The Politics of Curriculum Change in New Zealand

George Payne

Abstract. In this paper I trace the political background of recent educational reforms in New Zealand. I then reflect on how these reforms have impinged on one curriculum area – mathematics – by formulating a philosophical base for mathematics teaching and then use Meighan’s generic model of educational ideology as a framework in which to critique this curriculum.

Introduction

Dr. C. E. Beeby, Director of Education from 1940 until 1960, argues that educational change in twentieth century New Zealand was based on three successive educational ‘myths’ (Jones et al. 1990:29). The first myth, survival of the fittest, dominated the school system, from its inception in the 1870s to the early part of this century. As pupils competed via external exams for limited places in secondary schools only the fittest survived. This was followed by the second myth - education of the whole child. Beeby associated this movement with Professor James Shelley, who argued in the 1920s and 1930s that the school system should give every child the opportunity to become a ‘fully rounded person’. The third myth, equality of opportunity, came into being in 1936 when Peter Fraser, as Minister of Education in the first Labour Government, abolished the Proficiency examination to allow ‘free’ secondary education. Beeby argued that to become a ‘myth’, a movement or idea must satisfy five conditions:

1. It must be ‘either rooted deep in social history’ or express ‘some deep – though not always clearly defined – public aspiration’.

2. It should be expressed in language ‘flexible enough to permit a reasonably wide range of interpretations’.

3. It needs to be defined tightly enough to ‘rule out altogether some lines of action so that administrators, planners and teachers can get practical guidance from the myth’.

4. It should represent an unattainable vision, in order to remain potent over 25 years of change.
5. It must inspire people to fight on its behalf, to believe in it completely while it serves its purpose (Beeby 1986).

These ideals were not a unique New Zealand experience but, rather, were fashioned around the growth of ‘modern schooling’ in Britain from whom we obtained many textbooks and other resources and attitudes that legitimise existing power relations and social arrangements.

Capitalism has been able to subordinate to itself the infinite desire for knowledge that animates the sciences and to submit its achievements to its own criteria of technicity; the rule of performance that requires the endless optimisation of the cost/benefit (input/output) ratio (Peters, 1997:35).

Lyotard (1984 in Peters, 1997:xxxv) argues that the logic of optimising performance:

…necessarily involves a certain level of terror: be operational that is, commensurable, or disappear… The state has found its own credible goal in power.

Beeby, and other writers, maintain that there is now a move away from ‘equality of opportunity’ to ‘equality of outcome’ making a new ‘myth’ - a ‘myth’ of equity.

**Historical Factors Leading to Reform**

Grundy (in McGee, 1997:123) advances the notion that schooling is a cultural artifact. Far from being non-political, schooling is shaped to suit particular cultural, social and political conditions and aims.

Bowles and Gintis (in McGee, 1997:122) state that: ‘Schooling is a device for cultural reproduction.’ Schooling serves as a means of maintaining dominant values of social and political structures from one generation to another. Gramsci and Giroux, (in McGee, 1997:124), maintain that schooling is hegemonic. Thus, schools serve to dominate and control society by inculcating a series of beliefs in power. Science and Education are to be legitimated, in de facto terms, through the maximisation of the system’s performance, which becomes self legitimating.
If we accept that schooling is a cultural artifact, a device for cultural reproduction and a hegemonic process that is self-legitimating then, to gain a perspective on what influences our schools, we must look outside of schools to see what influenced our society in the 1970s and 1980s. In the modern world power rests with money, and money is made by business, so a perusal of the macroeconomics of that period is critical.

The 1970s saw the rise of trans-national corporations. The business activities of these ‘super companies’ and franchises had the effect of transferring wealth from national to global coffers and hence weakened the powers of nation states. At the same time an electronic revolution was in progress that enhanced communication to such an extent that Keynesian notions of supply and demand for intra-national trade no longer worked effectively. Owing to the removal of border controls for capital and ‘free trade’ for goods, the ‘market’ became global, and competition was found within industries rather than between countries. In this climate the New Right saw the liberal notions of ‘welfare state’, the ‘social wage’ and the ‘power of trade unions’ as anachronisms that undermined their culture of entrepreneurism and enterprise. They were able to couple the neo-liberal virtues of ‘individual freedom’ and ‘the free market’ with the view that a strong state is needed to keep moral and political order.

Central to New Right ideology was the notion that State involvement in individual lives reduces competitive and enterprising zeal. The State ‘crowds out’ the private sector by removing money that could be better used for investment. Taxing the rich is counterproductive. On the other hand, poor people’s initiative is impaired if they become dependent on welfare handouts. The State cannot compensate for individual failure. Economic reform cannot be led by Keynesian macroeconomic policies, rather, microeconomic policies are necessary. In Reagan’s United States and in Thatcher’s Britain, New Right ideology struck a chord of popular appeal which allowed an easy reconstruction of society as New Right theories were in accord with common experiences of everyday life.

Throughout the Western world, changes to education have been encompassed within macro-economic change. During the 1980s, the administrations of Reagan and Thatcher set in place reforms based on ‘market competition’ in all educational sectors. Common to education reforms worldwide was the devolution of financial, staffing,
and policy issues from central to individual educational institutions. New Right notions, common to all educational reforms, were that schools could compete successfully regardless of the nature of their intake, and that raising standards was a simple matter of efficient school management and quality teaching. ‘Parental choice’ would determine the good schools from the bad.

In New Zealand, these theories were largely imposed by a National Government that was able to utilise the administrative reforms set in place by Labour Prime Minister, David Lange, who followed the advice of the ‘Picot Report’ (Department of Education, 1998). Both political parties claimed their reforms to be in the interest of equity. In effect, the high minded ideals of the Left to achieve equity for Maori, women, and other disadvantaged groups, were used by the Right as an excuse to introduce new curricula based on clearly defined objectives. Both parties ensured compliance by utilising a ministerial monitoring body in the form of the Education Review Office. By bringing in a regime of devolution, motivated by a wish to reduce public expenditure, limit the extent of provider capture and to improve efficiency and responsiveness to change on a local level, Lange effectively sanctioned the introduction of New Right agendas.

Thus, the situation of today evolved. The final effect of this restructuring to make schools economically productive, was to turn knowledge into a commodity and to abrogate State commitment to the ‘public good’ aspects of education which only the State can guarantee. Peters (1997), when discussing commodification, implies that if education is a commodity there has to be some form of contract between the buyer and seller; that is, in the teacher/learner relationship. He queries exactly what the student or family is buying. Is it teacher skill, a programme or course, or a certificate or qualification? Peters points out there is no other product or service in which the customer is an active participant to the extent that, if there is no participation, there is no product.

The weight of international research shows that people’s perceptions as to which schools are good and which bad often rests on examination results. This perception is fine if the cognitive development of pupils is the sole reason for schooling, but another equally valid reason for education exists - the socialisation of pupils. In other
words, providing pupils with the skills required to allow them to take an active part in adult society.

Missing in the New Right vision is this second reason for education. Dale (1997:273) believes that the State’s role in controlling education, although ostensibly weakened by devolution has, in fact, been strengthened, whilst its role in providing education as a public good has been either weakened or withdrawn. Dale believes that the State has three roles to perform. The first is to support the process of capital accumulation. The second is the guaranteeing of a context for expansion, and the third is the legitimation of capitalist accumulation. Put simply, the State’s role is: to guarantee the funding of schools, to ensure the provision of schools and to provide regulations for the running of schools. Jessop (in Dale, 1997:274), speaks of the ‘hollowing out’ of the State that gives some control to supra-national bodies (for example, New Zealand’s Ministry of Education), and to non-State bodies (such as a New Zealand school Board of Trustees), while retaining overall control as funder and regulator.

Successive New Zealand Government’s restructuring of education through introducing market mechanisms has primarily been aimed at creating efficiency through the structure that Dale and Jessop discuss. In discussing the political situation in New Zealand, it is interesting to note Dale’s conception of ‘ways and means’ for educational funding and provision. Dale states ‘funding and regulation combine in different ways to create the context for educational policy, provision and practice’ (1997:277). Dale makes a distinction between providing education for consumers, where provision depends on an individual’s ability to pay, and providing education for citizens, where provision is a universal entitlement.

Offe (in Dale, 1997:247), maintains that the State’s capacity to act effectively is severely limited in policy areas where social, rather than economic, issues are parameters. Bureaucratic intervention and quick reaction to innovation is limited by inflexibility. Devolution to a community shifts accountability on to the community. ‘Choice’ regimes and ‘quasi-markets’ fudge accountability as different loci of power mitigate a clear audit trail.
Peters, Marshall & Massey (1994), neatly sum up the crux of the discourse when they state:

Critiques of the fourth Labour Government’s policies, economic as well as social, have drawn attention to the ways in which these polices have been constructed at the intersection of power and influence exerted by a relatively small, close knit, group of politicians, businessmen, bankers and bureaucrats. While the source of New Right ideology can be traced to various sites internationally, thereby indicating its global ascendancy, in local terms policies originating in New Right thinking have been constructed within the nexus of government, the Treasury, State Services Commission, the Reserve Bank and the Business Roundtable (Peters et al. 1994:266).

Why Were the Reforms Allowed to Happen?

In gaining an insight into how a relatively small elite can assume and maintain power in a democracy it is interesting to look at other theories. Shor (in Facundo, 1998:5/4) advanced theories of societal influence on schooling. Shor maintains that the United States imposes a ‘network of cultural instruments for thought control’ aimed at opposing mass intellectualism. By ‘preaching a vocational culture’ which ‘narrows the concept of human development to the meaning of ‘trained hands’… relegating some to the bottom strata by means of bureaucratic testing in school and work-classification on the work site’, the class system of society is maintained. Development of a false consciousness in which people are conditioned to internalise the ideas ‘preached by the ruling elite’ (such as sexism, racism and the worship of the rich and powerful), is achieved through four devices:

Reification: By fragmenting a workforce so that each member concentrates only on one particular piece or part (through devices such as assembly lines or individual contracts), humans are prevented from seeing systematic wholes. ‘People become too fragmented to organise for popular liberation and develop ways ‘to beat the system’ for survival, which, deep down, are only means to outsmart capitalism by playing within the very rules of the business world.’
**Pre-scientific thinking:** A mode of thought that discourages critical comparison and thus rational explanations for authentic problems. Brand name consumerism and blaming everything on ‘bad luck’ are examples.

**Acceleration:** The process of change is sped up to give no time for critical thought. Roger Douglas deliberately used this device when he introduced reforms in New Zealand. He is reported to have said in a speech he delivered to the Mont Pelerin Society in 1989, ‘Implement reforms by quantum leaps. Moving by steps lets vested interests mobilise. Big packages neutralises them. Speed is essential. It is impossible to move too fast’ (Coxon et al 1994:257).

**Mystification:** False answers in the form of slogans are given to social questions, for example: ‘Women belong in the kitchen’. ‘Blacks use welfare to buy Cadillacs’. ‘If you’re so smart why ain’t you rich?’

Shor also sees the non-practice of democracy, where ‘people pay a price for talking back to parents, bosses, teachers, supervisors, cops, judges, landlords, credit managers and bureaucrats,’ as another instrument for societal domination. In a modern democracy the population exerts virtually no control over elected officers in positions of power, especially where devolution has occurred. Finally Shor identifies the demands of private life. Each of us has many roles to play, with many responsibilities within and outside of our families, and work that limits the time we have to act. Appositely, people with money or power tend to have more time to reflect and plan as they can assign their menial tasks to underlings.

If these instruments are applied to educational change in New Zealand, a parallel can be found for each. We are all familiar with the various ‘catch-cries’ about the ‘inefficiency of public schools’ and the ‘innovation and success of private schools’. We know that large city, single-sex boarding schools provide the best education. We have seen reification in action as schools are encouraged to compete. We are all familiar with the accelerating speed of curriculum change. We know that ‘students only use their loans to go on overseas trips’. We are well aware of the effects of questioning the reasons for change and we don’t need to be told about our increasingly busy lives.
McGee refines these criteria further when he describes how teachers implement a new national curriculum. He says research has found that teachers, unfamiliar with curriculum content, ‘revert to acting like novices as in managing time and lesson planning.’ (McGee, 1997:299). McGee felt that teachers needed time to study new curriculum content. He stated that teachers were inclined to interpret new syllabus content prescriptively, and that ‘Teachers often reverted to more teacher-centred methods when they lacked curriculum knowledge’ (McGee, 1997:299).

**What is Happening to Curriculum in Schools Today?**

What then was the practice in schools when the 1990s curriculum statements were introduced? I have been unable to find any definitive New Zealand research that examines this question, but having lived through the era as a practising teacher in a managerial role in an Area school, I will relate my experience. To consider detailed effects of these changes on all the five curricula introduced to date is beyond the scope of this paper. I have chosen to examine one curriculum in depth - my focus being mathematics. I have chosen the mathematics curriculum as it has been practised for a reasonable time, since 1992, and also because I oversaw the introduction of the document to the staff of my school.


According to Ernest (1991), two fundamentally different schools of philosophy exist; both with faithful adherents and both equally grounded in logic. Between these two extremes there are arguments for a mix-and-match of both. The oldest, Absolutist, school holds that mathematical truth is absolutely certain and that mathematics is the only realm of certain, unquestionable and objective knowledge. More recently, owing to critiques of ideas propounded by formalists such as Hilbert (1925 in Ernest
1991:10) and Von Neumann (1930 in Ernest, 1991:10), and others in the 1920s and 30s, the Fallibilist School arose. This school maintains that truth is open to question (i.e. fallible) and can never be regarded as being above revision and correction. These schools of thought, being so different, arose from seeking answers to fundamental philosophical questions such as: What is the basis for mathematical knowledge? What is the nature of mathematical truth? What characterises truths of mathematics? What is the justification for these assertions? These dilemmas needed to be addressed as philosophers pondered the nature of knowledge. Euclid, 2500 years ago, made the first attempt to address these questions in his Elements. His ideas were reinforced in Newton’s Principia and Spinoza’s Ethics. These writings form the basis of the Absolutist argument that mathematics is the only certain, infallible knowledge.

Absolutists say mathematical knowledge is a priori (literally, coming before), as it can stand by reason alone. Mathematics is a body of knowledge based around an assumed set of axioms and definitions from which inferences may be made by deductive reasoning to prove their truths. The idea of axioms, or basic truths which need no justification, were first propounded by Euclid and held sway until relatively recently when such arguments as the ‘parallel postulates’ proved Euclid’s ‘incontrovertible truths’ to be contradictory in some circumstances and led to a new branch of mathematics knowledge - non-Euclidean geometry.

Modern mathematical knowledge includes many branches, such as group and set theory, which depend on the assumption of sets of axioms that cannot be claimed to be universal truths. The Absolutist school of philosophy (which today still has many adherents) says that regardless of the validity of certain axioms in certain circumstances, axioms are still required. Proponents such as Frege (1893) and Russell (1919) (in Ernest, 1991: 8-9) regarded pure mathematics as a part of logic, claiming that all concepts of mathematics can ultimately be reduced to logical concepts and that all mathematical truths can be proved from the rules and inferences of logic alone. This argument has yet to be fully discredited. On the other hand, Godel (1931, in Ernest 1991:10) through his Incompleteness Theory showed the programmes of those Formalists who view mathematics as a "meaningless formal game played with marks on paper, following rules" (Ernest, 1991:10), to be flawed.
Whichever formal philosophical school is followed does not really matter. Both have their points and, if any one school were to be slavishly followed, widely differing outcomes in terms of educational practice would result. Of more importance are considerations of values and ideologies, and the social groups that adhere to them. Throughout history mathematics has held a unique place in the systems and beliefs on which society is grounded. Those who understood the numbers could hold a position of power and domination over their fellows and often ascribed arcane powers to their position. The realm of mathematics cannot be divorced from its sociological impact and the ethical and moral values of the society in which it exists. It is in this context that the impact of recent changes to the New Zealand Mathematics Curriculum has to be viewed.

Perry (in Ernest, 1991), proposed a framework for mathematics to fit different philosophies and sets of values. Perry’s proposal specifies a sequence of developmental stages: Dualism, Multiplicity, Relativism and Commitment. Dualism implies that the world is structured with opposites - good and bad, we and they, right and wrong. An extrapolation of Perry’s notion of dualism implies that learners need to begin at this stage. In my experience this is true. Perry speaks of the dualistic state where ‘All problems are solved by adherence (alignment of self with authority): obedience, conformity to the right and what they want’. When children first start school, and, indeed, through most of their primary years, my experience is that this is how they see the world. Teachers are the authority. What they say concerning maths is right and is accepted without question. At this level ‘investigations’ and problem solving may have little impact on knowledge derived by children unless the teacher confirms their observations. To these children the teacher, as the authority figure, is the font of all knowledge and is never wrong.

Learners then move to the stage of Multiplicity. Perry (1970), defines this stage as when the learner accepts there to be:

(A) plurality of ‘answers’, points of view or evaluations, with reference to similar topics or problems. This plurality is perceived as an aggregate of discreetes without internal structure or external relation, in the sense ‘Anyone has a right to his own opinion’, with the implication that no judgements among opinions can be made
Learners at this stage acknowledge that there is more than one answer and more than one way of doing things but lack a basis for a rational choice from alternatives. Children begin to move into this stage around Year Six and, in my observation, remain in this stage even up to Year Nine or Ten.

Relativism is defined by Perry (1970), ‘as a plurality of points of view, interpretations, frames of reference, value systems and contingencies in which the structural properties of contests and forms allow various sorts of analysis, comparison and evaluation’. At this stage learners acknowledge that there may be more than one answer, and more than one way of doing things, and base their evaluations and justifications on principles and rule-governed systems. Not many pupils, in my experience, reach this state of maturity until well into their secondary career.

Perry’s theory has profound implications for the curriculum and teaching of mathematics. At the dualistic stage learners regard maths as being concerned with facts, rules, correct procedures and simple truths determined by absolute authority. Learners view maths as fixed and exact with a unique structure. Doing maths is following the rules. In the Multiplistic stage, learners view mathematics as a collection of tools to be utilised as and when needed, with no regard as to whys and wherefores. Any tool will do as long as the job gets done. All mathematical truths are not known so it is possible to be creative in their application. Learners in the Relativistic state have knowledge of the rules and systems on which mathematics is based and can use these principles and criteria for evaluation. Ernest (1991:115), relates Perry’s theory to the formal philosophies of mathematics discussed earlier and ascribes dualism as being typical of the Absolutist school’s claim that ‘mathematical knowledge is certain, but there are rational grounds for accepting (or rejecting) it’. On the other hand, he sees the Fallibilist philosophies as being Relativistic ‘because they acknowledge the multiplicity of approaches and possible solutions to mathematical problems, but require that mathematical knowledge is evaluated within a principled framework’.

What happens then if these philosophical notions are applied to our New Zealand situation? To do this some framework for examining mathematical ideologies is required. Meighan (1986), proposed a generic model of educational ideology in which
eight elements - knowledge, its content and structure; learning and the learner’s role; teaching and the teacher’s role; resources appropriate for learning; organisation of learning situations; assessment that learning has taken place; aims, objectives and outcomes; location of learning - are identified as requiring address in any educational system.

In the following sub-sections I will relate these eight elements to the document *Mathematics in the New Zealand Curriculum* (1992), and compare the espoused models with my experience.

**Knowledge, its content and structure:** The syllabus for mathematics in New Zealand schools is a product of our society. As such it is modeled around our mores and values. The pattern of development for curriculum writing was given in lectures to Auckland College of Education Masters classes in August 1998, by the heads of the writing parties of the New Zealand Curriculums for Science and the Arts. If this pattern holds true for the Mathematics Curriculum (and there is no reason to suppose it does not), the research and consultation that has gone into its production was constrained, to a great degree, by parameters imposed at Ministerial level. My experience tells me that the mathematical learning levels that have been worked out, and many of the activities suggested, are suited to the bulk of our children.

**Learning and the learner’s role:** Page eleven of the New Zealand Curriculum recommends that a problem solving approach, utilising examples taken from ‘real life’ situations, should be adopted. My feeling has always been that reliance on one methodology is limiting and that many students have NOT developed sufficiently, mentally, to derive satisfaction from carrying out investigations. This feeling is born out by Perry’s precepts. A child at the dualistic stage of mental development does not feel comfortable with investigative learning. Three key paragraphs on page eleven contain examples of learning methodology that can only be of benefit to learners in the Multiplistic stage (from around Year Six on):

Closed problems, which follow a well-known pattern of solution, develop only a limited range of skills. They encourage memorisation of routine methods rather than consideration and experimentation. While fluency with basic techniques is very important, such routines only become useful tools
when students can apply them to realistic problems (Ministry of Education, 1992:11).

Applying Perry’s consideration of the Dualistic mindset, learners at this early stage of mental development are only happy when memorising and following strict rules imposed by an authority figure (the teacher). At this stage developing only a limited range of skills is not only desirable, but necessary. I feel that one of the dangers we face in our maths teaching is pushing learners through to the end stage of Relativistic reasoning too quickly. All we end up with is confusion. The final sentence of this paragraph can only bear validity as an ultimate aim, not as a teaching prescription:

The characteristics of good problem-solving techniques include both convergent and divergent approaches. These include the systematic collection of data or evidence, experimentation (trial and error followed by improvement), flexibility and creativity, and reflection - that is, thinking about the process that has been followed and evaluating it critically (Ministry of Education, 1992:11).

All of these characteristics are typical of Perry’s stage of Relativistic reasoning and learners are not ready to utilise these cognitive skills until late in their development. Ernest (1991), carried out a critique of the works of Piaget, Kohlberg (1969), Gilligan (1982), Loevinger (1976) and Belenky (1986). Ernest (1991:125), came to the conclusion that, ‘Although a number of alternatives to the Perry scheme exist, they do not offer better alternatives in the present context’. Ernest continues to warn of the danger of attempting to locate an individual’s intellectual development on a simple linear scale. As different subsets of beliefs might be located at different levels on the scale, Perry’s propositions suffer the same criticism as that levelled at Piaget. Those who do not fully comprehend Piaget’s notion of ‘decalage’ fall into the same trap.

The methodology of the New Zealand Mathematics curriculum appears to be most closely linked to Kitchener and King’s (1981) theory of development of reflective judgement. Ernest says of this, ‘It also seems more appropriate to young adults than to lifelong development, for the highest level includes the ability to make objective judgments based on evidence.’ It appears to me that the same criticism can be leveled at our curriculum and, cynically, to the New Right culture of innovation and enterprise that demand such a mind set.
Teaching and the teacher’s role: The notions of ‘catering for individual needs’ espoused in the Curriculum document (page 12), are dear to the hearts of New Zealand teachers who generally accept these precepts. A large part of the section on page twelve of the Mathematics Curriculum deals with the teacher’s role as a facilitator. It attributes student failure, in the past, to students failing to recognise the applicability of mathematics to their lives. Perry’s work would suggest that in the early stages of mathematical development teachers have another role - that of being the ‘mathematical authority’ to whom students may turn for confirmation of the rightness or wrongness of their methodology. This has profound implications for education as ‘being an authority’ implies teachers need to have a mathematical background that allows them to elicit understandings rather than acting as mere technicians.

Brown (in Halsey et al, 1997:738), states that ‘although the odds in favour of the children from professional and managerial backgrounds gaining entry to higher education remain largely unchanged throughout the second half of the twentieth century, it is not a foregone conclusion’. Brown goes on to say that the restructuring and change that has occurred in society since the mid-1970s has made parents more aware of the uncertainties of success and the consequences of failure. An inability in mathematics is often used as one ‘exclusion’ factor for higher education.

The implications of the teachers of children in the early years of education having scant mathematical understanding are far reaching. Bourdieu’s theories of cultural capital and ‘habitus’ suggest that the middle classes are distinctly advantaged where mathematics teaching is concerned. Discussion by Bell and Carpenter (1994:121), indicates that ‘there is a relationship between SES (and we can presume social class) and educational outcomes in New Zealand’. Jones’ (1991), work carried out in a girls’ school in Auckland suggests that teachers actually change their teaching style according to the social class of children.

From observation of beginning level test results in my school, children from more ‘educated’ families enter school with greater understanding of mathematical concepts. Parents with little formal mathematical knowledge or understanding do not model mathematical appreciation for their pre-school children. They cannot assist their children if mathematics teaching is poor. Their expectations for their children is
lower and they do not recognise the fact that teaching is poor in the first place. Bell and Carpenter (1994:137), encapsulate the dilemma. ‘The role of teachers in promoting the hegemonic belief in equality of opportunity is significant. This is so successful in schools that when children do not succeed in education they and their parents generally see the school as OK and themselves as failures.’ Clearly, a responsibility to ensure the highest level of teacher preparation in mathematics exists.

**Resources appropriate for learning:** Page thirteen of the curriculum contains a section on the use of apparatus and textbooks that contains many good ideas and timely warnings, but I still feel pursues the notion of intellectual experimentation too far and too fast. The idea of a school’s uniqueness has, to my mind, been taken too far by our political ideologues. Prior to the reorganisation of education, resources, such as *Beginning School Mathematics* were made freely available to all schools. When *New Maths* was introduced in the late sixties teachers were supported with freely available texts and other resources and also extensive in school ‘adviser’ time. This, in part, compensated for the cultural capital issues previously discussed. Development of exemplars, assessment tools and apparatus suited to our present curriculum objectives is sorely needed.

**Organisation of learning situations:** Apart from exhorting our teachers to utilise everyday situations this facet has not been covered in the curriculum document. That, to me, is a pity, as I believe this to be a critical factor in a learner’s cognitive development. Given that the learning process utilises all senses available to humans, the importance of passive visual stimulation and kinaesthetic, as well as aural, input is required. Requiring students to orally reflect on what they have done and how they have done it helps them to organise their thoughts and reinforces their visualisations.

One of the rationales for the restructuring of the education system in New Zealand was that the system was failing particular groups of pupils. Ostensibly, the concept of self-managing schools would allow autonomy to organise learning situations that best fit their communities. The habitus of the school and discrete groups within the school community often do not coincide. Carpenter’s (1997) work with Takiwa School describes a model that overcomes many of the issues raised by incompatible habitus. By allowing different socio-cultural groups to form classes catering for their particular needs on the one campus, the theory is that learning will be enhanced.
Even such an innovative idea cannot be universally applied. In a school such as mine, which shares many characteristics with Takiwa, a similar experiment would be constrained by bureaucratic rigidity. As Dale (1997:274) points out, the Government, as the provider of funds, is ‘the only agency which can guarantee a context for expansion’. Owing to rapid roll growth, the physical nature of the school grounds and minimal teaching space, any reorganisation would be undertaken with great difficulty unless extra land was purchased.

Assessment that learning has taken place: A section on page eighteen of the New Zealand Mathematics Curriculum document makes some reference to this aspect, and exemplars are scattered throughout the document. What is not addressed, however, are the philosophical notions of knowing when learning has taken place, how much has been learned and how such learning is applied. I believe that answering these questions for each individual student is part of the art of teaching. The validity of record keeping, what to keep and for what purpose, has not been fully examined in the curriculum document. Accountability to political masters goes more towards satisfying feelings of vengeance against those ‘not doing a good job’ than to epistemological outcomes. In my experience of teaching, giving summative tests are satisfying for students who can ‘crow’ about achieving 100% as a boost to their self esteem, and conversely, quite demeaning to the self-esteem of those who achieve 5%. Formative evaluation of the processes a learner utilises has validity, but apart from a requirement to prove teaching has taken place, I can see no educational justification for retaining the results.

Aims, objectives and outcomes: These, although clearly delineated and, I believe, well structured for our New Zealand situation, do have their critics. Marshall (Coxon et al 1994:261), believes that ‘the curriculum document involves a reduction of knowledge from ‘knowing that’ to ‘knowing how’; that is, a reduction from general understanding with an emphasis on propositional knowledge to one based almost entirely on skills.’ In part I agree with this statement having seen the debacle in mathematics education caused by the introduction of New Maths in the late 1960s. The introduction to primary schools of set theory and reliance on ‘understanding’ above ‘rote’ learning of algorithmic methodology leads me to believe there is a need for skill teaching to be emphasised – especially in the early years.
Peters (in Coxon et al 1994:261), sees the curriculum as ‘not a neutral assemblage of knowledge and skills but rather a selection of knowledge packaged as skills, which represent a particular world-view and specific set of interests.’ He goes on to suggest that the authors of the National Curriculum have achieved a number of political objectives by reducing knowledge to skills. Owing to the manner in which skills can be separated from their learning context skills-based learning allows an easy transition from school to the labour market. In Peter’s view, a skills-based perspective contains an in-built bias towards a vocational education. Many in our society would say that this was a positive, rather than retrograde, step!

**Location of learning:** Philosophically the location of learning has profound implications if one believes that cultural and ethical backgrounds impinge on learners. This is particularly true in the case of Maori education and in the gender argument. It has long been argued that girls achieve more highly, especially in mathematics, in a single sex school rather than in a co-educational establishment. Most proponents of the ‘progressive educator’ and ‘public educator’ schools see a need to bring maths into the ‘real world’, but other ideologies contradict this view. Kura Kaupapa Maori schools, in which the medium of teaching and learning is the Maori language, development has purportedly done much to give a sense of ownership to knowledge. Carpenter’s work at Takiwa School supports the notion of location, in a social sense, having importance. In maths teaching in recent years socio-economic location factors have taken even greater meaning. As no new resources came out with the new curriculum those schools more able to purchase their requirements have been advantaged – as have those schools able to buy into the many excellent computer resources for mathematics teaching.

**Conclusions and Reflections**

So, have the recent administrative and curriculum reforms benefited our society? The answer, in my judgment, is yes – to a certain extent. Having been instigated in the interests of equity by the Labour Governments of the 1980s and then ‘captured’ and modified by the National Governments of the 1990s, the restructuring of New Zealand education is almost complete. We now have a structure that can allow for change at the single institution level. Innovative change in school organisation as outlined by
Carpenter at ‘Takiwa’, goes some way to addressing the social inequities of Bourdieu’s social capital and habitus. In allowing autonomy, Picot’s administrative reforms (Department of Education, 1988), permit effective schools to compensate, to some extent, for the influences of family, class, gender and ethnic background that were the prime drivers, or the raison d’être, of the original reforms.

However, administrative reforms, only allow an opportunity for success. Unresolved questions remain. The New Right has moved to commodify education but no clear definitions of who or what is being bought or sold have been formed. Whether students succeed or not at school depends on their talents, motivation and, to some extent, good luck. Good schools and good teachers can make a difference to the life chances of children. Attending school at least gives students the chance to succeed.

From a practical viewpoint the curriculum reforms have changed the perspective from ‘knowing that’ to ‘knowing how’. In so doing, the emphasis is now on schooling for vocation rather than schooling for life. Many critics have raised serious doubts as to whether this is the best way to head, but, as I have shown from a review of the Mathematics curriculum, change is not all bad. Beeby’s five conditions for sustained change mostly apply to our mathematics curriculum (and to the other curricula put in place so far). The mathematics curriculum is rooted deep in social history. The mathematics curriculum is expressed in language flexible enough to permit a reasonably wide range of interpretations. The mathematics curriculum is defined tightly enough to rule out, altogether, some lines of action so that administrators, planners and teachers gain practical guidance. Whether the mathematics curriculum remains potent over twenty five years of change, or inspires people to fight on its behalf, to believe in it completely while it serves its purpose, remains to be seen. What would be infinitely worse for teachers at this time would be further reform.

Understanding Shor’s insights into how change can be foisted on a community allows one to put the present reforms into perspective. What we need to do now is to reflect on what has happened to date and use the framework provided to give our students the best deal possible. As McGee and others have pointed out, teachers still retain a degree of autonomy in the classroom. The quality of a school resides here - at the chalkface. If Beeby’s myth of equity is to prevail, despite political meandering, well-informed committed practitioners will have to become its champion.
References


