Outcomes for Teachers and Students in the ICT PD School Clusters Programme 2006-2008 – A National Overview

Report to the Ministry of Education

Selver Sahin & Vince Ham
CORE Education

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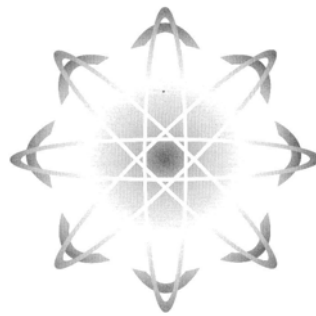
A report to the New Zealand Ministry of Education

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Contents

Executive Summary

Background

This report is submitted to the Ministry of Education as the last report in an ongoing evaluation of the Information and Communication Technologies Professional Development (ICT PD) teacher professional development initiative, which has been implemented in New Zealand since 1999. The focus of this particular report is on the effectiveness of the 2006-8 cohort of ICT PD School Clusters programmes and, as such, supplements previous evaluations of the first six ICT PD School Clusters Programmes submitted to the Ministry in 2002, 2004, 2005, 2006, 2007 and 2008.

As outlined in the performance agreements between the Ministry and the ICT PD clusters, the ICT PD School Cluster programmes in New Zealand are aimed at increasing teachers' ICT confidence, skills and pedagogical understandings of ICTs, fostering quality learning communities, and increasing the frequency and quality of the integration of ICTs to support effective classroom teaching and learning. The research reported here takes these performance criteria as its starting point to provide a national overview of the programme's impact on teachers, teaching and classroom learning in New Zealand, by means of an analysis of 2,674 responses from participating teachers to the End of Project survey.

Findings

The overall finding of the study is that the 2006-8 ICT PD programme had a marked effect on the teachers and students in cluster schools with respect to its key goals. There were high levels of goal achievement reported by participants, and marked increases or changes with respect to the relevant Ministry objectives as outlined in cluster performance agreements. At the national level, the programme achieved its overall goals of: significantly increasing teachers' skills and confidence with ICTs, improving teachers' understandings of the role of ICTs in teaching and learning, and providing quality ICT-mediated learning experiences for students. The 2006-8 programme achieved levels of participant satisfaction that were somewhat lower than the preceding two (2004-6 and 2005-7) cohorts but achieved overall increases in skills, confidence, understanding and regular or routine classroom/student usage of ICTs for learning in orders of magnitude at least similar to those of earlier cohorts.

We note also that, in regard to a range of outcomes, the ICT PD programme continues to have a greater impact among primary teachers and schools than among their secondary counterparts.

Specifically, we found that:

- The majority of teachers expressed moderate to high levels of satisfaction in terms of goal achievement at the end of the programme. Participant satisfaction varied somewhat by sector and length of time in the programme, with primary teachers and those who had been in the PD programme for most of the 3 years stating higher levels of satisfaction and goal achievement than secondary teachers and those who were in the programme for only a few months or up to a year.

- The programmes were seen by the majority of participants as having been a 'significant' event in their overall development as teachers, contributing well beyond any ICT-specific issues of increased technical skill, to encompass improved understandings in relation to teaching and learning more generally. Over two-thirds (68%) of teachers indicated that the programme had contributed new ideas about teaching and

learning, including 10% who felt that the programme had provided them with a whole new approach to teaching and learning. Primary teachers were rather more likely to see the programme as contributing *new* insights and ideas than secondary teachers.

- Teachers generally appreciated all of the ways the programmes were delivered and the knowledge and expertise of particular facilitators. The content of the programmes as well as the availability of opportunities to share ideas and problems and reflect and produce solutions together on their use of ICTs for teaching and learning purposes were among the most appreciated aspects of the programme that teachers reported.

- At the end of the programme, the greatest persisting concerns for teachers with regard to their professional use of ICTs were a lack of student access to equipment, a perceived lack of time to keep up to date with the range of ICTs available, technical reliability, and some concern about their continuing need for PD after the programme's formal end point.

- There was a marked increase in teachers' reported ICT skills over the period of the programme. Teachers' reported skill levels on entry to the programme were generally moderate to high already, though somewhat variable across different ICTs. By the end of the programme the great majority of teachers reported moderate or high skill levels across the whole range of educationally useful ICTs measured.

- There was also a marked and significant increase in teachers' confidence about their professional use of ICTs over the period of the programme, both in terms of their confidence as personal users and in relation to students using ICTs in their classes. Teachers reported that on entry the great majority of them had been either 'anxious', 'not confident' or 'neutral' about their professional use of ICTs; with female and primary teachers being less confident than male and secondary teachers. By the end of the programme over three quarters of all the demographic groups studied were reporting moderate or even high levels of such confidence. Moreover, the longer teachers were in the programme the greater was the extent of their gain in confidence. Throughout the programme levels of confidence as personal users remained higher than those related to classroom use of ICTs.

- The reported effect of the ICT PD programme on teachers' classroom practices was variable from teacher to teacher and from school to school, but substantial overall. Over a third of teachers acknowledged that over the programme period their classroom practices had changed to 'a large extent' or 'completely', while 81% felt their practices had changed at least to 'some extent'. Female and primary teachers reported greater change in this regard than male or secondary teachers.

- Participants reported that, on entry to the programme, they were already generally positive about the value of using ICTs for teaching and learning. At the end of the programme, they showed a similarly positive disposition towards the value of ICTs in the teaching and learning process, but many stated that they now had a clearer conception of how its educational value might be judged. The most prominent effects of the programme in terms of developing teacher *understandings* about learning were expressed as: a better understanding of student-centred teaching and learning, increased knowledge of teaching and learning theories, styles, and approaches; and challenging their pedagogical perspectives through sharing and discussion.

- There was a marked and significant increase in teachers' use of ICTs with their classes as a result of the programme. Approximately two thirds (62%) of teachers had either never used ICTs with classes prior to the programme, or had only used them once or twice a year. By the final year of the programme, over

three quarters (77%) of participating teachers reported that their students were using ICTs on a routine or regular basis.

- Primary teachers reported using ICTs in a greater proportion of their units of work than secondary teachers. The other significant predictors of increased classroom usage of ICTs by teachers in the clusters were their rising levels of confidence with and about the technology, and the length of time they were actively engaged in the PD programme.

- The surveys provide some proxy evidence of the conscious alignment of ICT-based classroom activities to a wide range of student learning outcomes. Teachers tended to report the learning outcomes from student use of ICTs in terms of: increased student-centredness in lessons, increased student motivation, coverage of a wide range of curriculum topics and objectives, student acquisition of ICT skills, and increased opportunity for learning activities which promoted communications skills, inquiry skills, high order thinking, creativity and a range of social skills. There were no statistically significant sector differences in relation to increased student use of ICTs for higher order thinking and critical thinking skills, but primary students were more likely to engage in frequent use of ICTs with classes than secondary students for all of: creative activity, curriculum content acquisition, information gathering or processing, collaborative learning, motivation and technical skill acquisition.

- The largest proportion of ICT-based student activities reported by teachers related to the English Learning Area (20%), followed by Mathematics (17%), Social Science (13%) and Science (11%).

- In most respects, the effects and trends listed above for the 2006-8 ICT PD national cohort are similar in both nature and magnitude to those reported for the earlier cluster cohorts. In general, the same effects, of a similar size, have been identified in all cohorts. The only notable exceptions or differences between the 2006-8 cohort and earlier cohorts in terms of the programme effect or size were:

  - The skill levels of teachers in the 2006-8 cohort on entering the programme, and also on exiting it, were generally higher than those of the earliest cohorts but similar to those reported for the 2004-6 and 2005-7 cohorts that immediately preceded it. Skill levels, both on entry and exit, as well as programme impacts on skills, are 'flattening off' as successive cohorts begin and finish their programme with higher skill levels across the range of ICTs used in education.

  - There were some cohort differences in terms of the learning outcomes of ICT use by students in both the 2005-7 and 2006-8 cohorts compared to earlier cohorts. There is a clear tendency for students in these two cohorts to show higher frequencies of use of ICTs than previous cohorts with respect to all of: static presentation (mostly word processing and slide shows), problem solving activities (mostly through spreadsheet use), information processing activities (mostly through Internet use), online communication (email, social software), and curriculum practice activities (mostly games, Drill and Practice or interactive/multimedia tutorials).

  - Finally, we note that levels of goal achievement and meeting of expectations were lower than in the 2004-6 and 2005-7 cohorts, but still higher than in the 2003-5 cohort, across all of the groups of goals identified.

Introduction

This report is submitted to the Ministry of Education as part of an ongoing evaluation of the Information and Communication Technologies Professional Development (ICT PD) teacher professional development initiative. The ICT PD initiative was first announced in the strategy document *Interactive Education: An Information and Communication Technologies Strategy for Schools* (Ministry of Education, 1998), and has been a feature of subsequent policy implementations as outlined in *Digital Horizons: Learning Through ICT: A Strategy for Schools* (Ministry of Education, 2001, Revised 2003), and more recently in *Enabling the 21st Century Learner: An e-Learning Action Plan for Schools 2006-2010 (Ministry of Education 2006).* It is the latter of these documents (*The e-Learning Action Plan*) that most directly provides the policy background for the implementation of the particular ICT PD cluster programme that is the subject of this report – the '2006-8 cohort'.

This report is on the effectiveness of the 2006-8 cohort of ICT PD School Clusters and supplements previous evaluations of the first six ICT PD School Clusters Programmes submitted to the Ministry in 2002, 2004, 2005, 2006, 2007 and 2008.

It should be noted that ICT PD cohorts operate their programmes in cluster schools over a period of three years, and that the contents of the report speak specifically to the effectiveness of the professional development programmes over the full three-year period from 2006-8. The final section in the report compares the results for this cohort with those of previous cohorts and comments on the respects in which national outcome trends in the overall ICT PD initiative since 1999 have, or have not, been maintained over time.

As outlined in the performance agreements between the Ministry and the ICT PD clusters, the ICT PD School Cluster programmes in New Zealand are aimed at increasing teachers' ICT confidence, skills and pedagogical understandings of ICTs, fostering quality learning communities, and increasing the frequency and quality of the integration of ICTs to facilitate improvements in students' learning, engagement and achievement.

The research reported here takes these performance criteria as its starting point to provide a national overview of the programme's impact on teachers, teaching and classroom learning, by means of an analysis of the results of a post-hoc survey of 2,674 participating teachers.

The 2006-8 ICT PD School Clusters Programme 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 ICT PD 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 bulk of the programme funding is devolved directly to schools as both 'producers and consumers' of their own PD programmes.

- 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.

- No particular delivery model is mandated. Within broad parameters, applicants for ICT PD cluster funds are expected to develop and propose their own models of delivery, rather than to implement a predetermined, Ministry model.

- There is central coordination of the programmes through the Ministry of Education itself and a team of contracted National Facilitators who provide professional development support, advice and coordination to the clusters as a national community.

The basic framework of the ICT PD 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$120,000 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 ICT PD School Clusters in various parts of the country were selected as the first cohort under the scheme, finishing their three year round of development in 2001. The government decided to continue the programmes on a rolling basis from 2001 onwards. The cohort which is the subject of this report was thus the sixth intake or 'cohort' of clusters. They began their programmes in January 2006 and completed at the end of 2008. This report on the 2006-8 cohort of ICT PD cluster teachers thus stands as a separate report on the effectiveness of 2006-8 programme, but it also supplements and updates reports on national trends in previous ICT PD School Cluster Programmes submitted to the Ministry from 2002 to 2008.

Programme Goals

The ICT PD School Cluster programmes in New Zealand have been generally aimed at increasing teachers' ICT skills and pedagogical understandings around ICTs, at increasing the frequency and quality of the use of ICTs in schools to support classroom teaching and student learning.

These broad goals were rearticulated as a number of specific performance measures and expected outcomes included in the various cluster cohort contracts. The specific statements of these goals changed during the course of the three years of the programme reported here, although the general tenor of them has remained the same across successive cohorts. The goals for the 2006 cohort programmes reported on here are:

- Teachers' confidence and skills in using ICTs increase.

- Instances of ICT use integrated into pedagogical practice across the curriculum increase.

- Teachers improve their understandings of the roles of ICTs in supporting teaching and learning.

- Professional learning communities around and through the use of ICTs in schools are fostered and strengthened.

- ICTs are used to enable quality learning experiences in classrooms that are focused on student learning, engagement and achievement.

Structure of the Report

This report on the 2006-8 cluster programme provides a national overview of the programme's impact on teachers, teaching and learning in New Zealand, through an analysis of the results of an End of Project survey study of teachers from all clusters. The report begins with an analysis of the relative impacts of the 2006-8 programme over time in terms of the performance goals of the programme listed. For convenience we group these goals and impacts into three main areas, each of which is reported as a separate section:

- The effects of the PD programmes on **teachers** themselves, as indicated by the reported effects on teacher skills, confidence, and understandings in relation to ICTs in teaching and learning.

- The effects of the PD programmes on **usage of ICTs by students**, as indicated by teacher reported rates of classroom usage, curriculum coverage, and the provision of 'quality learning experiences'.

- The provision of **appropriate advice, PD and support** by the various cluster programmes, as indicated by reported levels of participant satisfaction with the programmes and levels of teacher goal achievement.

Methodology

Research Questions

The brief for the research on the 2006-8 cohort of ICT PD clusters was to provide a broad national profile of the impact of the programme across the country as a whole. It has not been our role to evaluate specific clusters or their particular PD models. To this end, the core research question being addressed is not so much to identify which particular models of PD are most effective, but rather to conduct a survey-based study to evaluate how well, and in what respects, the national ICT PD School Cluster initiative has been meeting the objectives of stakeholders and participants across the cohort. In doing this we addressed the following core research question:

How effective overall was the 2006-8 ICT PD programme in meeting its goals of:

- increasing teachers' ICT skills, confidence and knowledge related to the educational applications of ICTs, and

- promoting quality classroom learning experiences for students?

Research Strategy and Data Collection

Survey data were gathered from all 39 of the 2006-8 cohort clusters. These comprised responses from a post-programme (End of Project) survey of participants. In order to maximise validity of comparison across cohorts, the End of Project instrument was based on equivalent questionnaires developed for the previous cohorts in the programme and reported separately in previous reports to the Ministry. Thus, this report focusses on the *effects* of the programme evidenced through retrospective self-report data gathered in the End of Project survey in September 2008.

Table 1:   Timetable of research surveys in ICT PD cluster cohorts, 1999-2008

	1999	2001	2002	2003	2004	2005	2006	2007	2008
1999-01 cohort	BL		EOP						
2001-3 cohort		BL		EOP					
2002-4 cohort			BL		EOP				
2003-5 cohort				BL		EOP			
2004-6 cohort					BL		EOP		
2005-7 cohort						BL		EOP	
2006-8 cohort							BL		EOP
2007-9 cohort								BL	
2008-10 cohort									BL

(Key: BL=Baseline survey; EOP = End of Project survey)

Respondent Demographics

In all, 2674 valid End of Project survey responses were received from teachers in the 39 cohort clusters. This represents an estimated response rate of c.70% for the End of Project survey. The End of Project response

rate is consistent with response rates for other 'online' surveys of ICT PD cluster teachers conducted prior to 2008.

Table 2:   Number of responses to the 2006-8 End-of-Project survey, by cluster (n=2674)

Cluster	EoP	Cluster	EoP
activ@eden - Mt Eden Normal Primary School	20	Opuke ICT Cluster - Methven School	51
Ako Nga Kura ICT Cluster - Clevedon School	36	Otahuhu East Cluster - Fairburn Primary School	61
AKO Orewa ICT PD Cluster - Orewa College	95	Otahuhu West ICT Schools Cluster - Otahuhu Intermediate	66
Auckland Grammar/West Lake Boys' High School - Auckland Grammar	167	Papatoetoe Intermediate Cluster - Papatoetoe Intermediate	67
Awatapu/Freyburg Cluster - Awatapu College	103	Parumoana Schools Cluster - Paremata	90
Bush Cluster - Eketahuna School	36	Petone Foreshore Teaching and Learning Cluster - Maungaraki School	70
Central Auckland Cluster - Richmond Road	18	Queenstown Primary School - Queenstown Primary School	52
Central North Shore Cluster - Sunnybrae Normal School	60	Reporoa Valley - Reporoa Primary School	33
Clear Link Cluster - Glendowie College	163	Taitokerau - Tikipunga High School	79
Cullinane College PanSector Cluster - Cullinane College	16	Te Awamutu Intermediate - Te Awamutu Intermediate	93
Discover IT Tasman - Motueka High School	91	Te Kete Matauranga (Far North ICTPD Cluster) - Pamapuria School	47
e-kete - Wiri Central School	58	The Bay Cluster - Lynfield College	92
Flaxmere Schooling Cluster - Peterhead School	71	The Wel.Net Project - Newlands College	57
Hawkes Bay Boys' Schools ICT PD Cluster – Napier Boys' High School	84	ThinkNet - Sacred Heart	57
Hills Cluster - Wakari Primary School	49	Waikato North Cluster - Glen Massey School	22
Journey Cluster - Southwell School	83	Wai-Maru ICT PD Cluster - Waimataitai Primary School	41
Manawatu ICT-PD Cluster - Whakarongo Primary	79	Waitomo - Pukenui School	45
Maungakiekie ICT Cluster - Royal Oak Primary School	64	Wellington College ICTPD Cluster - Wellington College	73
Ngahere - Flat Bush Primary	47	Whangarei Secondary Schools Cluster - Whangarei Boys' High School	134
Northern Bays Cluster - Glamorgan School	104		

It appears that the demographics of the respondent group for the End of Project survey was similar to that of the broader teacher population in the ICT PD programmes in terms of gender within the sectors. About 71% of respondents were females and 29% were males, which, when broken down by sector represents a ratio of female to male teachers among the primary sector respondents of 84% to16% and in the secondary sector of

50% to 50%. Compared to the general gender distribution of teachers in the respective sectors, therefore, female and male teachers were proportionally represented in the 2006-8 ICT PD cohort.

About 60% of responding teachers taught at primary school level, 38% at secondary, and the remaining 2% taught both primary and secondary students. As had been the case for all but one (2003-5) of the previous cohorts, the proportion of primary school participants in this ICT PD cohort was significantly larger than that of secondary. In this cohort primary school teachers are over represented compared to secondary teachers but by somewhat lower margins than most of the previous cohorts.

Table 3:   Respondents by school sector (end of project survey (n=2664)

School Sector	Total	Percentage
Primary	1609	60%
Secondary	1022	38%
Both	43	2%

A strong correlation was evident in studies of previous ICT PD cohorts between the length of time that individual teachers were actively engaged in the programme and their subsequent levels of confidence and classroom usage of ICTs. In the 2006-8 cohort, almost half of teachers were actively engaged in the ICT PD programme for more than 2 of the 3 years of the programme. Only 8% of teachers had been in a programme for short-term periods of less than six months (Table 4). These proportions are roughly comparable with those for the previous cohort of 2005-7.

Table 4:   Respondents by length of time actively involved in the ICT PD programme (n=2631)

Length of active involvement (Months)	Total	Percentage
0-6	215	8%
7-12	383	15%
13-18	282	11%
19-24	471	18%
25-30	212	8%
31-36	1068	41%

Effects of the 2006–8 ICT PD Programme on Teachers

The main programme-level goals of the ICT PD school clusters initiative with regard to the effects on teachers themselves were:

- Increased skills among teachers across a range of educationally useful ICTs.

- Increased teacher confidence about their personal use of ICTs and about the use of ICTs with and by students in classes.

- Improved understandings of the roles that ICTs can play in improving classroom teaching and learning.

- Engagement of teachers in critically reflective communities of practice through and about ICTs.

Nationally, there was a clear and significant increase/improvement in relation to all of these indicators over the period of the programme.

Teachers' ICT Skills

Over the period of the programme teachers' skills in using ICTs increased significantly, especially, but not exclusively, for those who at the beginning of the programme had rated their skill levels as either very low or non-existent. As can be seen in Table 5, below, there were significant reductions across the board in the proportions of teachers who rated their skills as low or non-existent, and significant increases in the proportion who rated their skill level as high or very high. This was the case even with regard to ICTs such as word processing where the great majority of teachers *entered* the programme already with reasonable pre-existing levels of competence. By the end of the programme very solid majorities of teachers felt they had moderate or high skills with regard to file management (94%), basic computer operation (93%), word processing (97%), Internet (87%) and telecommunications (85%). Lower but still relatively high levels of end of programme competence were reported with regard to graphics (77%), spreadsheets (69%), databases (49%) and multimedia packages (71%), all of these still show significant increases compared to entry point proportions. The *increases* in teachers' skill levels during the programme were considerable across all ICTs, but were most notable in relation to graphics and multimedia applications.

Table 5: Teachers' skill levels with various ICTs before and after the programme, as reported in the end of project surveys. (n = 2554 ~ 2648)

Skill level	File Management		Basic Operation		Word Processing		Spreadsheets		Database	
	Before	After	Before	After	Before	After	Before	After	Before	After
High/Very high	37%	60%	27%	50%	48%	71%	16%	28%	7%	13%
Moderate	33%	34%	41%	43%	36%	26%	27%	41%	22%	36%
Low/Nil	30%	6%	32%	7%	16%	2%	56%	31%	70%	50%

| Skill level	Graphics		Internet		Telecommunications		Multimedia presentation	
	Before	After	Before	After	Before	After	Before	After
High/Very high	12%	35%	21%	46%	22%	43%	12%	33%
Moderate	28%	42%	36%	41%	33%	42%	23%	38%
Low/Nil	60%	23%	43%	13%	45%	15%	65%	29%

Demographic analysis of these results shows that although gender differences decreased over the period of the programme, they still remained significant in favour of male teachers across virtually all ICTs, even at its end. The exceptions were word processing, for which female and male respondents indicated the same high skill levels, and graphics, for which female teachers reported higher skill levels.

There were some sector differences both at the beginning and end of the programme. Secondary teachers tended to report higher skill levels on entry to the programme, but at the end of the programme, this trend reversed. While at the end secondary teachers still reported higher skill levels with spreadsheets, primary teachers at the end reported higher skill levels with respect to file management, word processing, graphics, Internet, multimedia and telecommunications.

Teachers' Confidence About the Use of ICTs

Changes in the confidence of teachers about using ICTs were investigated with regard to two elements: their confidence as personal users of ICTs, and their confidence about using ICTs with classes of learners. Both of these increased significantly over the period of the programme from what were moderate and low levels of confidence respectively on entry.

Figure 1: **Teachers' confidence about using ICTs with classes before and after the programme (n=2594 Before, 2560 After)**
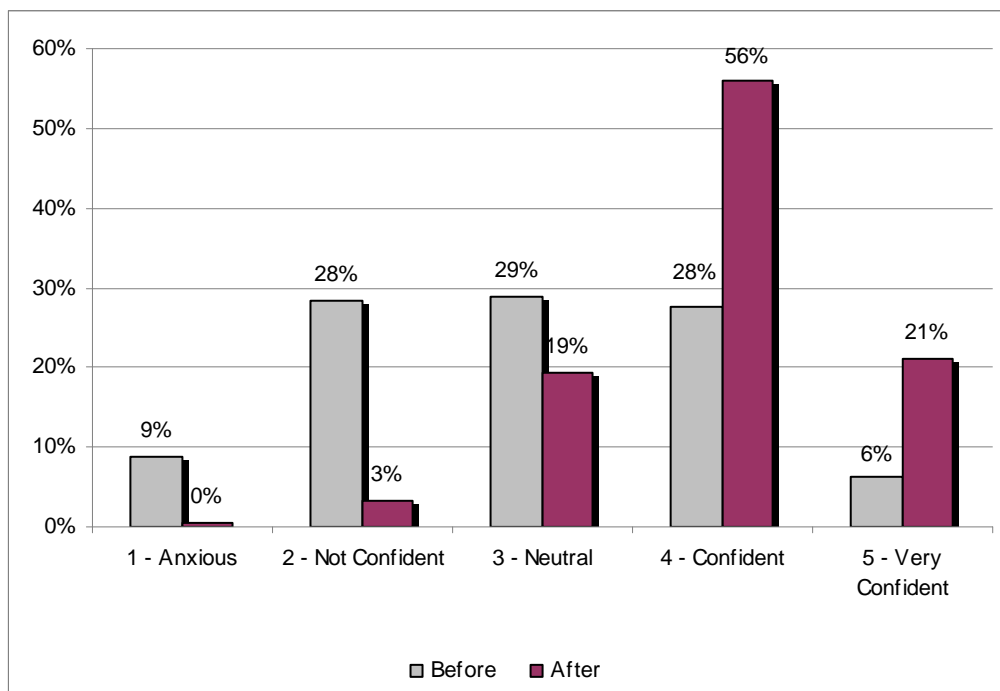
At the end of the project, many teachers reported that at the beginning of the project they had been less than confident as personal users of ICTs. About 4% of teachers classified themselves as 'anxious' and 20% of them were 'not confident' in this regard. By the end of the programme, less than 1% said they were 'anxious', while only 2% reported that they were still 'not confident' about the personal use of ICTs. By the end of the programme, over four fifths (84%) of teachers stated that they had become either 'confident' or 'very confident' about their personal use of ICTs.

Teachers' confidence about using ICTs **with classes** also increased significantly during the programme. Teachers reported that on entry, they had been even *less* confident about using ICTs with classes than they had been about their personal use. At that point, 9% of them self-identified as 'anxious' about this, and 28% identified themselves as 'not confident'. By the end of the programme, however, the percentage of 'anxious' or 'not confident' teachers had dropped from 37% to 3%. Correspondingly, the percentage of 'confident' or 'very confident' teachers had increased from 34% to 77%. Figure 1 illustrates the change in teachers' confidence about the use of ICTs with classes

As was also the case for confidence gains in relation to personal use, these confidence gains in relation to *classroom use of ICTs* were related to all of gender, sector and length of involvement demographics. Female teachers made significantly more confidence gains than male teachers ($X^2>35$; df=3; p<.001), primary teachers reported significantly more gains in confidence about classroom use than secondary teachers ($X^2>35$; df=3; p<.001), and confidence gains were also positively correlated with the length of time teachers had actively participated in the programme ($X^2>35$; df=15; p<.001) (See Table 6, & Figure 2). The longer teachers took active part in ICT PD the greater the increase in their confidence about using ICTs with classes.

Table 6.   Increases in teachers' confidence about use of ICTs with classes during the programme, by gender and sector (n=2565 gender; n= 2560 sector)

Change in confidence	Female	Male		Primary	Secondary
Decrease	2%	3%		2%	3%
No change	29%	48%		24%	50%
Slight increase	36%	34%		40%	31%
Significant increase	33%	16%		34%	17%

Figure 2:   Increases in individual teachers' confidence about use of ICTs with classes, by length of active involvement in programme (n= 2527)
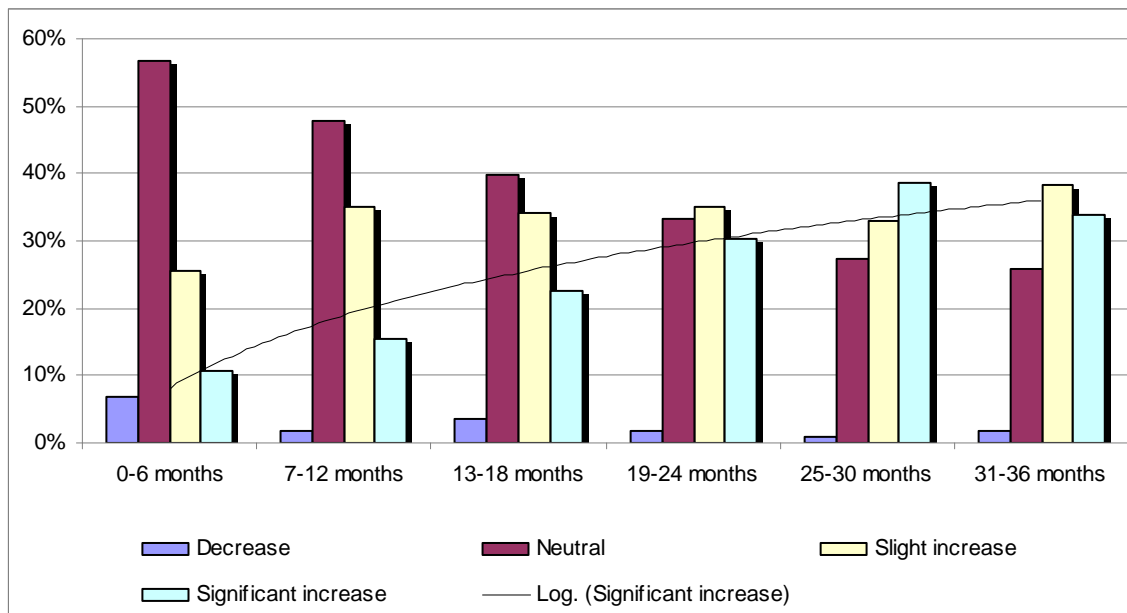
Teachers' Understanding of the Role of ICTs in Teaching and Learning

To address this indicator of the impact of the ICT PD programmes on teachers, we asked teachers what they saw as the benefits of ICTs in teaching and learning on the basis of their experience with ICTs during the programme; what concerns they had about the incorporation of ICTs into their teaching programmes; how, if at all, incorporating ICTs had changed their ways of teaching, and the contribution the programme had made to their understanding of teaching and learning in general. Their responses to these questions give an overview of what the teachers' own broad understandings were at the end of the programme in relation to the role of ICTs in education and how widely spread such views were among them.

Teachers in this cohort generally had positive views on the role of ICTs in education. By the end of the programme many of the teachers' still felt there were a number of constraints on the effective implementation of ICTs into teaching and learning, but their views had, if anything, become even more positive about their potential in other respects, both in improving their teaching and in fostering effective learning.

Benefits of integrating ICTs into teaching and learning

The qualitative analyses of previous cohorts reported benefits of integrating ICTs into their teaching and learning programmes, show that these benefits may be grouped into ten key categories (Ham, 2008; Ham, Toubat & Williamson-Leadley, 2006; Ham, Graham, Toubat & Williamson-Leadley, 2005). They are a mixture of teacher or teaching-oriented benefits and learner or learning-oriented benefits, with, from the teachers in this cohort, a heavy emphasis on the latter. The categories of benefit and their distribution for this cohort are outlined in Table 7.

Table 7:   **Examples and distribution of teacher-identified 'benefits' of using ICTs with classes. Percentages represent approximate proportions of statements relevant to a given category. (n=2225 respondents provided c.5063 statements. A random sample of 1156 statements were coded)**

Facilitating more efficient learning of specific curriculum content and **curriculum objectives,** easier access to information, improved presentation etc	(28%)	• "Becoming familiar with programmes e.g. PowerPoint, developing research skills rather than just 'Wikipedia' and 'Google', [and] enhancement of understanding/enrichment." • "Literacy skills improve. Oral language developed when using video on the computer" • "improvement in finding, evaluating and using information and justifying their choices , editing and reworking of written both fiction and information sharing material to improve content and form" • "Giving students a range of options to choose from when presenting data." • "Cementing of information using a variety of programmes / games, enjoyment." • "[Students are] more confident in their writing, knowing and locating information, [and] being able to discuss and analyse information." • "[Students] can quickly and easily find information looked for." • "[ICTs] broaden their [students'] research knowledge and skills. [There is an] increase in presentation skills and creativity."
Making learning for students more engaging and interesting	(25%)	• "Motivation/fun, accessing information that they [students] particularly wanted to know, learning without realising they are." • "[Students are] excited about learning [and] engaged in their learning." • "They [students] enjoy using computers and programmes so it enhances their learning." • "Increased motivation [and] increased level of communication and cooperative work." • "Motivation to learn is greater."
Fostering more independence and agency in student learning	(14%)	• "[Students are] becoming confident in what they once believed were unachievable skills." • "[Students] had control of their own learning and a sense of independence." • "The children were quick to learn and go further – they could identify possibilities and were keen to take risks and explore." • "[ICT] reinforces learning we have been covering in class. They [students] are not afraid to take a risk and are willing to problem solve for themselves when it comes to new ICT."
Encouraging collaborative or cooperative inquiry, contributing to social skill development	(10%)	• "They [students] were able to help each other when working on a laptop." • "Willingness to discuss, willingness to try new things [and] wanting to share with others." • "Children helping other children, more collaborative learning." • "They [students] are more supportive of each other, sharing knowledge and ideas." • "[Students are] sharing ideas and working collaboratively." • "Seeing their confidence in using a new tool and being able to teach someone else what they have learned."

|		
Enabling a focus on thinking skills (esp. higher order thinking and metacognition)	(7%)	• "[Students] discovered that not all that was on the web was true [and] became more critical thinkers when they could not find same answer in more than one place." • "They think critically about using graphics to make their work visually attractive". • "Thinking skills developed." • "[ICTs] encouraged higher order of thinking, more refined searches and detail in answers of research and contacts to get further info from." • "Developing the use of thinking and questioning skills."
Allowing more authenticity, real-worldness and relevance to children's lives in teaching and learning tasks	(4%)	• "Different opportunities such as creating music, making movies and creating blogs have been available to children." • "Learning of new skills and programmes to enhance current learning - authentic and purposeful." • "Authentic reflections / assessments and learning." • "We made connections with the wider world. We have increased our interaction with other classes in the school and community" • "Giving students an audience [and] preparing them for today and tomorrow's society." • "They know which programme to use for different purposes. Children got a lot of satisfaction out of producing something using an ICT. [It] enhanced children's authentic learning."
Using a wider range and variety of teaching-learning activities in class	(4%)	• "More access to ICT, increased teacher knowledge, wider variety of activities." • "[It] opened the door to a number of new resources that could be directly used in the classroom." • "Greater variety of options for sharing knowledge. Increased creativity and interest because of this. Wider variety of sources for research." • "Increased awareness and exposure to varied ICT [and] experience with different programmes e.g. kidpix, photostory etc." • "[It] allows for multiple opportunities to demonstrate learning." • "[ICT] gives a wide range of learning methods to meet learning styles."
Enhancing/expanding their own teaching skill set and pedagogical knowledge	(3%)	• "[Students have] access to alternative instruction". • "They [students] drive their own learning to a greater extent. Less pressure on teacher to be a fount of all knowledge and always to be right. It's stimulating." • "Formative practices are reinforced." • "Better able to support students struggling with content. [ICTs] helped with long-term planning of course work [and] encouraged a greater variety of approaches to classwork." • "Students were able to access more tools because I knew how to use them ," • "School becomes relevant again. Teachers become learners too. Answers come from the shared learning experience."
Teaching with more confidence and enthusiasm	(3%)	• "Increased application, increased confidence, increased knowledge." • "My gain in confidence benefited them [students] so that I could support them." • "They are much more confident and so am I." • "The ongoing PD has given me confidence to provide many more ICT opportunities for my students." • "What I have learnt thus far has contributed to the enthusiasm for me as a teacher and also the students I teach within the classroom"

Making learning more personalised or individualised,	(2%)	• "[ICT] personalises their learning." • "Work pitched closer to individual needs." • "Meeting individual learning needs". • "[Being] able to use an ICT that suits their learning style." • "[ICT] caters for variety of styles, needs."

Concerns

Technical issues, such as equipment reliability, and inadequate access to ICTs *for students* were among the most-selected concerns about ICT use, these being much more significant in peoples' minds than pedagogical issues. Over a third of the teachers, for example, identified significant concerns about access to equipment for students (39%), technical reliability, (33%) and lack of time (33%) for themselves to become familiar with the range of ICTs available as their main persisting concerns around the use of ICTs with students at the end of the programme (Figure 3). As has also been the case for previous cohorts, many of the teachers at the end of the project felt there was still a need for continuing PD around ICT use, even though the programme had significantly increased and improved their effective practices in this regard.

Figure 3:   Teachers' continuing concerns about the use of ICTs with classes (n = 2521~2566)
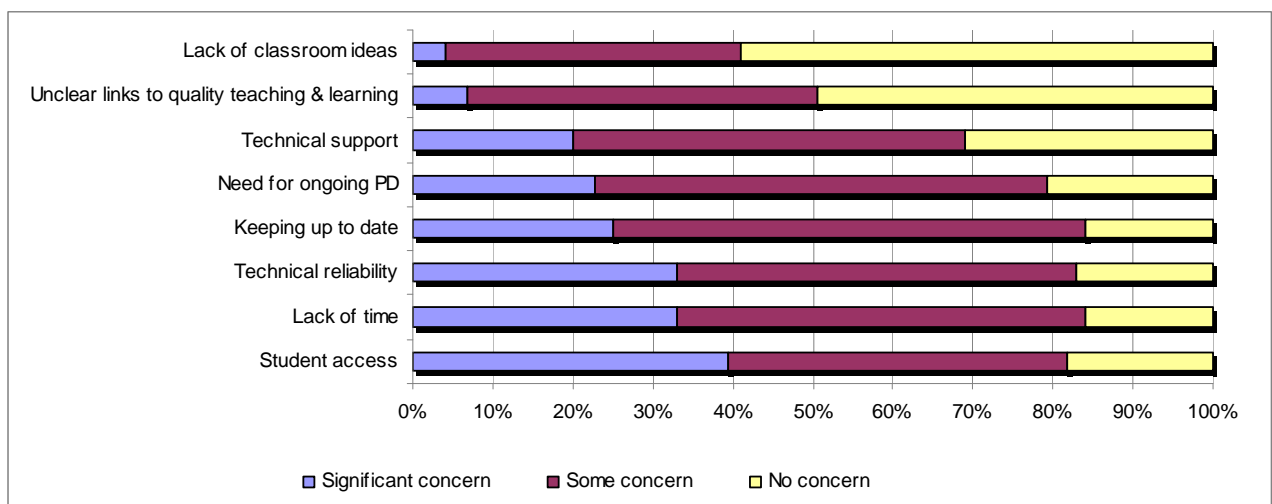
Contribution to wider understandings of teaching and learning

When asked whether or not the ICT PD programme had contributed to their understanding of teaching and learning in general terms, over two-thirds (68%) of respondents indicated that the programme contributed new ideas about teaching and learning, including 10% who stated that the programme provided them with a 'whole new approach'. It would also seem that primary teachers were rather more likely to see the programme as contributing new insights and ideas in this regard than secondary teachers (Table 8).

Table 8:   Contribution of ICT PD to general understandings of teaching and learning (n=1583 (P), 995 (S))

	Total	Primary	Secondary
Provided a new whole approach to teaching and learning	10%	13%	5%
Contributed some new ideas about teaching and learning	58%	63%	51%
Confirmed current ideas/understandings about teaching & learning	25%	20%	31%
Not at all	7%	4%	13%

When they were asked to describe the ways in which the ICT PD programme made a contribution to their 'understandings', responses[1] ranged from the educational value of ICTs to significantly deeper understandings of learning and pedagogy in general, well beyond the connection with ICTs.

Of all the comments made about the ways in which ICT PD programme had contributed to teachers' 'understandings' of teaching and learning in general, about a quarter (23%) related to the specific connections they had been able to make about the educational value of ICTs in teaching and learning, rather than what they had learned about teaching and learning 'more generally'. Almost three-quarters (70%) of the comments that teachers made, however, did identify deeper or wider understandings and identified a number of key ways in which the programme had supplemented, challenged and even changed those understandings.

Thirdly, there was also a substantial proportion (c. 28%) of comments on the programme as *challenging and changing their pedagogical perspectives and understandings*, either through the content of the PD programme, or, more often, through the opportunities it provided for sharing and critical discussion with colleagues, outside 'experts', and so on. Many of these comments spoke of the teachers adopting a more 'critical' or more 'reflective' approach to their teaching as a result of their new awareness of pedagogical and learning theories and research.

Examples of statements about challenging their pedagogical approach and understandings

- "It has exposed me to a whole new learning environment. I have become a facilitator of learning instead of the one holding all of the knowledge. I would see something in PD sessions and just have a go...initiate stage of an ICT environment."
- "My pedagogy has changed to understanding the different ways to formatively co-construct and get feed forward feedback from children using different ICT skills and hardware eg: Interactive whiteboard."
- "It has made me more capable of teaching to the needs of all students more fully and gaining a wider range of strategies to use to deliver curriculum in different areas."
- "[It] has made me more aware of what is out there and can be done. Always looking of better ways to teach and certainly feel that, through moodle, out of class work and assignments are more educational and meaningful for the students."
- "It has provided an opportunity for our school to go right back to the basics and explore our core values in learning and teaching. We have reviewed our beliefs on how children learn and how we can best prepare them for their futures."
- "[It has] widened my horizons and given me a whole new pedagogy."

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[1] 1754 teachers commented on the impact of their involvement in the programme on their 'understanding' of teaching and learning.

A slightly larger proportion (c. 23%) of responses stated that the teacher had increased their knowledge of different *teaching / learning styles and theories*, or were enabled to make clearer connections between their day to day practice and the various learning and teaching theories and models outlined in the programmes. Most prominent among the particular theories and models identified were 'inquiry learning', 'learning styles', 'collaborative and/or cooperative learning', and various taxonomies of 'thinking skills' (Bloom's, SOLO etc.).

Examples of statements about linking practice with learning theories, models and research

- "Some PD has been around thinking skills, inquiry learning and the new curriculum, so, relevant to develop my understanding of teaching and learning through the use of ICT."
- "I have learnt more about different inquiry approaches and have clarified my thoughts on some models. I have extended my knowledge of thinking tools."
- "In terms of our inquiry learning, this has greatly changed the way I view the role of the teacher/student. Letting go of all of the control has been great."
- "Conferences gave exposure to new approaches such as inquiry learning which we adopted as a school. Interactive whiteboard training and daily use and trouble shooting has lead [sic] to changes in teaching styles."
- "Understanding of inquiry learning and its place with a constructivist approach to situated learning."

Many of these (c. 20% of total comments) involved teachers reporting that they now had a better understanding of *student-centred teaching and learning,* or that in some way their teaching had become more student-focused or more relevant to students as a result of the programme.

Examples of statements on student-centredness

- "Giving children many avenues to explore, practise and present information has added a new dimension to my teaching and it really enthuses and turns some children onto learning, particularly boys and those who find pen and paper work difficult."
- "Teacher = facilitator of learning opportunities. The importance of students being actively engaged in questioning and seeking information."
- "[I have] realised the value of making learning child centered and learning directed by the child."
- "The use of ICT engages students quickly - they are able to problem solve and choose suitable applications for a variety of different tasks. Independence is key and the teacher is not the first point of reference."
- "[ICT] allows the teacher to enter the world of the student and is less teacher directive-the students take control of their own learning to learn."

Finally, we note that there were two elements of significant sector difference in the nature of the comments on wider deeper understandings gained from the programmes. The first is that primary teachers were twice as likely as secondary to comment on increased understanding of specific learning theories. The second is that secondary teachers were twice as likely as primary to state that the programme had had little or no effect on their pedagogical understandings in the broader sense.

Teachers' Classroom Practices

When teachers were asked about the extent to which their classroom practices had changed as a result of their participation in the ICT PD programme, over a third (35%) of them indicated that their classroom practices had changed to 'a large extent' or 'completely', and just under half of them (46%) said their classroom practices had changed 'to some extent'. A smaller group (18%) indicated that little or no change had occurred in their classroom practices at all (Table 9).

Table 9:   Changes in teachers' classroom practices
(n=2594)

Extent of change in classroom practices	Percentage
Not at all	5%
Very little	13%
To some extent	46%
To a large extent	32%
Completely changed	3%

There were significant gender and sector related differences in teachers' responses to this question. Female teachers indicated higher levels of change in their classroom practices than male teachers (X^2>35, df=4, p<.001). Some 39% of female teachers reported that their classroom practices changed 'completely' or 'to a large extent' as a result of their participation in the programme, while only a quarter (25%) of male teachers stated this (Table 10). Male teachers were almost twice as likely as female teachers to state that the programme made 'no' or 'little' change in their classroom practices.

Regarding sector differences, primary teachers stated higher levels of change in their classroom practice than secondary teachers (X^2>35, df=4, p<.001). Whereas 46% of primary teachers indicated a 'complete' or 'large' change happened to their classroom practices, 19% of secondary teachers indicated the same levels of change (Table 10). While the great majority (81%) of all teachers reported at least some element of change in their classroom practices, secondary teachers were almost four times as likely as primary teachers to report little or no change in classroom practice as a result of the programme.

Table 10: Changes in teachers' classroom practices by gender and sector
(n= 1835 (F), 758 (M), 1561 (P), 992 (S))

Levels of change in classroom practice	Female	Male	Primary	Secondary
Not at all	4%	8%	2%	9%
Very little	11%	18%	7%	23%
To some extent	45%	48%	45%	48%
To a large extent	35%	23%	41%	18%
Completely changed	4%	2%	5%	1%

In terms of *the types of changes* teachers reported making in their classroom practices, these were more or less equally divided among:

- Respondents identifying **increased use of ICTs in classes *per se***, as a 'changed practice' (e.g.: "I use ICT on a more regular basis as I have a better understanding of what programmes and how to use them effectively with the children."; "More use of ICT by students"; "Implementing ICT across all curriculum areas more."; "I now experiment with different forms of ICT with the hope of enhancing learning"; "I'm now Using Mimio in classrooms").

- Respondents identifying positive changes in the **students' learning attitudes and behaviours** or in the general 'student-centredness' of their lessons and classroom activities. (e.g.: "More pupil centred applets help with hands on learning"; "My confidence with computers/ICT has allowed me to let the children

have more freedom - and to show me what they know"; "It has got me away from teacher centred learning more and more. Students interacting more and taking more responsibility for their own learning and the learning of their peers"; "There's now a greater focus on student responsibility for acquiring knowledge and the value of inquiry based learning")

- Respondents identifying changes in their own pedagogies, especially their **trying out new and different teaching approaches in classes,** based on either their new understandings of teaching and learning or their increased familiarity and confidence with certain ICTs. Just over 50% of respondents who identified 'changed practices' did so in these terms. (E.g.: "I have incorporated more thinking skills in my teaching"; "Conferences gave exposure to new approaches such as Inquiry learning which we adopted as a school"; "I am now thinking much more about incorporating different ways to learn, to cater for different learning styles and strengths of individuals"; "I am now thinking much more about challenging the ideas, beliefs and values of my students and how to stretch them"; "Combined with thinking skills and higher learning initiatives development my in-class questioning and planning content have changed for the better"; "I can make lessons more visually interesting.".)

No teachers said that their classroom practices had changed for the worse as a result of their participation in the programme. By far the most prominent 'negative' change identified was the notion that teaching with ICTs had made teaching more difficult or frustrating in terms of time and resource management. This was largely seen to be the result of insufficient time, poor access, or lack of sufficient ICT resources to allow them to put into practice the ideas gleaned during PD events. The programme had clearly put significant strain on the technical infrastructures of many schools and their ICT resource base, and for many teachers the use of ICTs by students had logistically complicated their teaching at the same time as it had made it more learner and learning-centred.

- "We now want even more ICT equipment. :)"
- "Since I've realised what I can do in ICT and how useful it is, I've been frustrated with lack of resources and time in the classroom with the demands of our crowded days"
- "Not enough time or computers to be able to keep all children up to speed with what we are doing or what they want to do"
- "Computers [are] not working well in class or in library. No IWB - and to be able to use one involves major reorganisation of [the] class to go to another class to use them"
- "Greater demands on the teacher. Extra time is needed by teachers to learn new ideas and software and also to create new things for teaching because greater expectations were being placed on them."

Effects of the ICT PD Programme on Student Learning

The ICT PD clusters contracts identify several performance indicators related to the expected downstream student learning effects of the professional development. At a general level, there is an expectation that the ICT PD programmes would "facilitate improvements in students' learning, engagement and achievement." This was to be evidenced through:

1. increases in reported 'instances of teaching using ICT with classes to facilitate the learning of students', and

2. identifying 'instances of teachers aligning ICT use with student learning'

The surveys provide both quantitative evidence of the extent of such increases in classroom use of ICTs in the cluster schools, and some qualitative evidence of the nature of the 'alignment' of ICT use with a range of student learning objectives.

Increased Classroom Usage of ICTs

One measure of increased classroom use of ICTs during the programme is the change in proportions of 'high usage' teachers (those who integrated ICT based activities into "all" or "most" of their units of work) at the beginning and end of the programme. In this cohort, the proportion of 'high usage' teachers increased from 18% at the start for the programme to 47% at the end. Conversely, the proportion of teachers who did not integrate ICTs at all decreased from 20% to 4% (Table 11). These figures were almost identical to those for the previous (2005-7) cohort.

Table 11: The proportion of units of work in which ICTs were incorporated before and after ICT PD, as reported in the end of project surveys (n= 2601 Before, 2577 After)

	Percentage of teachers before the programme	**Percentage of teachers after the programme**
All or almost all units	5%	20%
Most units	13%	27%
Several units	20%	30%
One or two units	42%	18%
No units	20%	4%

The increase in the frequency of participants' usage of ICTs with classes over time was correlated with gender, sector and length of time in the ICT PD programme. In particular, female teachers reported a greater increase (from 17% to 49%) than male teachers (from 20% to 43%) in their integration of ICT-based learning activities into the classroom. In the same way, primary teachers increased their classroom usage significantly more than secondary teachers. At the end of the programme, well over half (54%) of primary teachers were using ICTs in most or all of their units of work, compared with just over a third (37%) of secondary teachers. Those who had been in the programme longer also tended to report use of ICTs in a higher proportion of units than those in the programme for shorter periods. At the end of the programme, over a third (37%) of those who had been actively involved in the programme for *less than a year* were 'high

usage' teachers. By comparison, well over half (56%) of those who had been active in the programme for *more than two years* were 'high usage' teachers at the end of the programme.

Aligning ICT Use with Student Learning Outcomes

In the surveys, we asked teachers to identify the specific learning activities their students had taken part in during the PD programme, the Essential Learning Areas covered by these activities, and the specific *student learning outcomes* they expected from or observed during those activities. These observed learning outcomes provide a window into what the teachers saw as the 'quality' in the 'quality learning experiences', that they provided for students during the programme.

Qualitative analyses of data from previous cohort surveys (Ham, Toubat & Williamson-Leadley, 2006) has suggested that, in teachers' minds at least, the learning *outcomes* most often demonstrated when students use ICTs in learning activities, can be grouped into four main categories:

1. Student motivation and engagement.

2. Generic thinking skills – (Presentation & Communication, information processing, higher order thinking, and creativity).

3. Generic social / collaborative skills

4. Specific curriculum content knowledge and objectives, including technical (ICT) skills and knowledge.

The 2006 cohort's identification of the alignment of ICT-based classroom activities with these student learning outcomes is outlined below under these same key categories.

1. Increased use of ICT-based activities for student motivation and engagement with learning tasks.

The routine involvement of students in ICT activities with motivation/engagement learning intent or outcomes doubled over the period of the programme (Table 12).

Table 12: Proportion of teachers reporting frequent use of ICTs in classrooms for motivation/reward/engagement outcomes before and after the ICT PD programme (n= 2445 Before, 2430 After)

Activity focus	Frequency / Time	Avg. daily or almost daily	Avg. once or twice a week	Avg. once or twice a term	Avg. once or twice per year	Not at all
Motivation/Reward/ Engagement	Before ICT PD	3%	12%	19%	15%	51%
	After ICT PD	10%	20%	22%	12%	35%

2. The acquisition and demonstration of a range of generic communication and cognitive skills

Communication skills

The use of ICTs such as Web2 sites or emailing for *interactive*, topic-related communication, for example making inquiries of experts outside the classroom or engaging with social networking websites for classroom learning purposes, did not increase dramatically for most teachers over the period of the programme at a national level, though we note that the proportion of teachers whose students had 'not at all' engaged in these kinds of activities did reduce from 69% of teachers to 40%. The proportions that reported student use for this purpose at least a few times a term increased noticeably (Table 13, below).

By contrast, the majority of teachers *were* reporting student use of ICTs quite regularly for other communication activities by the end of the programme, notably by way of presentations of their work to teacher or peers. By the end of the programme, for example, the proportion of those whose students had 'not at all' used ICTs for multimedia presentations had decreased from 49% to 17%. Conversely, by the end of the programme the students of well over half (59%) of the teachers were engaging in this at least once or twice a term. Student use of ICTs for static print presentation had been rather more common prior to the programme, but more routine use of this too increased over the period of the programme. By the final year of ICT PD, the students of almost a half of teachers were using ICTs for static print presentations on a weekly or more frequent basis, and about four fifths on a termly or more frequent better basis.

In all three of these aspects of ICT use connected to communication skills, primary students were likely to be involved in these activities more regularly than secondary students.

Table 13: Frequency of students' engagement in ICT based activities connected to communications skills, before and after the programme (n= 2475~2494)

Classroom activity	Frequency Time	Avg. daily or almost daily	Avg. once or twice a week	Avg. once or twice a term	Avg. once or twice per year	Not at all
Static print production / presentation	Before	5%	15%%	31%	30%	19%
	After	18%	28%	34%	14%	7%
Multimedia presentation	Before	1%	5%	16%	28%	49%
	After	6%	17%	36%	24%	17%
'Online' interaction with others (email, Web2 etc)	Before	4%	6%	8%	12%	69%
	After	12%	12%	17%	19%	40%

Information Processing

As had been the case with previous cohorts, the increase in student use of ICTs was most dramatic in relation to searching for, gathering or processing information, especially from the Internet. Teachers reported a significant increase in students' engagement in such activities over the programme. For example, 46% of teachers reported that their students had never or only rarely accessed or searched for information on the Internet before the programme. By the end of the programme, the students of over four fifths (84%) of the teachers in the programme were using ICTs for this purpose on a termly or weekly/daily basis (Table 14).

Primary students were more likely to be involved in using ICTs for information processing as routine (better than termly) users than secondary students (63% cf. 41%).

Table 14: Students' engagement in ICT-based activities related to a variety of cognitive skills before and after the programme (n=2437~2463)

Classroom activity	Frequency / Time	Avg. daily or almost daily	Avg. once or twice a week	Avg once or twice a term	Avg. once or twice per year	Not at all
Creativity	Before	2%	6%	13%	24%	56%
	After	6%	13%	29%	24%	27%
Information gathering/ processing	Before	7%	18%	29%	25%	21%
	After	24%	31%	29%	10%	6%
Higher Order Thinking, problem solving etc.	Before	2%	5%	12%	17%	64%
	After	6%	13%	20%	21%	39%

Higher Order and Critical Thinking Skills

As can also be seen in Table 14, when teachers were asked about ICT activities associated with higher order thinking skills such as problem solving or synthesis and evaluation, the results show that the proportion of termly or better users of ICTs for these outcomes more than doubled over the period. However, such increases were less than those noted for information gathering and were lower also than those reported for communications-based activities.

Creativity

In relation to ICT activities specifically aligned with creativity as a learning outcome the proportion of low frequency-users of ICTs for creative activity reduced noticeably (from 80% to 51%) over the programme. Conversely, the proportion of routine users increased from 8% to 19%. The greatest student use of ICTs for creative activities was in the termly rather than weekly/daily categories. Proportionally more primary teachers also used ICTs with students for creative activities than secondary teachers. This possibly reflects the relatively greater role of activities such as 'creative writing' and 'story telling' in the primary sector.

3. ICTs for collaborative or social learning

The frequency of student engagement in ICT based activities related to collaborative learning, social interaction, and a sense of being part of a learning community, such as working in groups to solve a problem, collaborating on desktop publishing projects etc, also increased over the period of the programme, though there was much less emphasis on these learning outcomes in ICT use than on other outcomes such as communication, information processing and the like. Two thirds (66%) of teachers said their students had 'not at all' engaged in ICT based activities connected to collaborative learning and social interaction during the year prior to the programme, though by the end of the programme this had reduced to 43%. The proportion of teachers who reported high levels (daily or once/twice a week) of their students' engagement in collaborative ICT based activities increased from 6% to 18%.

Table 15: Students' engagement in ICT-based activities related to collaborative and social learning, before and after the programme (n=2428 Before, 2416 After)

Classroom activity	Frequency / Time	Avg. daily or almost daily	Avg. once or twice a week	Avg. once or twice a term	Avg. once or twice per year	Not at all
Collaborative learning and social interaction	Before	1%	5%	13%	15%	66%
	After	5%	13%	21%	17%	43%

4. Curriculum Practice & Technical Skills

There was also an increase in the frequency of students' use of ICTs related to reinforcement of content knowledge, practice at rule application and concept learning through the use of drill and practice, educational games, tutoring software, and the like. The proportion of teachers whose classes had rarely or never used these technologies for these purposes reduced significantly over the programme, and conversely the proportion of teachers who reported daily or weekly student engagement in such classroom activities increased. By the end of the programme well over a third of teachers, and proportionally more primary (51%) than secondary (20%) teachers, were reporting routine (weekly or daily) use of ICTs for curriculum practice of this type.

As also had been the case with previous cohorts, a significant proportion of identified learning outcomes of ICT use, and a significant amount of regular use of ICTs by students, related to student acquisition of ICT skills *per se*. The tendency to view technical skills acquisition as a legitimate outcome for computer based learning activities was especially strong amongst primary teachers, some 60% of whom reported that they routinely used ICTs for such a purpose at the end of the programme (cf. 37% of secondary teachers).

Table 16: Students' engagement in ICT-based activities related to curriculum practice and technical skills, before and after the programme (n=2424~2445)

Classroom activity	Frequency / Time	Avg. daily or almost daily	Avg. once or twice a week	Avg. once or twice a term	Avg. once or twice per year	Not at all
Curriculum practice	Before	3%	12%	18%	24%	43%
	After	14%	25%	26%	17%	18%
Technical skills	Before	8%	16%	22%	22%	31%
	After	24%	27%	26%	11%	13%

Essential Learning Areas

The largest proportion of ICT-based student activities reported by teachers related to the English (20%) and Maths (17%), followed by Social Science (13%), Science (11%) and Cross-curricular (10%).

Figure 4: Students' use of ICTs by Essential Learning Area (n=9762 activities)
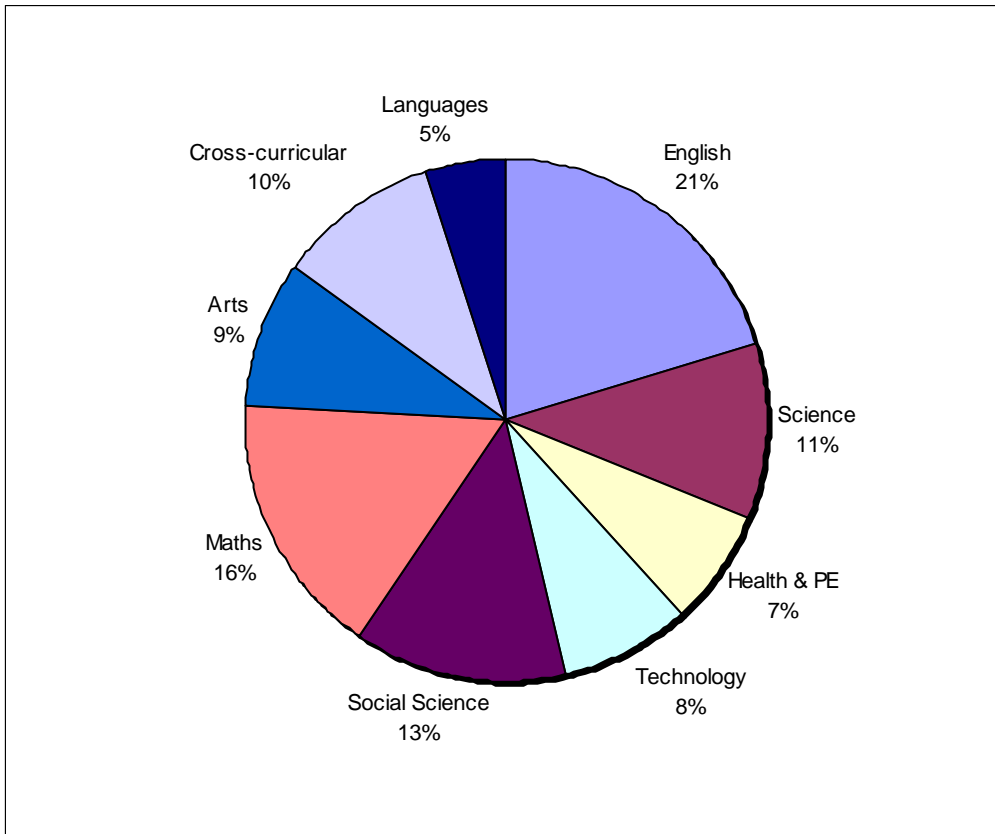
Participant Evaluations of the Programme

Teacher goal Achievement in the Programme

Generally, teachers indicated high levels of satisfaction with the programme in meeting their goals and the great majority, by the end, felt it had been a positive force in their recent development as teachers.

Teachers were asked about three main kinds of goals: technical skills, practical ideas for classroom uses of ICTs, and improved quality in teaching and learning. For all three major goal types, over half of teachers reported that their goals had been largely met, fully met or exceeded (Table 17).

**Table 17: Levels of ICT PD goal achievement reported by teachers (n= 2560 (T), 2428 (C), 2471 (Q))**

Goal Level of achievement	Technical skills (T)	Classroom ideas (C)	Quality of teaching and learning (Q)
Exceeded	3%	4%	3%
Fully met	8%	9%	9%
Largely met	44%	43%	42%
Partially met	40%	38%	40%
Not met	5%	6%	6%

In this cohort, sector differences were more marked than in the previous cohort of 2005-7. Primary teachers reported higher goal achievement levels compared to secondary teachers in relation to all three of technical skills acquisition, producing classroom ideas, and enhancing teaching and learning quality.

There was also a noticeable gender difference among teachers in terms of their goal achievement. For all three goal types, female teachers reported higher levels of achievement than male teachers.

As has been found in relation to many other effects of the ICT PD programmes, there was also a clear correlation between the length of time individuals were involved in the programme and their level of goal achievement. Across all three main goal types, and for both sectors, the longer the period of involvement, the higher the levels of goal achievement. Figure 5 shows this relationship between goal achievement and length of involvement.

Figure 5: Proportions of teachers reporting extent to which their goals/expectations of the ICT PD programme had been met, by length of time in the programme (with trendlines)
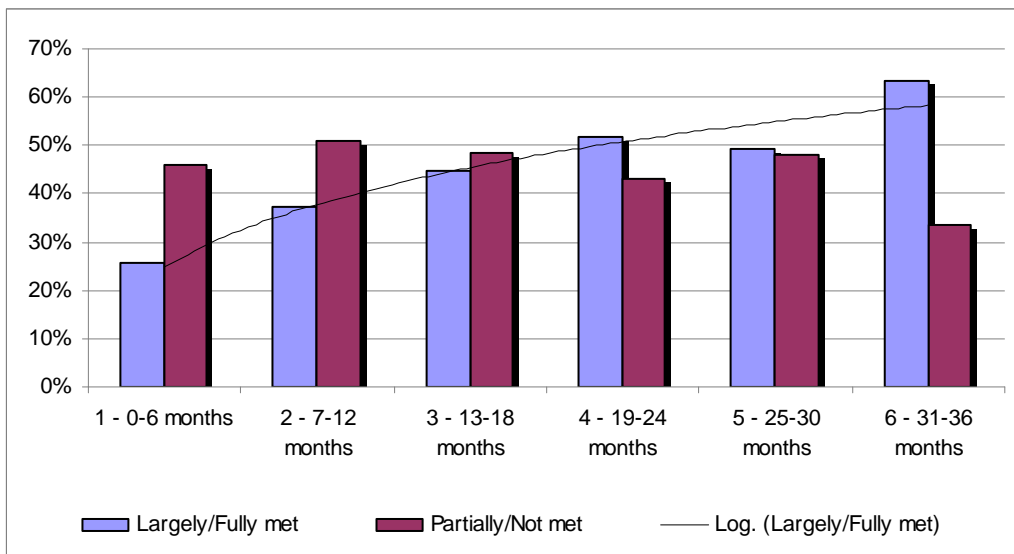
The ICT PD Programme's Contribution to Teachers' Increased ICT Usage

Teachers were asked about the extent to which their increased use of ICTs with classes over the three years of the programme was attributable to the programme. The great majority of teachers (89%) indicated that the increase in their ICT usage was attributed either completely, largely or partly to the ICT PD programme. Some 52% stated that their increased use of ICTs with classes was either largely or completely attributable to the programme (Figure 6).

Figure 6: The extent to which increased use of ICTs with classes was seen as attributable to the ICT PD (n= 1533 (P), 954 (S) programme
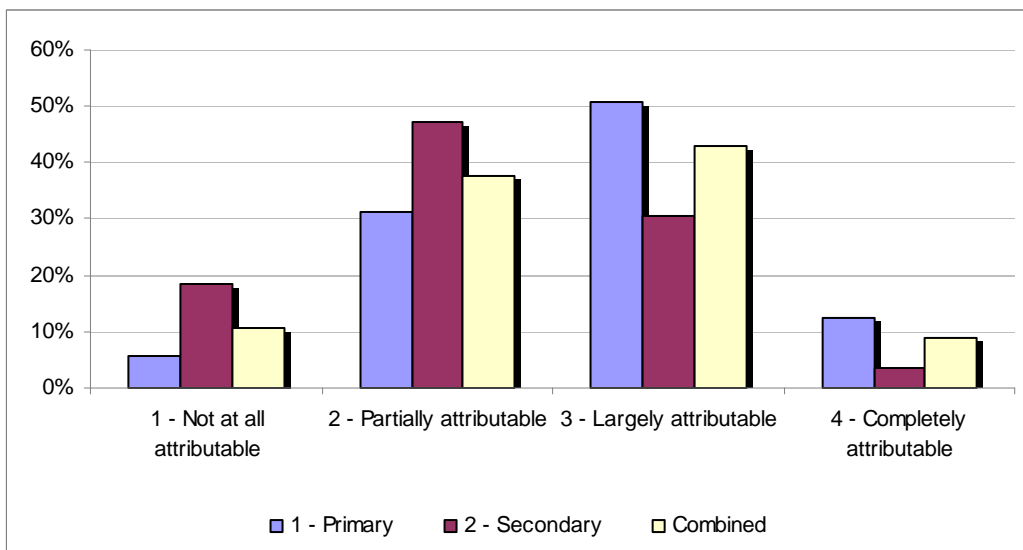
The other, non-programme, factors most often identified as contributing to their increased use of ICTs with students included:

- Recent entry into the programme.

- Their own prior knowledge or interest and self-teaching.

- Availability of high levels of technology in and of itself.

- A change of role or responsibility (e.g.: promotion) within school which required more attention to ICTs.

- Informal learning and mentoring from students or their own children, or from individual colleagues who were not Lead Teachers or cluster Facilitators.

- Other PD initiatives within the school that were not directly part of the ICTPD programme but which fostered the occasion to use ICTs with classes (e.g.: EHSAS initiatives).

- Professional learning from conferences.

- Completing ICT or learning related courses for formal qualifications at a local university, polytechnic or the like.

In a triangulating question, teachers were asked how significant the programme had been in contributing to their overall development as professionals. While only a small minority (11%) of teachers said it had not been significant to their overall development, well over half (59%) of teachers indicated that the programme had been either 'significant' or 'very significant' as a factor in their general development as teachers. Primary teachers were much more likely than secondary teachers to attribute general professional significance to the programme (70% and 42% respectively).

Teachers' Evaluations of the Delivery of the ICT PD Programme

Teachers were asked to comment on the particular aspects of their programmes that they most and least appreciated. The feedback in relation to these most and least appreciated aspects are summarised in the exemplary statements in the boxes below, categorised by:

- **Programme content.** Statements by teachers about the *content* of their ICT PD programmes and their particular cluster models centred around learning new technical skills, gathering and sharing practical ideas for ICT integration into classroom curriculum programmes, and learning about principles of effective teaching and learning in general. Prominent among critical comments on programme content were those about tailoring the PD better to the needs of individuals or doing more effective needs analysis, providing greater variety in ICT session content and activities, and improving the connection and balance between skills acquisition and quality classroom practice with ICTs as a focus of workshops.

Sample of appreciative comments on content	Sample of critical comments on content
• "Learning about the thinking maps and using Solo Taxonomy as a tool for assessment (and using it as incentive for more quality work from children!" • "That the programme covered a wide range of skills and topics, starting at a very basic level and moving on through to a higher level." • "Different resources you can use on the laptops, different thinking skills you can use in the class i.e. thinkers keys, HOMS, thinking hats..." • "Learning new skills." • "Ideas for integrating ICT into classroom." • "Exposure to new software and programmes." • "New ideas, new software and resources." • "Different learning activities."	• "Lead teacher workshops that were about something you would never use in the classroom or school." • "PD was directed too much at IWB teachers." • "Late after hours courses of a highly technical nature." • "The focus was so much on classroom practice that our administration needs have not yet been covered" • "Action research was added pressure at times." • "Being made do skills tests that I could already do - complete waste of time." • "Being given a limited and unrelevant (for me) list of school-based workshops to attend, rather than doing workshops that I really wanted/needed to do."

- The skills and effectiveness of the **Facilitators and other leadership elements. A**s has been the case in most cohorts, many of the comments highlighted the pivotal role of able, knowledgeable and professionally skilled facilitators. Teachers required their facilitators to be technologically and pedagogically knowledgeable, willing to adopt a supportive, empathetic attitude and always 'available'.

Sample of appreciative comments on facilitation and leadership	Sample of critical comments on facilitation and leadership
• "Our current facilitator being available and willing to be hands on and help in school with staff and students." • "Help from the coordinator in establishing the class blog." • "Having the ICT specialist available to teach, inspire and walk along side me so I gained first hand knowledge." • "Motivation through a super tutor and giving me confidence to know I can do this too!" • "The accessibility of our cluster leader - and his expertise." • "Individual teachers who trained, gave good ideas for relevant teacher practice." • "The ongoing PD support and motivation given by the adviser." • "Support, inspiration and ideas from our facilitators."	• "As ICT coordinator it can be difficult to get everyone on board in your school!" • "Need to accommodate different levels of skills across the cluster" • "Lack of time for staff PD within school PD structures, due to so many other curriculum needs." • "Not putting enough focus on good pedagogy using ICT" • "The key note speaker at our cluster ICT conference." • "Staff not willing to participate in IT PD" • "Extra work load." • "One tutor knew it all and assumed that we knew it also, where most of us were very hesitant with new ideas so they ended up getting lost."

- **Programme delivery.** The organisational aspects of programme delivery appreciated most were the personalised attention many facilitators were able to build into their programmes, small group sessions, one to one help, in-classroom visits, arranged visits among schools, and practical (i.e.: hands on and/or interactive) workshops. Many of the least appreciated aspects to do with programme design and delivery were about timing arrangements for training and other PD activities, about the need to balance workload and still have time to practise what they have learnt, about reducing paperwork and compliance requirements, and about ongoing access to equipment and facilities.

Sample of appreciative comments on programme delivery	Sample of critical comments on programme delivery
• "PD sessions and hands on activities." • "Having someone to ask, knowing there is an expert there if you needed help." • "The small group seminars that focused on a limited number of skills." • "Workshops and conferences to upgrade skills." • "Variety of after school holiday courses that were short, practical and available to everyone." • "One on one tutorials based on personal need." • "Practical hands-on sessions like how to use the data display, how to use the department distribution files." • "Step by step guidelines and assistance."	• "The milestone reporting requirements!!" • "Inservice not advertised to our school in time/PD at other schools during busy time of year? TIME for 1-to-1" • "Stress caused by termly commitments to showing proof of our goals" • "Time to sit at the computer to get to play!!!! Not enough time!!!!" • "PD held in the holidays or after school." • "All the holiday workshops." • "The difficulty to have access to computer suite at times -- many classes wanting it at same time or the system down!"

- The teachers' involvement in various **'Learning communities'** as part of their programmes. Teachers often commented on the various opportunities that accompanied the programmes to share learning and experiences both within and beyond the cluster, and the contribution these made to developing a 'community of practice' around the programme. Most prominent among these opportunities were the national conferences, outside/overseas visitors and experts, meeting other teachers from other schools, and sharing expertise and knowledge with colleagues through various 'celebrations' and events both within and outside the cluster context. Critical comments about the community aspects tended to be about a perceived lack of real inter-school collaboration in the cluster, the levels of coordination and organisation present in the cluster, working in mixed ability groups, and, seeing the same rather than new or innovative things happening in watch others' schools.

Sample of appreciative comments on learning community elements	Sample of critical comments on learning community elements
• "Being able to network with other lead teachers. The chance to share ideas, resources and strategies has been invaluable. As well as working with a facilitator to plan and approach problems. And opportunities to attend conferences - this has been incredible." • "Being able to learn, listen, understand concerns and share ideas with others." • "The collegial nature of the project. Teachers form all the schools getting together to learn from one another. Children and teachers presenting their learning at conferences. The sharing has been fantastic." • "The ability to link with others in the network to find out what I need to know." • "Sharing ideas with other teachers in the cluster." • "Meeting other teachers and getting more personal skills together." • "Collegiality between schools." • "Sharing cluster days. Visiting other schools to see best practice." • "The ICT(Northern Bays and ULearn) conferences really helped to innovate."	• The cluster meetings, although sounding good in theory, from what I experienced were very disorganised and ended up being a waste of time. • "frustration of working with other schools when we all have different priorities when organising collaborative events for teachers or students." • "Contrived get together with other schools does not work. There has to be a common interest for productive learning and sharing to take place." • "Forced or unnatural sharing of finished products." • "Seeing repeated activities at different schools." • "working with a partner at different level of confidence to me meant I did not gain as much as I would have liked from face to face contact with [facilitator]."

Although arguably out of scope of the cluster programmes' aims, there was a comparatively large number of comments wanting improved technical infrastructure and support in schools to avoid ICT failure and to enable teachers to better put into practice what they have learnt. Comments along these lines included: "Lack of computers to actually implement these ICT ideas", "sometimes being shown something that would be great to use in your class but not being able to follow through due to having a different platform in the school", "not enough time to consolidate things learnt and put them into practise", and so on.

Most of these paralleled the 'concerns' about integrating ICTs discussed in an earlier section.

Comparisons with Previous Cluster Cohorts

Teacher Skills

The reported increases in skill levels over all six of the ICT PD programmes that have been completed to date were considerable for all cohorts, especially for female and for primary teachers.

Similar proportions of teachers in the early 2001 and 2002 cohorts reported 'moderate' or 'high' skill levels at the end of their programmes. Noticeably higher proportions have reported such levels since the 2003 cohort, except in the case of graphics skills, which have remained relatively static across all cohorts over time (Figure 7). There has been a noticeable 'levelling off' of end of project skill levels at 'high' or 'very high' levels across all ICTs measured since the 2004 cohort.

Figure 7: Proportion of teachers reporting moderate to very high skill levels at the end of ICT PD programmes, across a range of ICT skills, 2001-2006 cohorts
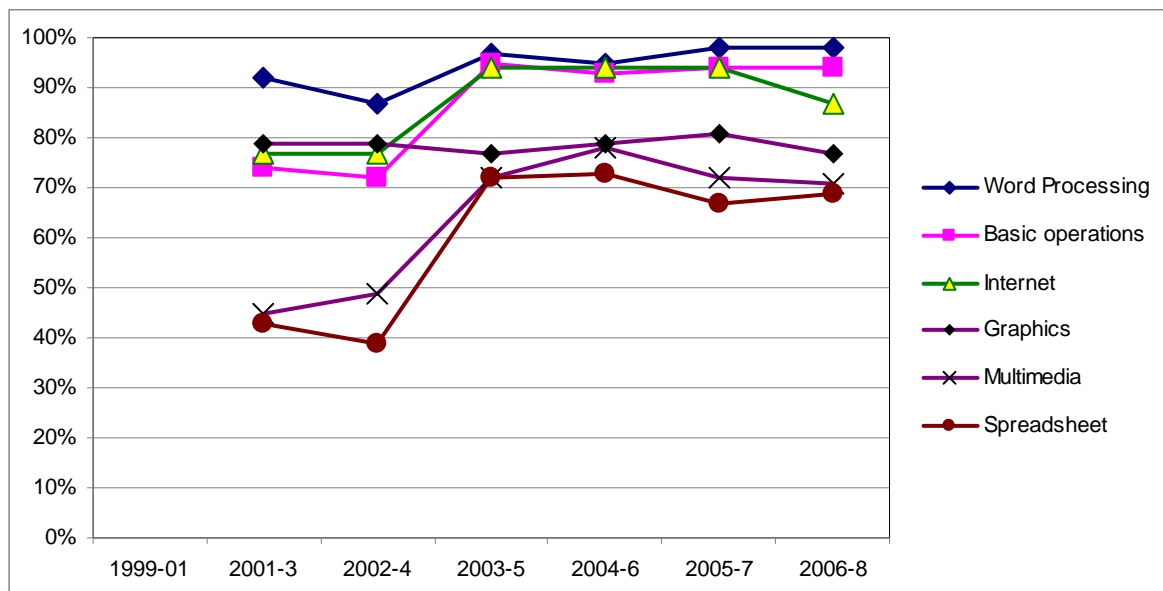
Reported *gains* in ICT skills during the programme were also greater in the earlier cohorts than in the more recent cohorts. This may be largely explained by increasing entry-level skills among each successive cohort. The noticeable 'shift' that occurred between 2003-5 may be the effect of the Ministry of Education's TELA laptop scheme, which was rolled out during the 2003 and 2004 cohort programmes.

The particular skill areas where the greatest and lowest gains in competence were reported over the period of the 2006 cohort programme, were similar to those reported by earlier cohorts.

Teacher Confidence

For all cohorts, reported *increases* in confidence as a consequence of the ICT PD programmes have been significant, both with regard to teachers' personal confidence with ICTs and their confidence about student use of ICTs in their classes (Figure 8). Large proportions of teachers from all cohorts reported moderate and high levels of confidence about ICT usage at the end of the programme. The relative increases in classroom

confidence are significant for all cohorts and may be slightly decreasing in magnitude over time. This again can be explained by the increasing entry level skills that teachers reported in the last three cohorts.

For all cohorts, levels of personal confidence continue to exceed those in confidence about classroom use of ICTs.

Figure 8: Proportions of teachers reporting confident to very confident levels of confidence with ICTs before and after ICT PD programmes, 2001-2006 cohorts
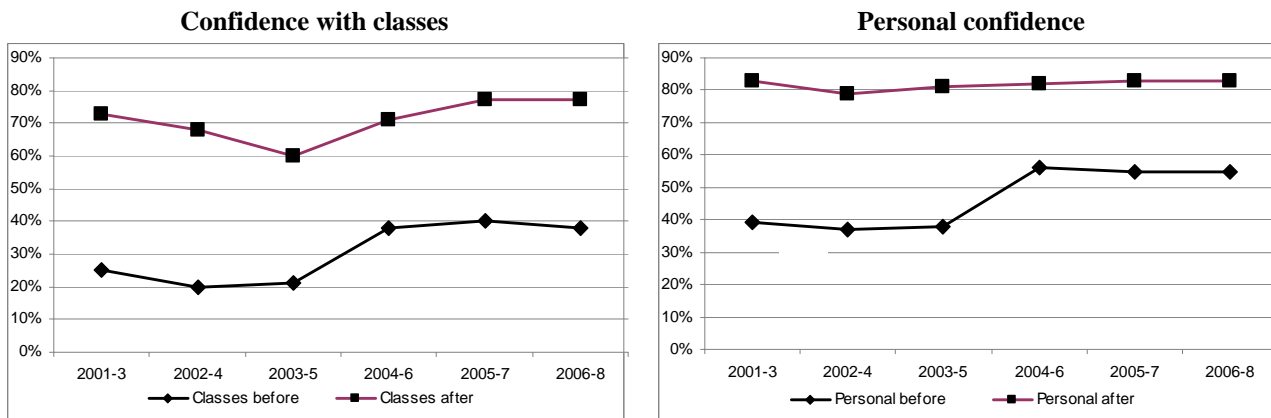
Increased Classroom Usage

The extent to which teachers integrated ICT-based activities in ICT PD cluster classes increased significantly from quite low entry points, and to similar extents, for all six cluster cohorts for which there is comparable data. As Figure 9 shows, for all of the last four cohorts about half of the teachers at the end of the programme were 'regularly' incorporating ICTs into 'most' or 'all' student units of work.

Figure 9: Proportion of teachers whose students regularly* used ICTs for classwork before and after the ICT PD programme, 2001-2008 (*i.e.: ICTS were incorporated in 'all' or 'most' of their units of work over the previous year.)
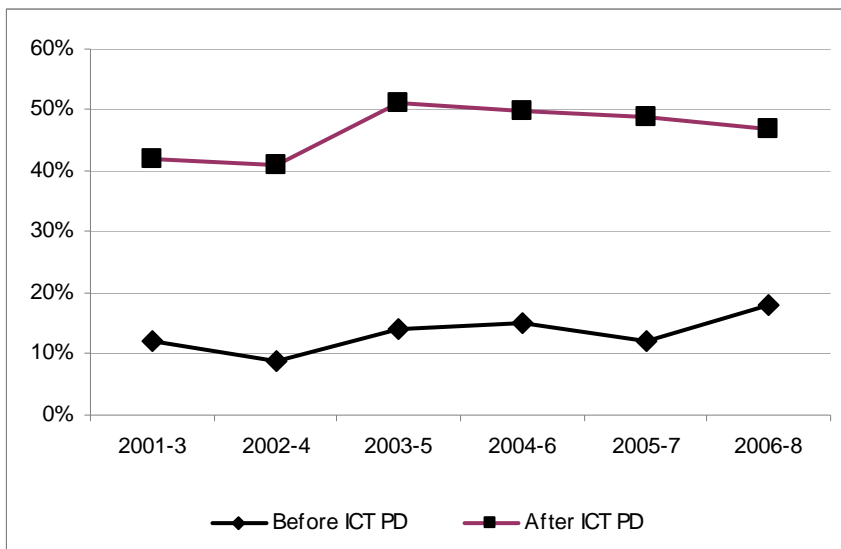
Student Learning Activities

On those indicators where direct cross-cohort comparison is possible, there seem few significant differences among cohorts with regard to the types of learning activities reported for classroom use of ICTs, or in the reported increases of such use over the period of the programmes.

The *increases* made during the programmes were similarly large for all cohorts. Increased reported student use of multimedia production tools for presentation continues to be a major contributor to increases in ICT use for 'static communication', especially in primary schools.

It is noted that entry point student use of ICTs for online communication (mostly emailing) and for problem solving have stayed relatively stable over more recent cohorts, while exit levels of such use have shown slow increases since 2002.

Student use of ICTs for information processing (predominantly Internet use) continues to show the greatest increases across the cohorts. Use of ICTs for problem solving activities, reported previously as declining from 1999 to 2002 cohorts, is still comparatively low, but has recovered to exceed earlier levels in more recent cohorts. Most of this 'problem solving' use is explained by secondary student use of spreadsheets, data loggers and the like, in the 2003, 2004, 2005 and 2006 cohorts. The same 'recovery' trend is shown in respect of post-programme routine use of ICTs for curriculum practice.

There is a clear tendency for students in the last two cohorts to be reported as attaining higher frequencies of use of ICTs than previous cohorts with respect to all of: static presentation (mostly word processing and slide shows), problem solving activities (mostly through spreadsheet use), information processing activities (mostly through Internet use), online communication (email, social software), and curriculum practice activities (drill and practice, computerised tutorials, multimedia books, etc.).

Figure 10: Proportions of teachers' reporting frequent* classroom usage of ICTs for various learning outcomes, before and after the ICT PD programme, 1999-20
(*At least once or twice per term on average in the previous year)
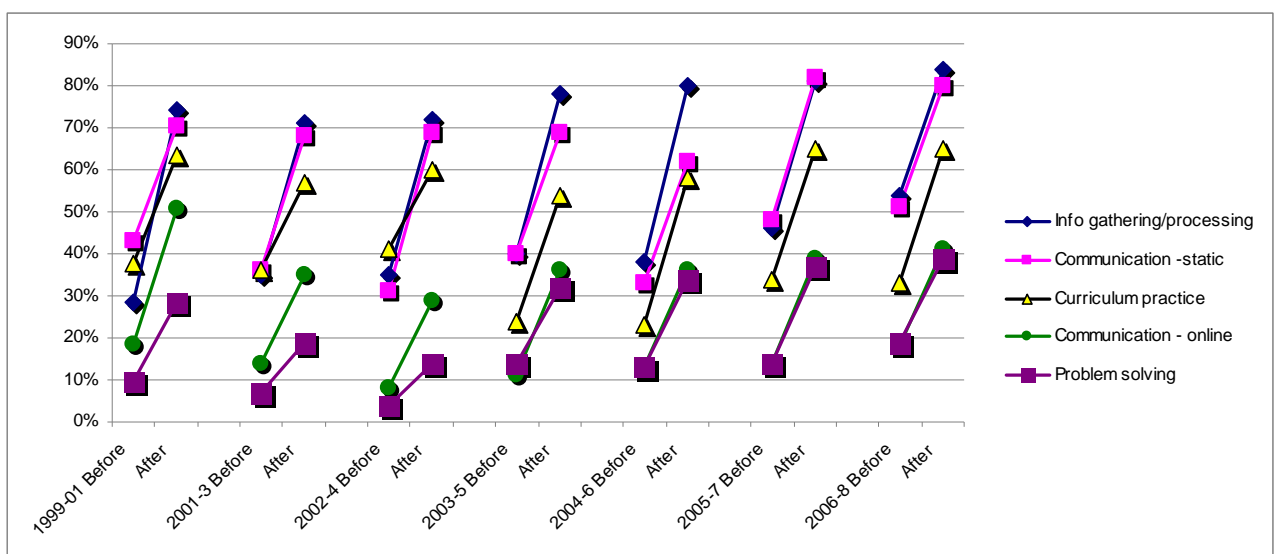
The distribution of student usage across Essential Learning Areas at the end of projects shows few clear trends across the cohorts, except perhaps for the continued predominance of ICT use for Language

objectives. Despite a slight decline over time, Language activities[2] continue to be significantly higher than all the other learning areas, while the gap between other areas has been narrowing (Figure 11).

Figure 11: Proportion of ICT activities by Essential Learning Area, 1999-2007
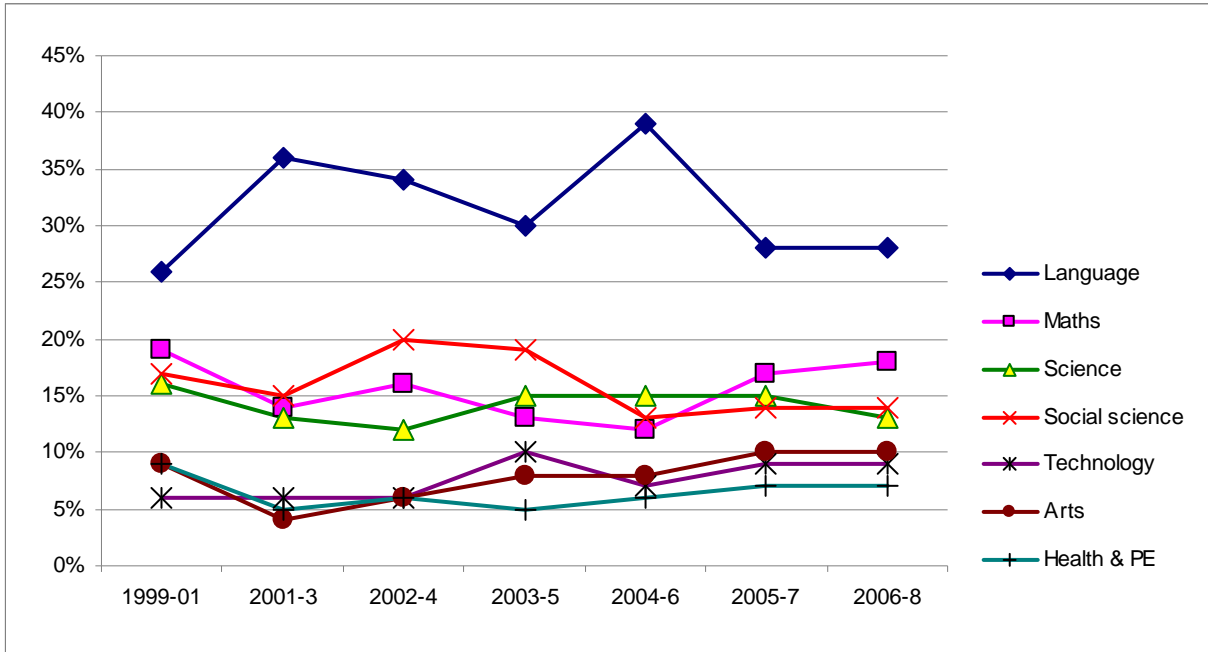
Participant Satisfaction with Programme

Finally, we note that the 2004 cohort remains the highest in terms of the levels of goal achievement that participants reported at the end of the programme. Figure 12 shows that levels of goal achievement, although were higher than those achieved in the earlier 2003 cohort, have declined over the last two cohorts.

Figure 12: Proportions of teachers reporting their PD goals were 'largely met', 'fully met' or 'exceeded'

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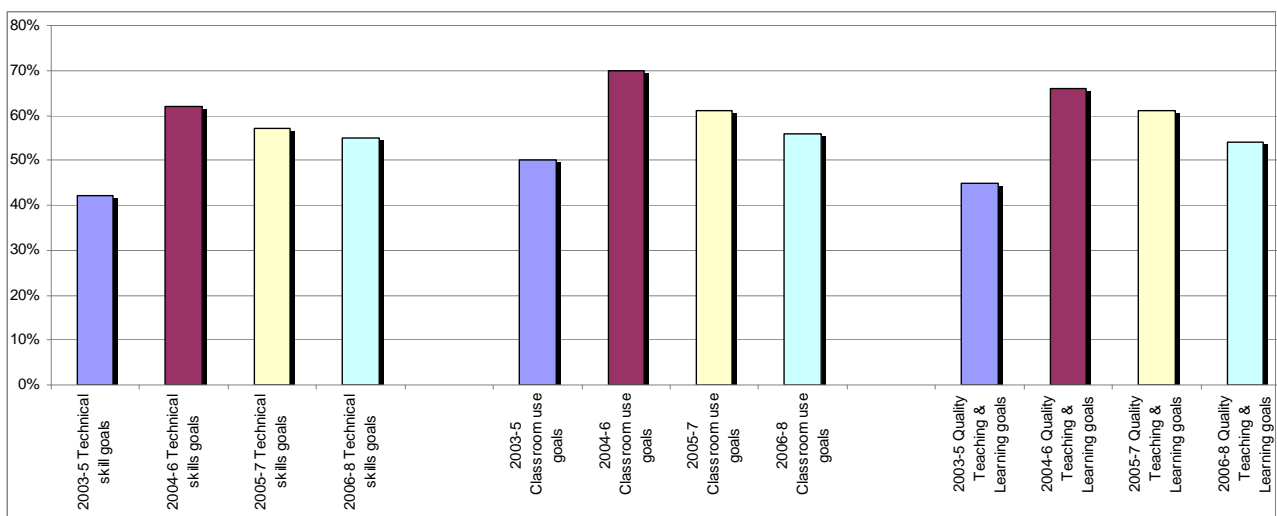
[2] For consistency with the previous cohorts, the proportions of activities engaged in the areas of English and Languages were combined together under the Language heading when analysing the data.

For all cohorts that were asked this question, participant satisfaction has varied by both sector and length of time in the programme, with both primary teachers and those in the programme for longer stating higher levels of satisfaction and goal achievement than secondary teachers and those in the programme for less time.

Conclusion

The overall conclusion arising from the study is that the 2006-8 ICT PD programme had a clear and positive effect on the teachers and students in cluster schools with respect to its key goals. Teachers reported moderate to high levels of increase or change with respect to the Ministry's programme objectives as outlined in cluster performance agreements (Viz: the integration of ICTs to give effect to the curriculum, increased capability of teachers and school leaders with respect to e-learning, increased professional understanding of the educational contribution of ICTs, and strengthened professional learning communities).

At the national level, the programme continues to achieve its overall goals of increasing teachers' skills and confidence with ICTs, improving teachers' understandings of the educative purposes of using ICTs in teaching and learning, increasing classroom usage of ICTs, involving schools and teachers in effective communities of practice for professional development, and providing quality ICT-mediated learning experiences for students. While stating these as general effects on the population of cluster teachers and classrooms as a whole, we note that at a national level the ICT PD programme continues to have a greater impact among primary teachers than among secondary teachers, and a greater impact among those who take part for the majority of the duration of the three-year programme.

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Appendices

End of Project Survey Questionnaire, 2008 (Paper version of Online Questionnaire)

ICTPD School Clusters Professional Development Programme End of Project Survey Questionnaire, 2008 – paper version

This questionnaire is being distributed to all **<u>teachers</u>** 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.

Individually attributable responses will be kept strictly confidential to the independent research team, though a set of anonymous, unattributable responses for each cluster will be sent to the cluster contract holder (usually the Principal of the lead school), and/or cluster project Director and/or cluster Facilitator to assist them with final Milestone reporting.

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.)	
Gender:	☐ Female ☐ Male
School Sector you *mostly* teach in	☐ Primary ☐ Secondary
Length/Duration of your involvement in ICTPD Programme: Indicate the time span over which you received **active** ICTPD support (workshops, facilitator visits, conferences, seminars, etc) as part of the cluster programme	☐ 0-6 mths ☐ 7-12 mths ☐ 13-18 mths ☐ 19-24 mths ☐ 25-30 mths ☐ 31-36 mths
Did you complete a baseline survey at the beginning of the programme?	☐ Yes ☐ No

THE ICTPD CLUSTER PROFESSIONAL DEVELOPMENT PROGRAMME

1. Please indicate your level (1-5 scale) of confidence in relation to personal and classroom use of ICTs with reference to *BOTH* BEFORE and AFTER taking part in the ICTPD Programme. *Enter a rating 1,2,3,4 or 5 in EACH column. (See example)*

.

1= Anxious   2= Not confident   3= Neutral   4= Confident   5= Very confident

	Confidence about using ICTs	*Before PD*	*After PD*
Example	How confident were/are you about using ICTs **with your classes**	2	4
A	How confident were/are you about using ICTs **personally**?		
B	How confident were/are you about using ICTs **with your classes**?		

2. Please indicate your level (1-5 scale) of competence with each of the following ICTs *BOTH* BEFORE and AFTER taking part in the ICTPD programme. *Enter a rating 1,2,3,4 or 5 in EACH column*

1= Very low/None   2= Low   3= Moderate   4= High   5= Very high

	ICT	*Before PD*	*After PD*
A	Basic Computer Operation (running programmes, trouble shooting, etc.)		
B	File Management (manipulation of documents, folders, etc.)		
C	Word Processing (manipulation of text – programs such as Word)		
D	Spreadsheet (create charts/graphs, use for record keeping purposes – programs such as Excel.)		
E	Database (1 being using pre-made databases such as library catalogue database to 5 being creating own databases)		
F	Graphics (manipulation of pictures and images – programs such as KidPix, Photoshop, etc.)		
G	Internet (1 being searching the internet and 5 being creating your own website)		
H	Telecommunications (email, social networking (Facebook, bebo, etc.), blogs, etc.		
I	Presentation / Multimedia (incorporating sound, movies, etc.)		

3. Please indicate the frequency with which you used ICT BEFORE and AFTER the ICTPD programme for the two purposes below. *Enter a rating 1,2,3,4 or 5 in EACH column.*

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

	Purpose	Before PD	After PD
A	School administration e.g. reports, marks and grades, attendance etc		
B	Finding or producing resources for lessons		

4. To what extent has ICT been integrated into your units of work? (*Please answer with reference to both BEFORE and AFTER the ICTPD programme. Please enter a rating 1, 2, 3, 4, 5 in the relevant box in both columns).*
  1. No units   2. One or two units   3. Several units   4. Most units   5. All or almost all units

	Extent of ICT Integration	Before PD	After PD
	What proportion of your units of work contains ICT based learning activities?		

5. a) To what extent have your classroom practices changed as a result of your participation in the ICTPD programme? (*Please tick ONE box only).*

☐ Not at all   ☐ Very little   ☐ To some extent   ☐ To a large extent   ☐ Completely changed

  b) Describe these changes (positive and/or negative) to your classroom practices.

  Positive_____Negative
  _____

6. a) To what extent has the ICTPD programme contributed to your understanding of teaching and learning generally? (*Please tick ONE box only).*

  ☐ Not at all
  ☐ Confirmed current ideas/understandings about teaching and learning
  ☐ Contributed some new ideas about teaching and learning
  ☐ Provided a whole new approach to teaching and learning

  b) Describe <u>how</u> the ICTPD programme has contributed to your understanding of teaching and learning in general.
  _____
  _____
  _____

    7. Describe up to 5 different ICT based activities that your students have engaged in during the last year?
  Identify the subject or learning area (eg: Health, Science, integrated curriculum), the type of ICT/software you used (eg. Internet word- processor, digital camera), and the learning outcomes for students.

	Essential Learning Area	Software / ICT	Learning Outcomes for Students
	e.g. English/Languages	*e.g. Word Processor, Digital camera*	*e.g. Presenting different points of view*
	e.g. Science	*e.g. CD Rom tutorial, Spreadsheet*	*e.g. Applying Motion formulae to problems*
A			
B			
C			

D			
E			

8. How often, on average, did/do your students use ICT based activities where the following constituted the <u>main</u> purpose of the activity? *Please indicate a frequency of use for both the year BEFORE the ICTPD programme, and NOW <u>in this last year</u>. Use the 1-5 scale below*

1 = Not at all   *2 = Once or twice in the year*   *3 = Once or twice a term*
4 = Once or twice a week   *5 = Daily/almost daily*

	Purpose	*Activity*	*Before PD*	*Now*
a	**Communication**	*Text and picture presentation*: eg. making posters, journals, written stories etc		
		Multimedia presentations: eg. making slideshows; blogs, podcasts, presenting results of project using PowerPoint or Hyperstudio etc		
		Online interaction: e.g. emailing or chatting with experts/other students on a current topic or a problem. Videoconferencing, Belonging to e-club or contributing to online communities, social networking (Facebook, bebo)		
b	**Creativity**	e.g. creative writing, designing and making websites, editing and composing music, video etc. creativity focus		
c	**Information gathering/processing**	e.g. accessing or searching for information on the internet, accessing school library electronic catalogue, or data logging using external devices connected to computers		
d	**Problem solving**	e.g. calculating/analysing data, working through simulations on computer, designing or developing their own spreadsheet or database to solve a problem; interactive fiction; immersive gaming		
e	**Curriculum practice**	e.g. learning from tutoring software, reinforcing pre-taught knowledge or practicing skills; drill and practice		
f	**Technical skills**	e.g cut and paste, file management, importing digital photographs, key board skills, how to use Inspiration		
g	**Collaborative learning and social interaction**	e.g. working in groups to solve a problem using spreadsheets etc, collaborating on DTP projects, multi-user gaming etc		
h	**Motivation/Reward/Engagement**	e.g. working on a CD Rom or game etc as a reward		

9. To what extent to date do you think you have effectively integrated ICTs into your classroom teaching and learning? (*Please tick ONE box only).*

☐ Not at all   ☐ Very little   ☐ To some extent   ☐ To a large extent   ☐ Completely

10. What were the main three benefits you observed for <u>students/learners</u> in their use of ICTs?

a)_____

b)_____

c)_____

11 To what extent were your goals/expectations met by ICTPD programme? *Please answer with regard to the 5 types of goals below, using the following six point scale:*

 1=. Not met 2= Partially met 3= Largely met 4= Fully met 5= Exceeded 6=Not applicable

	Type of goal	Extent to which goal met
a	Personal ICT skill development	
b	Ideas for using ICTs with classes / managing ICT in my classroom practice	
c	Quality teaching and learning enhancement in general	
d.	Using ICTs for administration	
e	Gaining of Qualification	
f.	Strengthening collegial relationships and practice	
g.	Developing leadership	
h.	Communications with wider community	

12. Which aspects of your ICTPD school cluster programme have you:

 a) Most appreciated?

  _____

 b) Least appreciated?

  _____

13. What are your greatest current concerns about using ICTs in schools? *Please rate each of the following as it applies to you, on a 1-3 scale*

   *1 = No concern 2 = Some concern **3** = Significant concern*

		Rating
a	Access to equipment for my students' use	
b	Insufficient technical support	
c	Making the links between ICTs and quality teaching and learning	
d	Lack of ideas on how to use ICTs with classes	
e	Lack of time to cope with it all	
f	Need for ongoing professional development	
g	Keeping up-to-date with required skills and knowledge on ICT developments	
h	Technical reliability/equipment breakdown	
i	Others: Please specify	

14. a) To what extent has any increase in your use of ICTs with classes over the last three years been attributable to the ICTPD Professional Development Programme? *Please tick ONE box only*

 □ **Not at all attributable** □ **Partly attributable** □ **Largely attributable** □ **Completely attributable**

 b) If other factors were involved, what were they?

  _____

15. a) How significant has the ICTPD Cluster Programme been in your overall development as a teacher?

    ☐ Not significant   ☐ Slightly significant   ☐ Significant   ☐ Very significant

b) Comments:

        _____

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