Evaluating the Level and Manner of Use of ICT in the New Zealand Secondary School: A New Approach

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Abstract

This paper is based on the contention that current research into the use of ICT (Information and Communication Technologies) in our schools does not adequately explain the differential level, manner and patterns of use that can be found both within and between schools. What it portrays is the level of implementation and integration; which is then related to a number of factors, which are usually described as barriers to integration.[2,8] The concern is that such research does not sufficiently take into account "the substantial discretionary authority teachers have in their classrooms."[4] This paper suggests that there is also a need to understand the "contextually-constrained choices teachers make as "gate-keepers to their classrooms."[4] A new approach, is therefore suggested for unpacking the reasoning behind the decisions teachers make regarding their use of ICT.

Background

If one considers the level, and manner, of use of ICT in secondary schools it can be said to be on a continuum from implementation, the provision of infrastructure through to innovation, change in teaching and learning practices. The stages on the way include administration and integration progressing from simple lesson preparation through to highly constructive, discovery learning where students create their own knowledge with minimal teacher input.

What research in this area shows us is that both here, and overseas, while there have been major advances in the level of implementation, little has occurred in terms of either integration, in any depth, into the curriculum or, more significantly, change in teacher practice. It also shows us that there is wide variation both in the level and type of use by teachers both within and between schools.[5,6,7,8,9,10,11]

Research Design

A 'theory of change approach', which has three stages is used as the conceptual framework.[11] Each of these stages can be related to both the preliminary work and each of the two phases of the research design described here.

The first stage, surfacing and articulating a theory of change, corresponds directly to the preliminary work when program logic is used to draw a complex causal model for the inclusion of ICT into secondary schools. Program logic has been defined as a set of interrelated assumptions, principles and/or propositions to explain or guide social actions.[3] It is therefore a way of ordering events so as to explain the nature of causality and allows stakeholders and/or researchers to produce a model, which clearly explains the program to be studied. In this instance it provides an overall 'plan' for ICT inclusion including the predisposing factors, the inputs necessary, any mediating factors (facilitating or inhibiting) and possible outcomes.

During the first phase, which relates to stage 2, measuring the activities and intended outcomes, a case study approach, within purposively selected schools is used. The causal model, created in the preliminary phase, is used as the outline for a questionnaire to be administered to the teaching staff at the selected schools. This questionnaire provides information regarding teacher perceptions of the ICT infrastructure, teacher demographic information, their values and beliefs as well as their teaching practices. The resultant analysis of this data should provide simplistic correlations between the use of ICT by teachers and the mediating factors determined in the causal model. It should also allow the researcher to place the teachers on a number of continua including level and manner of use.

The third stage, analysing and interpreting the results of an evaluation, can be seen as the second phase of the research design. At this point teacher participants are purposively selected based on the findings from phase 1. Because this phase focuses on educational practice, problem-based methodology, "in which the theories of action relevant to the problem situation are investigated, evaluated and if necessary altered"[4] is used. The rationale, behind using this as a framework, arises from the need for research on the use of ICT to be directly related to and impact on teacher practice. Robinson (1993) states that teacher practice can be seen as a solution to practical problems of what to do within a given situation. Thus the current level, or manner, of use by teachers can be described as their individual solution to a number of potential problems. These could include, for example, the need to motivate students; the desire to teach in a more constructive manner; or the need to be more efficient in administrative tasks. Alternatively for many teachers the need to integrate ICT itself could be...
described as an educational problem, which needs resolving. They may therefore; perhaps, chose to ignore it and hope it will fade away as many other innovations have. It is this ability of teachers to make individual decisions, re the problems they face, that lies at the core of this second phase.

In PBM a researcher "maps the relationships between the practices to be explained, the intended and unintended consequences of those practices, and the constraints that those practices satisfy." [10]

In order to achieve this dialogue is used as a means of obtaining the selected teachers own explanations of their practices as they relate to ICT. This is necessary to determine not only the personal constraint sets underlying the decisions they have made but also whether ICT was indeed the problem or a solution to a number of problems. Both the barriers to its integration and the circuit breakers that determine how and why some teachers overcome these barriers will be considered. Where necessary document analysis, classroom observation and interviews with other staff members can be used to ensure actual theories of action rather than espoused, have been gained. The purpose of Phase 2 then is to probe more deeply into the reasoning behind the broad picture gained in Phase 1 by getting teachers to articulate why they had made the individual decisions they had regarding whether to use ICT.

Conclusion

What this paper has discussed is an approach which is being used in a study to determine why individual teachers use ICT in the way they do. In so doing it is intended to explain the differential use of ICT in our classrooms and provide a clearer picture of what is needed to allow ICT to reach its full potential as a learning tool. It has been suggested that there is a need to firmly place teacher practice at the centre of any evaluation into the inclusion of ICT. The approach outlined here allows the researcher to not only devise a more complex model of causality using program logic but to also probe into the reasoning behind the decisions teachers make using problem-based methodology.

References


