Action Research in the ICT Strategy for New Zealand Schools

Margaret Lamont

*EdCom Network, MultiServe Education Trust, PO Box 19059, Wellington, New Zealand
margaret@edcom.co.nz*

Keywords: classroom teaching/practice, curriculum changes, integration of ICT, learner-centred learning, pedagogy

Abstract Governments, schools and teachers worldwide are investing in the ICT challenge – the challenge of making effective use of ICT to support teaching and learning. Government initiatives are providing funds for hardware, software, professional development, on-line resources, technical support and research initiatives. The challenge for educators is to explore and exploit the full potential of ICT to support teaching and learning outcomes; to explore the possibilities ICT offers, and to investigate ways in which ICT can provide an environment which will "engage and facilitate critical thinking and higher order learning" (Jonassen 2000).

1. INTRODUCTION

'These are fantastic times..... we are about to see a decade of change, the like of which we won't see again this century' (Heppell 2000).

A few years ago, we marvelled at the Information Technology tools, which supported teaching and learning: the word processor, database, spreadsheet, Logo and simulations. Teachers used such tools and integrated them into the curriculum. The capacity for storing and organising information; modelling structures and environments, and manipulating text and images, freed students from laborious time consuming tasks, facilitated

higher order problem solving and investigations, and enabled students to produce publications to professional standards.

Now the challenge is greater. With a focus now on the communication element within ICT, whole new learning communities are emerging, allowing synchronous and asynchronous contribution and participation; new channels for creative expression; easy and instant access to information. We have moved beyond the *integration* of ICT tools into the curriculum; we must now look to how ICT can best be used to support learning experiences, which are challenging, engaging, participative and rewarding, and how ICT can support meaningful learning:

'Mindtools are computer based tools and learning environments that have been adapted or developed to function as intellectual partners with the learner in order to engage and facilitate critical thinking and higher order learning' (Jonassen 2000). If we do not rise to this challenge, there is a danger that the richest learning experiences for students will be those outside of the education system. We must design a system, which will nurture the 'creative, collaborative and productive cyber athlete, rather than the passive, consuming and predictable cyber couch potato' (Heppell 2000).

We are in a time of accelerating change and ICT will change both the teaching and learning practices in education. We can either choose to go forward with the knowledge that the changes are sound and well implemented or we can drag the chain using ICT in a mediocre way and miss the chances ICT offers to make a real difference to how teaching and learning occurs in schools. 'We've gone past the rhetoric of computers making a difference in schools. Now a clear view is emerging that you can get (ICT in education) wrong, or you can get it right. We are in the opportunity stage where we are asking what is the right thing to do' (Heppell, 2000).

There are many teachers who are successfully incorporating ICT into teaching and learning within the New Zealand Curriculum Framework. What is required now, however, is to identify the ways in which those technologies can empower students and teachers so they can participate fully in the technological society of the future. ICT can, and must, bring about curriculum innovation that will provide for critical technological literacy. Educators must 'think outside the square' and identify those empowering elements. We must now look beyond the confines of the schools and institutions, and identify the ways in which the use of ICT is challenging students; providing new and exciting learning environments; providing a real focus for communication and expression; changing the expectations of students in terms of the nature and context of learning. The curriculum, and the role of the teacher must evolve to meet the changing needs and expectations of our students.

2. ICT STRATEGY FOR NEW ZEALAND SCHOOLS

In October 1998, the New Zealand Ministry of Education launched its ICT Strategy (Ministry of Education, 1998) with a number of initiatives. One initiative, designed to establish and maintain an ICT infrastructure, is the development of a central on-line resource centre, launched this year. Te Kete Ipurangi (www.tki.org.nz) is a web site for New Zealand teachers and students. Two other initiatives were designed to support ICT professional development in schools. The ITPD project, started in 1998, has funded more than 1,000 schools in organising and managing their own professional development. Each school has to set clear objectives and develop an operational plan, upon which they received funding for a period of one year for their own in-house professional development.

Another development saw 23 clusters of schools throughout New Zealand receive funding over a three-year period to provide professional development and resources. With a final year to run for these 23 cluster schools, the Ministry has announced another 25 clusters for a three-year period beginning in January 2001. Information on the cluster schools, and resource materials produced by them can be found on www.tki.org.nz.

3. ACTION RESEARCH APPROACH

A cluster of four secondary schools in the Wellington area are embarking upon a three year action research project, to identify the ways ICT can enhance, extend and innovate the curriculum, and explore means of supporting teachers and educators in reflecting on their own practice in their uses of ICT to support teaching and learning. The proposed cluster of secondary schools has been based on the diversity in size and culture that each of the schools offers. Two schools are well down the road in providing ICT professional development based around the secondary school curriculum, and senior management has actively supported this professional development. Another school taking part in a separate teaching and learning project, wishes to expand what has been achieved in this to teaching and learning specifically using ICT.

The cluster schools also have an interest in ensuring their student population are not disadvantaged by lack of access to ICT, and are keen to explore the ways in which ICT can support their Te Reo Maori programmes. In addition, the Lead School has made structural changes to the junior school regarding ICT and needs to find some way to evaluate the effectiveness of those changes in improving the teaching and learning outcomes for both staff and students. The Lead School needs to go forward confidently in their

decisions. This project will enable a group of schools to support each other, and to enable evaluation and feedback.

One of the goals of the project is to 'support individuals, departments and whole schools in developing the necessary skills for effective implementation of ICT in teaching and learning'. The main challenge, is to meet such a diverse range of needs within the scope of this project. The project proposes a innovative approach, to adopt an action research model as an umbrella for a variety of activities across the cluster.

In initial discussions with the principals from the cluster schools, it was noted that all were very keen to develop an action research element. The action research model will ensure a clear focus for each area of development. Each participating individual, or group of individuals, will be encouraged and supported in the study of their own teaching and educational practice. Through support materials and appropriate scaffolding, areas of interest will be clearly identified; steps will be taken towards finding a solution or bringing about improvement; relevant evidence will be gathered to enable a judgement to be made; research will be validated by sharing findings with others throughout the cluster.

The action research model will provide scope for development in a number of different areas. One of the needs, common to all schools in the cluster, is the identification of ways in which ICT can be used to enhance, extend and innovate teaching and learning within the New Zealand Curriculum Framework, and the development of individual ICT capabilities of staff through the use of personal profiling and goal setting. These will be ongoing throughout the project. Other areas for investigation are the:

- Development and implementation of school ICT strategies and policies
- profiling of student ICT capabilities
- Identification and implementation of professional development strategies to support teachers in using ICT effectively within teaching and learning
- Impact of ICT on students' research, communication, presentation, metacognition
- Identification of successful management strategies to achieve optimum use of ICT by teachers and students
- Development and monitoring of on-line learning communities within and beyond the cluster
- Investigation of the impact of ICT on the educational issues surrounding culture, gender and special needs.

The action research model allows development to be supported at different levels, and within a variety of areas of interest, therefore addressing the diversity of school and individual needs within the cluster. The examples above are only possibilities at this stage, and it is understood that only a

limited number of initiatives will take place at any given time over the three-year duration of the project.

Key Project Personnel

The *project director* will liaise with the lead school and the cluster; promoting leadership support and direction; providing on-going professional guidance, support and resources; supporting and encouraging publication of research findings.

The *facilitators* will take responsibility for extending their knowledge and skills in innovative uses of ICT in teaching and learning, by participating in negotiated professional development and action research initiatives, and supporting focus groups, across the cluster, in using ICT effectively within teaching and learning.

The *key staff* will facilitate access to hardware and software, and provide on-site technical and professional support for facilitators and focus groups.

The *focus groups* will take responsibility for extending their knowledge and skills in innovative uses of ICT in teaching and learning, and work alongside the key staff to take increased responsibility for providing on-site support for other staff.

The *advisory group* will liaise with the project director and senior management to review progress and further development, and advise the cluster with regard to any other relevant developments and publications.

A crucial element of the project will be the regular sharing of information and relevant ongoing professional development within schools and across cluster. By necessity, the facilitators will change as initiatives roll over. Focus groups will be groups of interested parties across the cluster, such as departmental staff, senior management, and library staff. The focus groups will also change according to the progression of the project. Where appropriate, information will be shared with whole staff groups, although it is recognised that most initiatives may be of interest initially to a particular focus group. The advisory group will include a representative from New Zealand Council for Educational Research, and facilitators/directors from some of the current ICT contract holders. This group will contribute by means of e-mail and electronic conferencing and discussions.

4. PROFESSIONAL DEVELOPMENT

In a secondary school, separation into curriculum areas is quite marked and the lead school has found that the most successful way to approach ICT-related professional development is within curriculum or learning areas. This approach ensures that professional development activities and contexts are relevant to the needs of particular staff. The lead school, having participated

in the Ministry's ITPD funding initiative, have found that the following factors contribute to the effectiveness of professional development in supporting the use of ICT in teaching and learning:

Professional development needs to be ongoing – one off demonstrations whet the appetite, but don't ensure that techniques / skills are developed, expanded and incorporated into programmes.

Train the trainers – recruit people who are sound, innovative practitioners; who can model good practice in the incorporation of ICT into teaching and learning programmes within their own curricular area or area of interest. A partnership is needed between the ICT specialist who can be an effective facilitator and the curriculum specialist who can demonstrate enthusiasm and the particular relevance of ICT to their own practice.

The process has to be developmental rather than 'the big hit'. Professional development should be planned over a period of time to allow for training, trial, evaluation, adaptation and implementation.

Drip feed approach is best – frequent, relevant workshops with individuals and small groups are more effective in providing 'just in time' support.

Professional development must meet individual needs – all staff are at different stages in their readiness to implement ICT effectively in their teaching programmes. Support should reflect these differences.

Professional development in ICT must address pedagogical and professional elements as well as practical skills, and in doing so, should relate closely to the New Zealand Curriculum documents.

A range of professional development strategies can be employed in order to satisfy individual, departmental and institutional needs. These strategies could include: one-to-one support, visits to other schools to see examples of good practice and new ideas, group workshops, in-class support, team teaching / peer support, whole-staff sessions to share information and foster a shared vision, attendance at seminars / conferences, and keeping up-to-date with current developments in ICT in education, nationally and internationally.

Two of the schools have made significant progress to date with their ICT Strategic Plans. One of the main factors contributing to this success has been the support and involvement of senior management. Therefore it is crucial that senior management are not only kept informed, but are also supportive of the project and provide leadership in the initiatives.

One study of ICT professional development for teachers was the INTENT Project (Somekh 1993) in the UK. Two of the four aims of the INTENT project were to 'develop management strategies to support developments in ICT' and 'monitor the process of institutional change'. In pursuit of these aims, Somekh, Whitty and Coveney (Somekh and Davis

1997) found that the direct involvement of senior management within a staff development strategy was very effective, as it 'put into place supportive structures, to allocate essential resources, and highlighted the importance of the initiative to the institution as a whole'.

They also noted that the partnership between 'coal face and senior management always uncovers surprising misconceptions on both sides', and that 'this new mutual understanding of the perspectives of them and us can reduce tensions and enable a genuine cross-fertilisation of ideas'.

It is also pertinent to recognise that, in secondary schools more particularly, there are real barriers to effective change in ICT across whole institutions. Somekh, Whitty and Coveney identify four main reasons why institutions such as secondary schools find it difficult to implement change in ICT across the whole institution.

Cultural alienation and stereotyping – culturally constructed conceptions about people who use computers; engineering culture vs. literature, history, arts; threat to culture and values – dehumanised element; complications of gender issues.

Compartmentalisation – history of introduction of computers into schools by Maths or Science departments; separate computer studies departments with 'control' of the computer 'laboratory'; computers established as a specialist discipline rather than a general tool; difficulty of implementing cross-curricular initiatives within departmental structure.

Equitable allocation of resources – difficulties in allocating 'fair' distribution of budgets for computer resources; difficulties of ensuring equal and adequate access to ICTs for all.

Responsibility without power – those people delegated responsibility for bringing about change don't always have the power to make decisions or allocate resources; difficulties faced by the ICT co-ordinator in influencing all colleagues across all departments.

It is important, therefore, to take these factors into consideration, to recognise the barriers that may exist, and to be aware of a range of possible solutions and strategies that can be put into place in order that each school achieves the optimum benefit from this programme.

The lead school has already identified that there are diverse needs from Computing, Text and Information Management and other Curricular areas, all making demands on a expensive and scarce resource. Many teachers have been forced to join the ICT bandwagon without careful and well-researched reasons. Schools are under pressure from parents, industry, and ICT companies all pushing for ICT in schools, each for their own reasons, and these may not necessarily be the reason teachers, as educators, should be implementing the new technologies.

In order to address these issues, the management and staff at the lead school have made some structural decision. They now wish to analyse, observe and adjust these from the perspective of knowing they are on a sound educational footing. The school has a philosophy based around personal responsibility for behaviour and learning, and they are basing their ICT learning programmes around this. Various strategies are in place to integrate ICT into the fabric of the school's learning environment.

'The true challenge to the teaching role comes not from the official curriculum developers, but from the children themselves. It is here that teachers and curriculum developers will learn the most creative uses of the computer for educational purposes; if only they will watch, and listen, and explore the cues provided by learners themselves' (Schostak 1988). The action research approach will encourage experimentation and creativity, at a time when the teachers themselves are still learning to cope with ICT and finding out what it has to offer. There has to be a climate where teachers are prepared to take calculated risks, to experiment along with their students, and to become confident that they can use ICT to support meaningful learning, which will engage their students in a challenging and stimulating environment.

REFERENCES

- Jonassen, D. H. (2000) *Computers as Mindtools for Schools* (p. 1-20) Prentice-Hall, NJ.
- Heppell, S. (2000) *ACEC 2000 Conference*, Melbourne, Australia.
- Ministry of Education (1998) *Interactive Education – An Information and Communication Technologies Strategy for Schools* Ministry of Education, New Zealand.
- Somekh, B. (1993) *Project INTENT 1990-92: Final Report*. National Council for Educational Technology Coventry.
- Somekh, B. and Davis (1997) *Using Information Technology Effectively in Teaching and Learning*. Routledge.
- Schostak, J. F. (1988) *Breaking into the Curriculum – the impact of Information Technology on schooling*.

BIOGRAPHY

Margaret Lamont has been involved in teacher education and ICT in Scotland and New Zealand. She is currently supporting the action research initiative being conducted by some of the schools funded within the NZ ICT Strategy for Schools.