Using computers in the professional development of teachers:
An Otago/Southland survey

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The Need for Professional Development

The New Zealand government spent 16.1% of its 1996/97 budget on education. As a percentage of GDP, this is more than the OECD average, and more than is spent in the United States, Australia, or Great Britain. This included salaries for nearly 50,000 full-time state teachers. These teachers work in an extensively reformed system where they face ongoing changes in curriculum, assessment, funding and organisation which directly affect their work. The Education Review Office has claimed that, "teachers are a school's most important resource". (1995, p. 1) Since New Zealanders spend a lot of money on valuable people in a challenging school system, we might expect the professional development of teachers to be carefully planned, efficiently organised and adequately resourced.

Until 1997, however, there were no mandatory requirements for the professional development of school staff, and there still are few nationally coordinated professional development initiatives for teachers. Lacking national guidelines, schools vary widely in their spending on staff development and their means of identifying staff training needs.

The importance of professional development for teachers is increasingly recognised. In Britain it has been argued that

If schools are about promoting the learning of pupils in a changing world and learning is worthwhile and not a static or bounded process, then the learning of education professionals throughout their careers is essential. (Craft, 1996, p. 11)

The United States Department of Education (1996) declared that, "Professional development plays an essential role in successful education reform", and Australian writers have claimed that:

Initial training clearly cannot meet career-long needs... inservice education is essential to enable teachers to respond effectively to change.... (Australian Education Review No 30, 1990, p. 114)

The Education Review Office in New Zealand has echoed these perspectives:

Investment in the continual professional development of teachers through inservice training contributes to raising the quality of students' learning and achievement. (Education Review Office, 1995, p. 1).

There is a considerable gap, however, between official statements of the importance of professional development, and the actual provision of appropriate programmes in which teachers readily can participate.

'Professional development' usually refers to courses or programmes organised either within a single school, or involving teachers from a number of different institutions. Reasons for undertaking

professional development:

- to improve job performance skills
- to extend experience for career development or promotion
- to develop and expand personal and professional knowledge and understanding
- to promote job satisfaction, enhance view and value of job
- to clarify policy and help facilitate change (Craft, 1996, p. 6).

A variety of local and national in-service programmes are available in New Zealand, but many teachers still are frustrated by insufficient time and money provided by their schools, by the inadequacy and inappropriateness of some forms of training, and by the disruptions to teaching and family life caused by travelling to training venues.

Current Patterns of Provision

Professional development opportunities for New Zealand teachers include the following:

- In-house activities in schools and early childhood centres, or the whole staff or for subgroups such as syndicates, teaching departments or faculties. Outside facilitators may be employed.
- Courses, seminars and meetings run by subject associations (e.g. Commerce and Economics Teachers' Association).
- Curriculum advisers contracted by the Ministry of Education to support teachers in implementing national curriculum initiatives.
- Experienced teachers contracted by the New Zealand Qualifications Authority to train secondary teachers in using the assessment systems introduced in the New Zealand Qualifications Framework.
- Regional (usually one-day) courses and 'on request' assistance from experienced teachers provided through the

School Advisory Services, based in Colleges of Education and University Schools of Education and funded largely through the Ministry of Education.

- Week long courses, designed by a voluntary committee of teachers and offered during school holidays, provided under contract to the Ministry of Education by the Teacher Refresher Course Committee (TRCC)..
- Courses, sometimes leading to qualifications, offered by colleges of education, universities and polytechnics.

Much professional development currently is provided *by* as well as *for* teachers. Many outside providers use teacher volunteers for service delivery, or occasionally employ teachers on short-term contracts. While limited funding to pay commercial providers promotes dependence on teachers' voluntary efforts, the experience and understanding of teachers legitimates their role in designing and delivering training programmes in their own field. School Advisory Services and the Teacher Refresher Course Committee design their provisions on the basis of teachers' assessments of professional needs.

Much professional development

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work is subject specific (eg implementing the English curriculum) or issue specific (eg implementing unit standards assessment). Much work also is very brief, such as hour-long workshops at subject association meetings or one-day inservice courses. This short-term format has

been criticised widely (Cook and Fine, 1997; Kentucky Department of Education, 1997). However useful they may be in enhancing teachers' specific knowledge or skills, one-hour or one-day sessions are unlikely to have a significant impact on their overall professional attitudes (France, 1990, p. 116).

The USA's National Education Association recommended that 50% of teachers' time be devoted to professional development. Others have argued that

teachers likely will require more than 20 percent of their work time for learning and collaboration if they are to be successful in implementing ambitious reform initiatives (Cook and Fine, 1997, internet).

If these proposals mean that 20% to 50% of teachers' paid work time should be devoted to professional development, they clearly would be unsustainable within the current budget for education in this country. If they mean that teachers should spend this amount of time in in-service study during their off-hours, they would place a crushing burden on already pressured teachers.

The New Zealand Education Review Office identified weaknesses in professional development provisions in this country, including:

- lack of market analysis or evaluation of effectiveness carried out by schools (the "purchasers" of most professional development)
- lack of linkages within schools between the teacher appraisal process and the identification of training needs
- expenditure of more than half of professional development financing on employment of relief teachers.

ERO also was concerned with the lack of programmes to meet the school-wide needs of individual institutions. Individual schools and boards of trustees have little opportunity to shape courses for their own needs:

Boards of trustees should require the inservice training programme they approve to include specific objectives which are... integrated with the school's long term planning... documents. (ERO, 1995, p.12)

Boards of trustees now are expected to assess and meet professional development needs in ways which previously never had been conducted effectively at any level in the school system. Boards have little guidance or prior experience on which to draw.

Providers of inservice training also were criticised by ERO for failing to investigate what boards wanted for their staff. Neither boards nor professional training providers appear to know very much either about what schools need at the institutional level, or whether what they get is effective.

Survey of Professional Development in Otago/ Southland

We surveyed secondary school teachers and principals in Otago and Southland regarding their attitudes towards professional development opportunities, and their problems in accessing development programmes. We were interested especially in whether school staff would respond favourably to the delivery of training programmes over computer networks, and whether such delivery could assist with access problems.

Thirty-two of the 43 state and state-integrated secondary and area schools in Otago and Southland— there are no private schools of these types in the region—participated in this survey. Questionnaires were completed by 23 Principals and 475 teachers, a response rate of 48%, constituting 36% of Otago/ Southland secondary teachers. Respondents were 57% female, and 32% taught in single-sex schools. Other details of the sample are reported in Table One.

important as their promotions expectations diminish. Alternatively, highly experienced teachers may be less likely to believe training could add to their abilities, or weariness or cynicism may decrease enthusiasm.

Table 1:

Teaching Experience:	Years	%
	0 - 5	17
	6 - 10	16
	11 - 15	18
	16 - 20	20
	21+	29
Position:		**%**
Assistant Teacher		43
Head of Department		45
Senior Management		10
Other		2
Type of School:		**%**
State		78
State-Integrated		16

Table 2:

Length of Teaching Service	% Rating Professional Development
"4" or "5"	
0 - 5 years	77
6 - 10 years	84
11 - 15 years	87
16 - 20 years	79
21+	79

Fifty-three percent of responding teachers taught in two regional centres of Dunedin and Invercargill, where much professional development activity takes place. The geographical distribution of teachers in the sample closely matched that in the region.

Importance of Professional Development

Eighty-one percent of teachers ranked professional development as "4" or "5" on a 1-5 Likert scale, where "5" indicated "of critical importance". Belief in the importance of professional development increased directly as teachers acquired management responsibilities. A different pattern was found with respect to length of teaching service:

Teachers may consider professional development to be less

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In-School Allocation Procedures

Principals reported that expenditure on professional development in their schools, ranged from 0.4% to 13.3% of their annual budgets. Average expenditure was 5.3% of budget, slightly higher than the 4% found by ERO (1995, p. 6). Some schools distributed funds for professional development to staff informally. Other schools had detailed procedures which were

closer to those recommended by ERO, such as the scheme reported in one school:

1. Needs Assessment survey carried out previous year.
2. Strategic Plan - highlights school needs eg Unit Standards Training
3. Professional Development Cycle - individual needs identified.
4. Consultation with HODs
5. PD coordinator and Principal have final decision."

Several schools had a Professional Development Committee or a senior manager charged with coordinating the school's needs (as identified in annual plans or curriculum goals) with serving those of individual teachers (derived from an appraisal or self review process).

Participation Rates

Over the past five years, 90% of teachers had participated in development activities provided by subject associations, 79% had been involved in whole staff training and in training in groups or departments within their schools, and 66% had used the subject-related services of advisers. More than half (54%) of the teachers had participated in NZQA training in the use of unit standard assessments, and 47% had participated in courses—usually curriculum related—organised by the School Support Services.

Twenty-five percent of teachers had been involved in Teacher Refresher Course Committee programmes, 24% had participated in training provided through Ministry of Education curriculum contracts and 20% had undertaken University papers. Ten percent had taken Polytechnic courses, and 10% also had taken Advanced Studies for Teachers (AST) papers offered through the Dunedin College of Education or Massey University. Fifteen percent of teachers had undertaken other types of professional development work not listed above. It is noteworthy that these less-frequently undertaken forms of professional development include all the longer-term out-of-school types of training that are available. In terms of time out of class, costs to schools, and demands on teach-

ers' own resources, these types of training are the most difficult to access.

Most teachers undertook work directed toward coping with structural changes such as new curricula or qualifications requirements. A minority of teachers took courses to enhance their own personal knowledge, skills or understanding (e.g., time and stress management, technology in classrooms, biculturalism).

Effectiveness of Different Forms of Provision

Teachers were asked to assess the effectiveness of the specific types of professional development in which they had participated. The following table shows the percentages of principals' and of participating teachers' responses indicating which forms of provision were viewed as "more effective".

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concerns in their schools, rather than toward the more general educational development of teachers. University and polytech courses are among the forms of professional development most likely to add to teachers' general education, but principals viewed such courses as far less effective than did the teachers who had taken

Table 3:
Judgements of Effectiveness of Types of Professional Development

Form of Provision	% Principals	% Teachers Participating in Each Type
Whole staff training	50	22
Group/Department training	83	81
Adviser visits	75	56
Subject association meetings/courses	71	67
A. S. T. papers	8	40
NZQA unit standard training	50	53
TRCC courses	54	82
Support Service Courses (e.g. INSET)	54	66
Ministry of Ed curriculum contracts	25	43
University papers	25	78
Polytechnic studies	4	67
Other	4	67

There are both similarities and some sizable differences between the assessments of effectiveness made by participating teachers and by principals. Along with the assessments of whole staff training, large differences appear between the two groups over A.S.T. papers, TRCC courses and, most extremely, polytech and university papers.

The divergences in the assessments of principals and teachers may reflect principals' preference for professional development work linked directly to operating

"...seventy-five percent wanted subject association meetings,"

them. These differences may contribute to disagreements between about which kinds of training opportunities for teachers should be paid for by schools.

When asked what types of programmes they wanted to engage in the future, teachers responded as follows: seventy-five percent

wanted subject association meetings, 41% wanted NZQA unit standard training, 37% wanted Support Service courses, 30% wished to enrol for University papers, and 23% wanted TRCC courses. Respondents desiring other types of courses were: Ministry of Education curriculum contract work, 12%; A.S.T papers, 10%; polytechnic studies, 7%; other, 6%.

"...lack of time was a major obstacle to participation in professional development."

Obstacles to Participation

Almost four-fifths of all respondents (78% of teachers and 79% of principals) said that lack of time was a major obstacle to participation in professional development. Time was cited more often than any other factor as the *single* greatest obstacle by respondents in both groups—36% of teachers and 33% of principals. Cost was an obstacle for 59% of teachers, though 75% of principals cited cost as an obstacle—probably reflecting principals' greater sensitivity to budget constraints. Double the proportion of principals to teachers (63% to 31%) thought that finding relievers was an obstacle to teachers' participation, but half of both groups agreed that the lack of appropriate training opportunities was a problem. Neither group thought that lack of interest or energy was the *most* important barrier to participation, but teachers and principals differed considerably over whether lack of energy on the part of teachers was an obstacle at all: 23% of teachers said it was, compared with 42% of principals.

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Content of Professional Development

Teachers and principals agreed (83% each) that subject curricula were the most important in-service topics. This may reflect the urgency of issues generated by the introduction of the New Zealand Curriculum Framework. Our sample also was drawn entirely from secondary schools where most teachers have a subject focus, whereas primary teachers are likely to be less subject-oriented. Table 4 shows the percentages of principals and teachers who regarded various topics as important for professional development study:

technology. Even teaching strategies are seen as less important as a focus of professional development by teachers than by principals.

None of these topics were thought to be inadequately dealt with at present by a majority of either principals or teachers. The topics identified as inadequately covered by the largest percentages of teachers were the same as the ones named as most important: subject curricula, guidance and discipline, technology in classrooms and classroom teaching strategies.

Results are presented in Table 5.

Table 4:
Importance of Professional Development Topics

Topic	% Principals	% Teachers
Subject curriculum 83	83	
School-wide curriculum	54	22
Guidance/ discipline	83	50
Middle management	54	20
School management	38	16
Technology in classrooms	71	43
Treaty of Waitangi issues	0	5
Gender issues	4	5
Classroom teaching strategies	83	63
Other	25	7

Table 5:
Professional Development Topics Not Adequately Provided For

Topic	% Principals	% Teachers
Subject curriculum	29	34
School-wide curriculum	13	14
Guidance/ discipline	25	32
Middle management	13	19
School management	4	11
Technology in classrooms	13	32
Treaty of Waitangi issues	13	12
Gender issues	4	2
Classroom teaching strategies	33	29

While teachers and principals agree on the importance of subject curricula, and while neither group sees social issues such as biculturalism and gender as significant, they disagree on the importance of all other topics. Principals place greater importance on school-wide matters such as the overall curriculum, administration, discipline and guidance, and teaching

Delivering Professional Development via the Internet

Many teachers criticised the common format of out-of-school professional training, in which courses are held in central locations, during school time, and for only one day.

According to some respondents:
Rural areas such as us are

often disadvantaged because of the distance needed to travel for inservice courses....

Teachers want help but often it means leaving classes and this adds stress....

One day courses are a total waste of time.

Several teachers complained about the lack of opportunities available to them:

"I... have to beg to be allowed off school... Used to live in Wellington with ready access to evening courses, etc. Miss that in the country - we're penalised. "

"I worked for 4 years in private enterprise before coming teaching. We went on about 6 - 8 professional development courses a year. Here I have been on 3... in just 3 years and I feel I'm completely left behind now.... "

Since courses usually are offered in urban areas, rural teachers can be disadvantaged because their attendance requires further travel at greater cost, and displaces them from their classrooms and homes for longer periods than their city-based colleagues. Regardless of their geographical location, many teachers also have inflexible commitments which restrict participation. Schools vary considerably in their funding of in-service training. These factors restrict the participation of teachers in professional development activities.

Computer technologies for delivering in-service training can alleviate many of the problems of flexibility, access and cost. (Baird and Monson, 1992, p.65) Computers can

deliver programming to larger, more diverse, expectant, distant audiences, faster, more economically, and in accommodation of individual schedules... the Internet has attracted the interest of education agencies world-wide for...

"Computer technologies for delivering in-service training can alleviate many of the problems of flexibility, access and cost. "

the ease with which it accommodates the individual schedules of a geographically diverse audience". (Scheffler, Betancourt-Smith and Kirkwood, 1995, p. 394) Benedict du Boulay wrote in
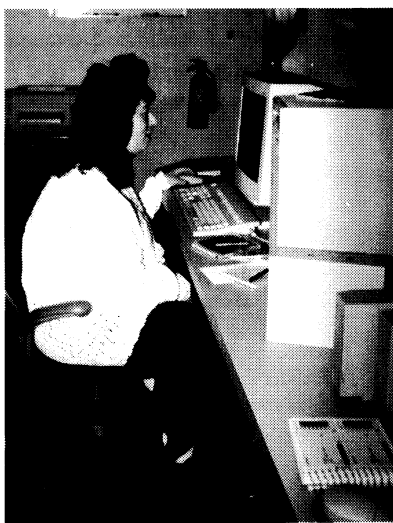
1983 that "the computer offers something new and valuable to teacher education... [it] is not just a novel presentation medium for conventional teaching material" (p.177). Computer technology has changed immensely since this comment was written, and computer-based professional development c2sing among tertiary institutions in New Zealand, relatively little in the way of Internet programmes for teachers as yet is available.

Sixty-one percent of teachers expressed an interest in professional development programmes on the Internet, with little difference in terms of gender or rural/urban location. If extrapolated to the total full-time equivalent teaching force in Otago and Southland, this represents 770 potential students; nationally, it suggests there could be approximately 29,000 teachers

interested in in-service courses on the Internet. Seventy-nine percent of principals expressed interest in involving their teachers in Internet courses, a higher proportion than among the teachers themselves, though only 25% of principals thought such courses would be appropriate for their own professional development.

Some teachers were enthusiastic about the prospect of Internet professional studies:

"This would alleviate our severe disadvantages. " (rural teacher)

"I think any form of learning which can be done in my own time and at my own speed would be brilliant. "

"Internet PD would allow me to study in my own time/at my own convenience. Less hassle with getting to courses, arranging for [teacher] relief. Much cheaper because no travel - travel is also costly in time. Could be done at school or at home. Great idea. "

The most common reason given by our respondents who were not interested in internet-delivered professional development was a lack of knowledge, skill or technology (46%), followed by 31% who cited the lack of personal interaction. Teachers commented that:

"Teachers are human beings who have human needs. Computers are cold, impersonal objects. "
"I would hate for inservice courses to be reduced to this! I am a teacher.... in isolation in a rural area - and thrive on any contact with others!"

It should be noted here that while 93% of teachers said they *preferred* face-to-face learning, many would have had no experience of in-service training in any other mode.

Although 61% of teachers have a computer at home, only 21% are connected to the Internet at home:

"The most meaningful P.D. I have been involved in (ie P.D. that has produced significant change in my professional practice) has been long term and collegial. Can see the potential for Internet to meet this need for dialogue with other practitioners but need to have access in out-of-school hours and it is not a necessity given family financial needs."

"Internet at home - nice idea - BUT who will pick up the tab and will the school pay me for the use of my computer? I think not."

Though using a computer at school is less convenient for many teachers, and though doing so diminishes flexibility, principals reported that 92% of schools have an Internet connection available for teachers to use at any time. Only 64% of teachers were aware of this, however.

Only 8% of teachers felt "very proficient" in using Internet, though 33% thought they were "reasonably proficient". Many teachers would have to be taught how to use the technology before they could participate in Internet-based courses, though training programmes could include user skills in their preliminary content.

Conclusion

The need for ongoing professional development has grown immensely as a result of the changed environment in which teachers work, but present arrangements for the in-service education are inadequate. Teachers are eager to participate in professional development, but they face obstacles in accessing appropriate opportunities. Much of the in-service training currently available is directed toward problems gener-

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ated by changes in curriculum content, qualifications requirements and school procedures. These matters are important, but the pressures of immediate problems

confronting schools can lead to limited, short-term and issue-specific training provisions which may not promote teachers' broader reflective growth in their profession. Teachers are not just technicians in the education system, and they ought to have access to opportunities for their own continuing education. Even limited provisions can be difficult for teachers to attend because of constraints of time, distance and money.

The Internet can provide teachers with interactive distance learning in ways that are more cost-effective, accessible and flexible than traditional delivery methods. To make the computer delivery of professional development programmes acceptable to teachers, however, participants need confidence in using the technology. Obviously, they also need access to machines linked to the Internet.

The potential of computer-based professional development for teachers is only beginning to be exploited, and many people see computers as an impersonal—and perhaps de-humanising—medium of learning. Educators need a greater understanding of the benefits as well as the limitations of the computer. A computer conference, for example, is no more impersonal than using the telephone, and provides group interactivity through multiple media in ways that the telephone can not match. Yet teachers do not refuse to use the telephone in their work because it impedes face-to-face contact. Similarly, no teacher would refuse to use books, but books, like computers, are substitutes for face-to-face conversations.

Computer-based professional development programmes can be cost effective for schools: travel costs are eliminated, as are payments to relief teachers unless programmes are delivered in real time during schools hours. Given limited school funds, savings in these areas could be distributed among staff, possibly paying for Internet connection charges or enrolment fees for on-line programmes. Costs for computers and software also need to be met. Teachers may be suspicious that on-line programmes deprive them of interactions with their colleagues in out-of-school settings. To meet this concern, it is important that computers not be seen as a complete substitute for face-to-face provision. More teachers could engage in more positive interaction with a greater number of their colleagues around the country, however, if they relied more on computers than if they insisted on the exclusive value of face-to-face meetings.

Teachers also worry that using the Internet as a training medium could increase pressure for them to engage in obligatory professional development during their own time. While a number of teachers complained about the disruption caused to their classes when they attended courses during school hours, and

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while some were attracted to the prospect of pursuing Net-based programmes entirely at their own pace and in their own time, still others resent the encroachment on their private lives which such study could entail. This issue is linked both to the degree to which the overall funding of schools takes account of the costs of professional development, and the ways boards of trustees organise staff teaching conditions. Much professional development work already is undertaken by teachers in their own time, however, and computer-based programmes need not have a negative effect on the employment conditions of teachers. Such an outcome, indeed, would be counter-productive as far as professional development is concerned. However widespread the use of the Internet as a training tool may become, other forms of professional development will continue to be needed, and while costs for relieving teachers to free staff to attend programmes may be reduced they will not disappear.

Interactivity is a major advantage of computer networks, and is likely to be especially useful to professionals such as teachers, for whom collegial discussion and advice are important. (Lamb, 1992, p. 36)

The types and content of training programmes that can be offered over the Internet are extremely diverse, and can include everything from tertiary courses offering credit toward advanced qualifications to short-term interactive seminars on specific issues and problems. Permanent Internet 'sites' can be dedicated to particular areas of interest, creating on-going nationwide and international arenas for discussion. Once established,

such sites can place considerable control over content and agendas into the hands of participating teachers. Given the value we supposedly place on teachers as human resources, the advantages which many writers claim for net-based teaching, and the size of the potential clientele for such teaching, it would be negligent to ignore the use of the Internet as a medium for the professional development of this potential clientele. (Collis, 1992; Johnson, Harlow & Madduz, 1995; Anderson, 1997)

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