 0-2 scale.

	<i>2 = significant concern</i>	<i>1 = some concern</i>	<i>0 = no concern</i>	<i>Rating</i>
a	The ongoing need to upskill myself in using new software packages			
b	Access to equipment for my own professional use			
c	Access to equipment for my students' use			
d	Equipment breakdown/technical problems			
e	The need to change my teaching style			
f	Not knowing how to include the use of ICTs in my teaching programmes.			
g	Keeping up to date with new developments			
h	Lack of time to cope with it all			
i	Lack of technical support			
j	Too much change, too quickly			
k	Lack of training/PD			
l	My suspicion that they don't actually improve learning			
m	Unexpected changes to the daily timetable			
n	Feeling already too far behind			
o	Lack of keyboard skills			
p	Other concerns. Please specify :			

Thank you for your participation in the ICTPD Cluster programme and for completing this evaluation

Please seal your completed questionnaire in the envelope provided, write your name and school on the back of the envelope, and return the sealed envelope to your cluster facilitator

Return completed questionnaire in its envelope to cluster facilitators before FRIDAY 19 September

Queries or comments regarding this questionnaire should be addressed to:
 Dr. Vince Ham. C/- Christchurch College of Education. Email: vince.ham@cce.ac.nz.

Appendix 3. Observation Schedule for Classroom Observations

OBSERVATION SCHEDULE

Researcher: _____ **Date:** _____ **Visit No.:** _____
Cluster _____ **Teacher** _____ **School** _____
Class/Year _____ **Subject:** _____ **Start time:** _____ **Finish time:** _____
Child 1 _____ **Gender** _____ **Child 2** _____ **Gender** _____
Child 3 _____ **Gender** _____ **Child 4** _____ **Gender** _____

Discuss with the teacher...

Curriculum objective(s) for the activity to be observed. Any particular skills to be developed/concentrated on during this lesson?

What have the children done before? Role of the ICT in the context of this topic/ how this lesson relates to previous lessons.

1 What ICT(s) is/are being used?
 Computer fax telephone _____
 Video camera digital still camera scanner _____

What software is being used?
 tutorial drill and practice DTP word processing
 spreadsheet database WWW e-mail
 simulation multimedia authoring e-reference (Encarta etc)
 _____ _____ _____

Name(s) of software: _____

2 Rate the *technical skills* demonstrated – 1-5 in box (see definitions)
 opens program uses menus
 opens new file uses keyboard to enter data
 locates existing file point and click
 edits using delete key edits using select process
 stores/saves to specified location prints
 multi-tasks (takes info from one application to another; adds info. from other source (eg audio, graphics etc.)
 transforms information using technical features (graph, spell check, columns)

Describe:

Other software features used:

3. COGNITIVE ABILITIES

Indicate which of the following cognitive skills you observed in the classroom by ticking each episode or example and describing evidence

Cognitive Skill	Present	Evidence
Knowledge Recall of facts, dates, names, definitions (Defines, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states)		
Comprehension Understanding the meaning of remembered material (Converts, defines, distinguishes, estimates, extends, generalises, gives examples, infers, paraphrases, predicts, rewrites, summarises)		
Application Using information in a new context to solve a problem, to answer a question (Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses)		
Analysis Breaking a piece of material into its parts and explaining the relationship between the parts (Breaks down, diagrams, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, subdivides)		
Synthesis Putting parts together to form a new whole, pattern or structure (Categorises, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organises, plans rearranges, reconstructs, relates, reorganises, revises, rewrites, summarises, tells, writes)		
Evaluation Making a judgement based on a set of criteria (Appraises, compares, concludes, contrasts, criticises, describes, discriminates, justifies, interprets, relates, summarises, supports)		
Creativity Trying out new and innovative ideas (ingenious, inventive, clever, imaginative, novel, original)		

GENERAL COMMENTS

4. ESSENTIAL SKILLS

Indicate which of the following Essential Skills you observed in the classroom

<p>Communication Skills</p> <ul style="list-style-type: none"> • communicate confidently and competently by listening, reading, speaking & writing and other forms of communication. • convey & receive information, instruction, ideas & feelings in a range of social and cultural contexts. • skills of discrimination and critical analysis in relation to the media, and to aural and visual messages from other sources. • argue a case clearly, logically and convincingly. • become competent in using new ICTs, including augmenting communication for people with disabilities. 	<p>Numeracy Skills</p> <ul style="list-style-type: none"> • calculate accurately • estimate proficiently and with confidence. • use calculators and a range of measuring instruments confidently and competently. • recognise, understand, analyse, and respond to information which is presented in mathematical ways, for example, in graphs, tables, charts, or percentages. • organise information to support logic and reasoning. • recognise and use numerical patterns and relationships.
<p>Information Skills</p> <ul style="list-style-type: none"> • identify, locate, gather store, retrieve and process information from a range of sources. • organise, analyse, synthesise, evaluate & use information. • present information clearly, logically, concisely and accurately. • identify, describe, and interpret different points of view, and distinguish fact from opinion. • use a range of information-retrieval and information processing technologies confidently and competently. 	<p>Self-management and Competitive Skills.</p> <ul style="list-style-type: none"> • set evaluate and achieve realistic personal goals. • manage time effectively. • show initiative, commitment, perseverance, courage and enterprise. • adapt to new ideas, technologies and situations. • develop constructive approaches to challenge, stress, conflict, competition success and failure. • develop the skills of self-appraisal and self-advocacy. • achieve self-discipline and take responsibility for actions and decisions. • develop self-esteem and personal integrity. • take increasing responsibility for their own health and safety. • develop a range of practical life skills such as parenting, budgeting, consumer transport and household maintenance skills.
<p>Problem Solving Skills.</p> <ul style="list-style-type: none"> • think critically, creatively, reflectively and logically. • exercise imagination, initiative, and flexibility. • identify, describe, and redefine a problem. • analyse problems from a variety of different perspectives. • make connections and establish relationships. • inquire and research, and explore, generate and develop ideas. • try out innovative and original ideas. • design and make. • test ideas, and solutions, and make decisions on the basis of experience and supporting evidence. • evaluate processes and solutions. 	<p>Social and Cooperative Skills</p> <ul style="list-style-type: none"> • develop good relationships with others at work in cooperative ways to achieve common goals. • take responsibility as a member of a group for jointly decided actions and decisions. • participate appropriately in a range of social and cultural settings. • learn to recognise, analyse and respond appropriately to discriminatory practices and behaviours. • acknowledge individual differences and demonstrate respect for the rights of all people. • demonstrate consideration for others through qualities such as integrity, reliability, trustworthiness, caring or compassion (aroha), fairness, diligence, tolerance (rangimaarie) and hospitality or generosity (manaakitanga). • develop a sense of responsibility for the well-being of others and the environment. • participate effectively as responsible citizens in a democratic society. • develop the ability to negotiate and reach consensus.
<p>Physical Skills</p> <ul style="list-style-type: none"> • develop personal fitness and health through regular exercise, good hygiene and healthy diet. • develop locomotor, non-locomotor and manipulative skills. • develop first-aid skills • develop specialised skills related to sporting recreational and cultural activities. • learn to use tools and materials efficiently and safely. • develop relaxation skills. 	<p>Work and Study Skills.</p> <ul style="list-style-type: none"> • work effectively, both independently and in groups. • build on their own learning experiences, cultural backgrounds and preferred learning styles. • develop sound work habits. • take increasing responsibility for their own learning and work. • develop the desire and skills to continue learning throughout life. • make career choices on the basis of realistic information and self-appraisal.

Comments/evidence

GENERAL COMMENTS

5. What is the relationship between the observed ICT activity and concurrent classroom activities?

6. How does the work with ICT observed contribute to the general sequence of lessons?

7. To what extent is the use of the ICT integrated with the unit of work?

<i>Closely integrated</i>	1	2	3	4	5	<i>Not at all integrated</i>
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Complete Q8 and 9 if there was more than one child working with ICT

8. How co-operative was the working relationship of the group? (*see definitions*)

<i>Very co-operative</i>	1	2	3	4	5	<i>Not at all co-operative</i>
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9. How successfully was the task completed by the group?

<i>Very successfully</i>	1	2	3	4	5	<i>Not at all successfully</i>
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10. THE COMPUTER LEARNING ENVIRONMENT

Sketch (or photograph) a plan of the classroom noting particularly the location /arrangement of ICT.

Number of computers

Location of computers

What arrangements have been made for children to use the computer(s)?

What other technologies are available to the children in the class/school?

Describe the involvement of the teacher in the students' use of the computer (*e.g. collaborative - involves the active participation of all children, defers to children's knowledge, 'hands off' approach...*).

Indicate which of the following behaviours you observed in the classroom.

Behaviour	Present	Evidence
Socially interactive learning (team-work/co-operation)		
Clear goals set		
Time for children to reflect (i.e. time to think, discuss, explore)		
Informative feedback (from teacher)		
Warm positive learning environment (good personal relationships)		
Interaction between children encouraged by T intervention		
Teacher collaborates with children (encourages children to talk about experiences)		
Active participation of children		
Comment		
Direct computer instruction from teacher		
Teacher models appropriate behaviour (use of ICT)		
Teacher has the necessary level of technical computer competence for the situation		

11. THE STUDENTS: ATTITUDES, SKILLS, PRODUCTS

With the product/project in front of you and the child, direct questions in the three following areas:

1. Background

Tell me about this [project...]. How did you find the information for it? How did you create it?

2. Assistance and opportunities to use ICT

Did you ask anyone to help you with it? Who was that? What sort of things did they help you with? Did you do it mostly at home or at school?

3. Personal satisfaction

Did you enjoy doing this project? What did you enjoy most about doing it? What do you think you learned most from doing it? What was especially good about doing this project?