Iterative Best Evidence Synthesis:
Strengthening Research, Policy and Practice Links to Improve Outcomes

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The Iterative Best Evidence Synthesis (BES) Programme is a collaborative knowledge building approach across policy, research and practice. The Iterative BES Programme synthesises and explains evidence about what works for diverse learners. The primary purpose of the programme is to support sustainable educational development whereby a whole education system and its communities strengthen a range of desired outcomes for all learners through iterative processes of shared knowledge building and use. The iterative approach is designed to be a collaborative tool and catalyst to intensify and embed the interplay of research and development (R & D) as a systemic lever for sustainable development in education.

The programme is an innovation that grew out of work in the Medium Term Strategy Policy Division of the Ministry of Education and has been formally established within Medium Term Strategy for two and a half years.

The Iterative BES Programme has been one of a number of case studies considered in a series of OECD meetings focussed on evidence-based policy research. This paper builds upon two earlier papers prepared for OECD meetings describing the rationale for the programme and its brokerage role across policy, research and practice. The first paper in the series was for the 2004 joint OECD/United States Evidence Based Policy Research Conference. In that initial paper, because of the marked differences between our approach and federal US approaches, considerable attention was given to the rationale for our realist and fit-for-purpose methodological approach to synthesising bodies of evidence. That paper explained for BES development: the importance afforded local context, the rigorous pluralist approach, the search for theoretical coherence, and the use of a ‘jigsaw methodology’ to synthesise research that provides credible evidence about influences on a range of desired outcomes for diverse learners (the what, what magnitude of impact, under what conditions, for whom, why, and how).


Overview
I begin this paper by briefly focussing on current national and global educational challenges. I also provide some background about R & D as a systemic lever to foreground the role of BES as a tool to support sustainable development.
Then I explain how the Iterative BES Programme is a collaborative approach led from a national policy agency. I explain the nature of the engagement with and amongst: researchers and teacher educators, teachers, educational leaders, policy workers and policy makers, and the brokerage role of the Iterative BES Programme. I highlight weaknesses and strengths inherent in the work and lessons we are learning as we engage in this work. I also signal that the significant gap in the growing evidence base is systematic consideration of evidence about the effectiveness of policy. The final section foreshadows the kind of analytical and empirical work that might further our knowledge.

The process of identifying weaknesses in the work has been a deliberate, pro-active and ongoing tool to strengthen this cumulative knowledge building approach and particular attention is given to the ‘iterative approach’ in this paper. The emphasis of this paper is on the Iterative Best Evidence Synthesis Programme as a collaborative strategy and catalyst to stimulate and optimise the potential of R & D for sustainable educational improvement in New Zealand.

Thinking about use of evidence should be fundamentally informed by an evidence-based approach to sustainable educational development. To date our thinking about ‘use’ of evidence is that it has its seeds in the synthesis development process rather than following in some linear way. This paper explains how work-in-progress on educational change processes and interaction amongst policy workers, researchers, educators and educational leaders is informing ‘use’.

New Challenges for Strengthened Performance of Education Systems

There are new challenges for education systems in knowledge societies. It is no longer sufficient for education systems to sort learners into those who pass and those who fail. Rather all learners need to be well-served by their education to develop their capabilities, their sense of belonging, their well-being and their abilities to succeed and contribute to wider communities. Governments are looking to education systems to rise to the challenge to be more responsive to the diversity of their learners and to meet the higher expectations and future-focus required by knowledge societies.

The PISA studies show marked differences amongst education systems in how well 15-year-old students are able to apply their learning in mathematics, science and reading literacy. They also show marked differences in disparities between groups of students within countries. New Zealand has high mean scores, performing in the second highest band of countries across the PISA studies. But New Zealand’s results show relatively high disparities in achievement by comparison with most OECD countries. Despite high achievement by many Māori and Pasifika learners, there is a pattern of poor outcomes, particularly for Māori from New Zealand schooling.

The high disparities, the relatively high variance within schools in the New Zealand PISA results, and our rapidly growing demographic profiles for those learners traditionally underserved by New Zealand schooling, indicate a need for community and system development to be more responsive to diverse learners.

Accordingly our collaborative knowledge building work has at its foundation the goal of being more simultaneously effective with diverse learners. This goal recognises the day-to-day challenge for educators from early childhood, schooling through tertiary and adult learning. Educators need to be working effectively and simultaneously with students with different prior knowledges and experiences, speakers of different languages, high and low achievers, students with multiple, fluid and complex ethnic, gendered and social class affiliations.
cultures, heritages (including indigenous heritage) and identities, and students who bring varied dis/abilities and cultural resources to their learning.

Because the context for this work is New Zealand, all BES developments are informed by, and inform educational practice in both Māori and English-medium education. Māori have a treaty relationship with the Crown that protects Te Reo (Māori language) and tikanga Māori (Māori culture) and guarantees Māori the same educational opportunities as non-Māori. However, the published BESs provide substantial evidence over some decades of inequitable teaching of Māori learners (fewer teacher-interactions, less positive feedback, under-assessment of capability, mispronounced names and so on). Although Māori medium education has only been a very recent system provision in New Zealand, and despite resourcing challenges in a language revitalisation context, early cohorts of students emerging from continuous Māori medium education are performing more highly than Maori students in English medium contexts.

There is much evidence that reveals difference to be salient in education, albeit in complex and context-specific ways. Our approach is to put difference at the centre of this work through a ‘responsiveness to diversity’ framework. Because difference is a characteristic that all learners share, the approach allows for a ‘universalising discourse of difference’ (Britzman, 1995; Town, 1998). This approach moves away from ‘norm’ and ‘other’ thinking that has constrained mainstream educational thinking to focus on the homogeneous and the ‘mean’ and seeks to strengthen our evidence base about what works for all learners.

While the Iterative Best Evidence Synthesis Programme is designed to work across early childhood, schooling, tertiary, community, industry and adult learning our progress to date has been in the family and community, early childhood and schooling areas. For the purposes of this paper the context of schooling is predominantly used to illustrate the rationale.

The Role of R & D in Strengthening Educational Practice for Diverse Learners

It is the goal of practice being more effective for diverse learners that drives our approach to knowledge building and use. The syntheses bring together and explain bodies of outcomes-linked evidence about educational approaches that optimise learning for diverse learners simultaneously. This evidence foregrounds partnership research and development between researchers and teachers that demonstrates, for example:

- how ongoing attention to evidence about the prior knowledge, thinking, experiences and learning processes of the particular learners in any context is critical to effectiveness;

- how to increase student self-regulation and use of metacognitive (learning to learn) strategies;

- how to enhance student social and collaborative skills in ways that strengthen both social and academic outcomes;

- how to develop productive learning communities at each level of the education system whereby cognitive conflict is valued, managed and used to enhance learning, and peer supports for learning are intensified;

- how to provide challenging educational environments wherein the sense of belonging, the well-being of learners and teachers, and enjoyment of learning are nurtured; and
• how to optimise effective linkages with families and communities that strengthen learning outcomes.

An understated theme across these kinds of outcomes-linked research and development findings is that there is outcomes-linked pedagogical research that can strengthen sustainable ways of working with learners that reduce the stress of teachers and educational leaders.

However, while the examples of research identified above arise out of substantial traditions of R & D much of this research is unknown to many teachers, educational leaders, policy workers, policy makers and even teacher educators. There has been a strong tradition leaning towards craft practice within education and teacher education.

‘Craft practice’ is used here to mean the model of teaching where practice is based on teachers’ experience, where there is discussion about teaching matters but involvement in other teachers’ day-to-day practice in classrooms occurs normally only in the context of pre-service practica. There is emphasis on management and discipline, evaluation is based on judgement about how the teaching went rather than consideration of the children’s learning, and the prevailing norms and practices of classrooms are maintained. A craft practice approach does not involve engagement with R & D around pedagogy.

Doyle (1990)\(^9\) provides a contrasting framework of a ‘reflective professional’ approach to teaching which focuses on reflective capacities of observation, analysis, interpretation and decision-making linked to data about children’s learning. The knowledge base for the reflective professional is not exclusive of, and values the craft knowledge of skilled teachers but also includes pedagogical, subject, socio-cultural and other knowledge from the social sciences and the use of formative assessment and inquiry processes to inform teaching. Evidence-based practices become embedded within everyday educational practice.

Despite the fact that research about pedagogy is a potentially invaluable record of the work of teachers, there is stronger ownership of that knowledge by researchers than teachers and teachers are rarely named as co-authors of research reports about their work. Teachers have often had reason to find the educational research they have encountered of little appeal or practical help (Kennedy, 1997)\(^10\).

We have had a strong positive response from both New Zealand’s teacher unions to the best evidence synthesis work; however, the response from teachers nationally has varied. One response from educators has been the realisation that there are substantial traditions of potentially helpful research about their core professional work of which they had been unaware, even through their initial teacher education.

A consideration of the status of R & D, and educational research in general, in New Zealand provides insights into the barriers and potential for future development.

**The Quantum and Place of R & D in Education**

A definition of educational research and development commonly used by the OECD Centre for Educational Research and Innovation is:

_Educational research and development is a systematic, original investigation or inquiry and associated development activities concerning the social, cultural, economic and political contexts within which the educational systems operate and learning takes place; the purposes of education; the processes of teaching, learning and personal development of children, youth and adults; the work of educators; the_
resources and organisational arrangements to support educational work; the policies and strategies to achieve educational objectives; and the social, cultural, political and economic outcomes of education. (OECD, 1995, p. 37; CERI, 2001)

An example of effective and systemic R & D in New Zealand is the Numeracy Development Project/Te Poutama Tau. This project involves communities of New Zealand mathematics education researchers, teacher educators, teachers and policy workers in a national professional development programme which has a research process embedded within it. Teachers carry out diagnostic interviews with their students in order to guide their pedagogical approaches and maintain records of their students’ progress on a national database.

The professional development includes conceptual and resource development and processes of teacher collaboration, observation and reflection. The pedagogical emphasis has been focussed on the mathematical ideas, students’ metacognitive strategies and strengthening learning community amongst students. There has been an iterative cycle of development and evaluation in the Numeracy Development Project which has recently, partly as a response to findings from BES work, focussed teachers on better meeting the needs of diverse learners.

Conservative analyses\textsuperscript{11} of the 2004 data for 70,000 NZ students in Years 1 to 8 (English and Māori medium) showed progress to a higher stage was greater for all ethnic groups than in 2003 and following an explicit national focus on responsiveness to diverse learners, for the first time in five years there was a decrease in disparities between groups. Although the average effect size advantage for addition/subtraction was only modest (0.19 which is comparable with the UK Numeracy initiative gains) the average effect sizes for multiplication and proportion/ratio were more than double these (0.40 and 0.43) reflecting the emphasis on more advanced mental strategies in the New Zealand development. In 2003 the Numeracy Development community attended to the pattern of failure to reduce disparity and a range of strategies were introduced to strengthen responsiveness to diverse learners. Early analyses of the 2005 achievement data in the Numeracy Development Project indicate the significant reduction in disparities apparent in 2004 may not have been repeated in 2005. The Numeracy Development community has given particular weight to interrogating this concerning trend change in their national Hui in March 2006.

Although there is increasing evidence of the potential value of R & D, a 2003 OECD report\textsuperscript{12} identified the relatively low proportion of funding afforded to R&D in education and the challenges this raises for knowledge societies.

\begin{quote}
A rough estimate of the level of educational R & D as a percentage of total expenditure on education is on average less than 0.3\% in six countries for which data are available. This is a very small figure when education is compared with other knowledge sectors, for example, the health sector where between 5-10\% of the total health expenditure in public and private sectors are directed to R & D.’ (p.11).
\end{quote}

The OECD Report includes an assessment of educational research in New Zealand and estimated educational research funding to be even lower than that for other OECD countries at between 0.17- 0.20%:

\begin{quote}
At the same time New Zealand invests far less in research and development of any kind than other developed countries, and has far lower R & D personnel per
\end{quote}
million population than Australia or Western European countries. New Zealand is successful educationally, but is, by R & D standards, not becoming a knowledge economy. (p. 89).

Government strategies in New Zealand have followed or been in train to lift research activity. For example; the establishment of a $2 million annual grant for researchers to work in partnership with institutions to do R & D focussed on needs identified by researchers and educators: The Teaching and Learning Research Initiative.

Tertiary policy has also led to the establishment of additional funding to Centres of Research Excellence in tertiary institutions. However, none of the new Centres is focussed on education. In 2003 the first national assessment of the quality and extent of research activity of the tertiary sector was conducted: The Performance Based Research Funding (PBRF) Quality Evaluation.

The results of the PBRF showed educational research in New Zealand to have the third highest actual numbers of A-ranked researchers (research of world-class standard) of any discipline. The number of A-rated researchers in education was outranked only by academics in engineering and technology.

However, the evaluations indicated that the submitted research portfolios for almost three quarters of tertiary academics working specifically in education were evaluated as either research inactive, emergent or not demonstrating good-quality research; which meant that education was one of the poorest performing subject areas across the board. Even if the poor performance underestimates valuable unreported R & D activity such activity is unavailable to inform development more widely through publication.

The Education Peer Review Panel (2004) concluded that the ‘there is clear evidence of a critical mass of nationally and internationally excellent researchers in education in New Zealand and this augurs well for the future of our discipline’ (p. 283) Despite this optimism for the future, the need for R & D to improve practice for diverse learners is pressing, and there are areas of concern.

Closer links between research and practice are mitigated against because of at least five factors. These are:

- the uneven distribution of the excellent researchers across tertiary institutions;
- much of the quality research may not be oriented towards R & D (only a proportion of the available quality research focuses on improving educational practice which is small subset of the wide-ranging interests of academics in education);
- the relatively low prevalence of quality research in some teacher education institutions,
- research quality in New Zealand education was assessed as lowest in teacher education, e-learning and curriculum (with the exception of mathematics and science); and
- undermined social capital in the form of networks and relationships fostering trust and reciprocity in New Zealand educational research was identified as a national weakness in the OECD Review (2001).

This last factor raises concerns that many educational researchers may be working in quite siloed ways in New Zealand. This can mean researchers ‘rediscovering the wheel’ rather than
engaging with, and building on the work of others. This problem has been highlighted by the authors of a recent review of New Zealand research on initial teacher education\textsuperscript{17}.

Overcoming these barriers to the escalation of R & D in New Zealand education is critical because to understand and strengthen New Zealand education we need New Zealand R & D. The international research provides a substantial resource for public policy in a small economy. But, when using international research, New Zealand educators and policy-developers need to know if what the evidence indicates works in other countries would apply in the New Zealand context, given regulatory, policy, institutional, cultural, language, professional and other contextual differences. For example, educational policy and practice needs to understand the ways in which indigeneity is salient and the nature of school-based self-management in New Zealand.

Further, to bring about effective change we need the practice and benefits of R & D to permeate New Zealand education. Critical to the potential role of R & D as a lever for change is the degree of inter-relationship between research and development. The potential of collaborative and systematic action research for change exemplifies the power of an ongoing and iterative cycle of feedback and improvement when R & D inform each other.

This notion of an interdependent process between R & D in education contrasts with traditional approaches where educational resource development\textsuperscript{18}, innovation and research may be occurring independently of each other. This siloed approach lacks the leverage for realistic, effective, synergistic, cumulative and sustainable development possible when R & D are interdependent. Such fragmentation also carries risks for teacher burnout and ineffectiveness for learners that bandwagonism and isolation can bring.

The goal of the Iterative Best Evidence Synthesis Programme is to bring together previously inaccessible research evidence about what works in an iterative process of synthesis development that builds upon R & D, informs R & D, is a capability building tool for R & D and becomes a stimulus for intensified R & D activity across policy, research and practice in ways that improve practice.

Attending to a Range of Desired Outcomes

Our approach to the selection of evidence within a synthesis recognises that within a democracy, desired outcomes from an education system are part of an agreement within the wider society and between educational institutions and their communities. Desired outcomes are by nature subject to a contested and evolving discourse about what parents and wider communities want for all our learners.

Accordingly BES writers are required to seek out research evidence relevant to a range of outcomes previously identified in consultative processes with wider communities including academic outcomes, skill development, social outcomes, cultural identity, disposition as a learner, self-regulatory skills, enjoyment of learning, preparation for local and global citizenship and success and well-being, rather than just a narrow focus on particular measures of academic achievement. Particular emphasis is placed on evidence about approaches that strengthen a range of outcomes at the same time. For example, research focused on outcomes-linked evidence about the interdependence of the social and the academic in mathematics education (Cohen, 1994\textsuperscript{19}; Stein, 2001\textsuperscript{20}).

While there is likely to be consideration of evidence of impacts on a wide-range of student outcomes in every BES, the focus on research that has illuminated impacts on learner outcomes is incontrovertible in BES development and the justification for the use of the term ‘best’. That is ‘best’ does not mean ‘best available’; rather ‘best’ denotes evidence and explanation about how educational or other processes impact positively on a range of outcomes for diverse learners.
Part of the rationale for the incontrovertible concern with impacts on learners is the compelling evidence across studies that have linked teacher goals, learning processes and student outcomes, that well-intentioned, caring and experienced teachers can unknowingly teach in ways that have impacts counter to their own goals (Doyle, 1983; Nuthall, 1999; Alton-Lee, Nuthall & Patrick, 1995; Bossert, 1979). This finding is apparent, for example, in research about unintended impacts of social studies in exacerbating racism (Cole, 1998; Donn & Schick, 1995; Osler & Starkey, 1999; Seixas, 2001; Shaver, 1999). The concern for impact on outcomes is similarly critical for well-intentioned policy settings and initiatives that can also have impacts counter to their goals, for example, policy initiatives related to drug education (Biddulph, Biddulph & Biddulph, 2003).

Policy advice has a legitimate role in giving precedence to impacts on learners in education. However, when evidence-to-practice policy work does not genuinely and positively support educational development, then cynicism will result, and opportunities for collaborative development can be in jeopardy.

The Iterative Best Evidence Synthesis Programme has been from time to time the subject of attacks from New Zealand academics arising from discontent with the US ‘gold standard’ of large randomised controlled trials or the UK use of systematic reviews. Such attacks have assumed the Iterative BES Programme to be a clone of those approaches despite its explicit commitment to the significance of context, critical realism, rigorous eclecticism, use of outcomes-linked case study examples, attention to evidence about change processes and to a collaborative approach. While criticism continues to be a key resource in the iterative development process for the programme, we are seeking that criticism be relevant to BES.

**Building Sustainability through a Strategic Health-of-the-System Approach**

Because of concern in policy agencies to ensure accountability of government spending on interventions, systematic reviews are sometimes commissioned to focus on evaluations of interventions. The focus of the evidence-based engagement can be more narrowly focussed on the links between policy interventions and practice with research playing an evaluative but not a cumulative developmental role in that link. Pawson (2001) warns of impoverished knowledge building when there is insufficient attention to explanation of the underlying causes or mechanisms mediating impacts of interventions. A risk of an overly intervention-focussed approach is the failure to advance sustainable development when expensive experimental evaluations are insufficiently able to address or explain the problems of poorly designed theoretically impoverished interventions that do not optimise systemic or sustainable levers. There are instances in education where randomised controlled experimental trials can provide very powerful knowledge (for example, Biddulph, 1983) but there are real constraints upon the value of experimental methodology in classroom research (Alton-Lee, 2006).

This Iterative Best Evidence Synthesis Programme uses a health-of-the-system framework in which there is a broad concern with how infrastructure, wider policy settings, and interactions amongst the multiple communities within an education system contribute to a system that is functioning effectively for all its learners. This means considering an evidence-based approach to larger accountabilities for government expenditure and policy settings, not just those focussed on new interventions.

This health-of-the-system framework has many ramifications for our evidence-based approach. For example:

- there is a need for attention to inter-linkages across BESs and evidence-based theorising of intermediary, and inter-linked influences on outcomes;
• there is the need for attention to the educational impact of culture and cultural mismatches between institutions and families and communities;

• particular weight needs to be given to outcomes-linked research case studies that illustrate and explain contextualised examples of effective practice in New Zealand;

• the model calls for attention to changes in system impact over time requiring a wider search than in many other synthesis activities:

• there needs to be more weight given to analysis and evaluations linked to outcomes that consider not only the specific evaluations at the school or classroom level but also the ways in which broader policy, infrastructure, regulatory and ‘implementation’ influences can contribute to outcomes (for example, Annan & Robinson, 2005) 35.

Considerations of evidence-based use and sustainability call for attention to the ways in which policy interfaces with wider infrastructure for R & D in the tertiary sector. For example, if the Ministry of Education were to use the BESs to inform the work of contracted providers of teacher professional development without linkages to the ongoing work of postgraduate courses, and thesis supervision for educators in tertiary educations, then the impact could be superficial and short-lived. The evidence-based development would, in effect, be bypassing the engine of knowledge production, dissemination and qualification gate-keeping that is integral to the role of tertiary institutions, and is so influential in shaping the nature of professional knowledge and practice in education nationally. The BES approach seeks to achieve improvement and sustainability through embedding the iterative process of development and use in business-as-usual infrastructure.

What Makes a Bigger Difference?
We have used the framework in Figure 1 below as a way of pulling together our available evidence on the relative impact of different influences on the variance in learner outcomes from schooling.

A literature review 36 commissioned by the Ministry of Education indicated that about 40 to 65 percent of variance in outcomes is attributable to the influences of family and communities, depending on the outcome of focus. An analysis 37 of multi-level studies of school and teacher/class influences showed the impact on variance at the teacher/class level to be variously 16 percent to 59 percent of the variance in learner outcomes, depending on the subject area, level of schooling, and outcome of interest. The largest teaching impacts on variance have been identified in a recent Australian study across a wide range of subjects at
the senior secondary school level\textsuperscript{38,39,40,41}. A limitation of this framework to date is that most of the multi-level modelling studies on school and class effects restrict their consideration to academic outcomes. We have New Zealand evidence\textsuperscript{42} of teaching class impacts accounting for 42\% of the variance in student achievement in mathematics at Year 9 level.

The impact on outcomes of school level influences (from 0-20.9\% of impact on variance) varied considerably depending, for example, on the length of time the learner had spent in the school, the subject area, and school level policies such as allowing, or not, lower achievers to be assessed. But the school level impact was consistently far smaller than that at the teacher/class level both for primary and secondary education.

In summarising the findings of the analysis of multi-level modelling studies of school and between teacher/class effects, we framed teaching as the ‘key system influence’ (compared with school-level effects). However, the translation of evidence-based findings into easily communicable ideas by speechwriters can rapidly transpose evidence-based messages into claims that are clearly wrong. For example, the false claim that ‘quality teaching is the key influence on learner outcomes’. A rapid response to this false claim surfaced from the leadership of both teacher unions. In an editorial\textsuperscript{43} to primary and early childhood teacher union membership the union president urged teachers to go to the Ministry of Education’s best evidence synthesis website to check out the evidence, concluding:

\begin{quote}
‘Our members are committed to continuous improvement and enhancement of quality teaching but, as the BESs, confirm, it is when the myriad of influences come into focus, and are addressed, holistically, that significant progress is made.’
\end{quote}

This overview of influences on variance in student outcomes provides both an indicator that can direct shared knowledge building to the areas of potentially larger direct influence such as families and teaching and to critical mediating influences such as teacher education, leadership and resourcing.

The implications of this overview analysis for thinking about the policy importance of teaching have drawn the most critique of any aspect of the Iterative Best Evidence Synthesis Programme. So before addressing the policy importance of effective teaching for diverse learners, it is important to emphasise the importance afforded to family and community influences in this analysis of impacts on variance in student outcomes. There are four key implications that have arisen from our initial best evidence synthesis on family and community influences on outcomes:

- The impact of wider social and economic policies on families & community influences should not be under-estimated.
- The implication of the wider impacts of families and communities is that an evidence-based policy approach requires strong interface between educational policy and wider social, economic and health policy.
- Notwithstanding the implications above, there is much New Zealand evidence that teacher deficit attributions to families and students can pose a barrier to effective practice, particularly for diverse students.
- An R & D approach to school-family linkages/partnerships in which the school takes agency can have particularly high impacts because they activate both the home and the teaching influences and can forge greater coherence between these.

Because of the importance of family and community influences on children, one of the first tranche of first iteration BESs\textsuperscript{44} commissioned was focused on family and community influences on children’s educational outcomes. This BES has been influential in work with other policy agencies. For example, it has strengthened the case for more priority to issues of
child poverty in government policy and for a higher priority for children’s untreated hearing loss.

This BES has also stimulated interest in the wider community. For example: the Waitakere City Council in New Zealand has been in touch with the Iterative BES Programme about follow-up. They called a one day conference in October 2005 focused on the implications of the BES findings and invited the BES writers to speak. The conference was described in the following way by the Council:

Communities and Educators Working Together:
“Strengthening Relationships”
Fostering a collaborative approach to building and transforming relationships between communities and educators
Examining models of effective practice locally, nationally and internationally and looking at how these might be adapted to the Waitakere environment.

There is a lack of infrastructure for R & D in New Zealand in the critical area of educator-community/family linkages and partnerships. While there are examples of substantial and sustained gains for students, and busy teachers and parents, when school-family partnerships are activated effectively (for example, Biddulph, 1983; Biddulph and Tuck; 1983; Biddulph, 1993 and Biddulph, 2004; many evaluations of government interventions in this area signal gaps in knowledge and effectiveness. This is a national educational research weakness that impacts upon work across government policy agencies.

The R & D outcomes-linked collaborative work in this area led by Professor Joyce Epstein at Johns Hopkins University Center on School, Family and Community Partnerships in the U.S (linked to the Harvard Family Research Project) is providing a model that could inform a collaborative national research programme in New Zealand. The Johns Hopkins University Center has established a new research and development initiative called the National Network of Partnership Schools (http://www.csos.jhu.edu/p2000). This network ensures an ongoing action research approach to identifying what works in school-home partnerships for specific contexts. The aims of the Center are to provide a research foundation to guide schools, districts, and policymakers to create and support positive, permanent programmes of partnership, to disseminate information about what works, and to learn from a variety of approaches implemented in diverse schooling environments.

If New Zealand is to optimise linkages between evidence and practice in this area in any sustainable way then there needs to be comparable infrastructure and work carried out here in ways that are appropriate for educators, families and whanau in the New Zealand context. A particular resource in this work will be the substantial body of Māori educational research illuminating linkages between communities, iwi (tribes), families (whanau) and schools (kura and wharekura). Māori educational research was noted to be an area of national strength in the Performance Based Research Funding quality evaluation.

Rationale for the Series of Best Evidence Syntheses
Walter and Davies’ (2003) have identified ‘a strategy of creating evidence in priority areas, with concomitant systematic efforts to accumulate evidence in the form of robust bodies of knowledge’ (p. 126) as one of the four widely-agreed underpinnings of any evidence-based practice agenda.

The analysis of the relative impacts of different influences on outcomes has been influential in the selection, prioritising and order of BES topics for the first iteration BESs. At this stage it has not been possible to gain agreement within the Ministry of Education about the criteria for identifying and prioritising future BES topics. Tensions occur around the BES focus on what
can potentially make the most difference for learners, perceived policy needs, methodological challenges around more distant levers, and available resources internally and externally.

The analysis of potential impacts on diverse learner outcomes influenced the initial cohort of BESs focussed on:

- the influence of families and communities on outcomes for children from birth across early childhood education and schooling\(^{52}\);
- quality teaching for diverse learners in early childhood\(^{53}\);
- quality teaching for diverse learners in schooling\(^{54}\), and
- professional development in early childhood education\(^{55}\).

The second cohort of BESs is now in progress focussed on:

- effective pedagogy for diverse learners in mathematics/pāngarau\(^{56}\);
- effective pedagogy for diverse learners across the social studies, social sciences, tikanga-ā-iwi curricula areas\(^ {57}\);
- educational leadership – schooling\(^ {58}\);
- teacher professional learning and development – schooling\(^ {59}\).

The two teaching-focussed BESs span early childhood and schooling and all BESs are required to link to and specifically build on the findings of the families and communities BES. The focus on educational leadership was not initially planned so early in the series because of the methodological challenges posed by indirect links between leadership and outcomes. However, this BES was commissioned in response to a strong case mounted from the sector and internally within the Ministry of Education, given the policy importance of site-based management as a feature of the New Zealand schooling system.

Consultation with national advisory groups and within the Ministry of Education indicates that the next four BESs are likely to focus on tertiary teaching, industry and workplace training and development, quality pedagogy for diverse Māori learners and effective teaching of literacy. The biggest constraint on initiating new BESs arises out of the considerable resources required to mount, resource and sustain the collaborative and national consultation processes involved in a BES development at both the national policy level and across the research institutions and stakeholders involved.

**Collaborative Knowledge Building as a Change Strategy**

A key proposition in this paper is that the project of bringing together rigorous and useful bodies of evidence about what works in education needs to embed within its approach ways of working that attend to the ‘knowledge utilisation’ challenge as well as the knowledge building challenge. If such ways of working are built into EBPR then the endeavour of itself can be a transformational process that not only constructs a new kind of dialogue and understandings amongst policy workers, practitioners and researchers but also provides the foundation for using the knowledge to make a bigger difference in education.

This means embedding opportunities for dialogue into the knowledge building processes rather than initiating them after a synthesis has been produced. This approach is resource intensive because it is part of a national educational development process of itself. Ginsburg and Gorostiaga (2003)\(^ {60}\) explain the underlying principle in the series editor’s introduction to an international consideration of the *Limitations and possibilities of dialogue among researchers, policy makers and practitioners*’
Dialogue isn’t necessarily more efficient, but it’s more democratic and, therefore, more effective.

...Our preference is also based on the belief that in the long run dialogue and participation by a wide range of stakeholders produce better and more relevant educational research, policy and practice. ...Certainly, it may be easier – and, in that sense, more efficient – for researchers, policy makers, and practitioners in education to engage in action (or even in praxis) in isolation of members of the other groups. However, the decisions that are made and the actions that are pursued are likely to be less effective. This is the case not only because the quality of judgements may be lower but also because the activities of one group may detract from or cancel out those of other groups. ‘(p. x)

The ways in which we are forging the collaborative knowledge building strategy in BES are being informed by our own outcomes-linked evidence within the Ministry of Education. As indicated earlier in this paper we have an outstanding national educational strategy for which there is clear evidence of both a significant national shift in achievement outcomes for all ethnic groups and a measurable reduction in disparities between ethnic groups: The Numeracy Development Strategy. This policy programme has exemplified a national research and development strategy in both Māori and English Medium Schooling.

Evaluators have described the NDP as ‘a dynamic and evolutionary approach to (policy) implementation’. The senior officials involved, Malcolm Hyland and Ro Parsons have in-depth educational knowledge and expertise and have worked from the outset in an iterative R & D process with teacher unions, researchers, teacher educators, leaders and teachers to successfully create a national learning community. The project has used a deliberate iterative process exemplifying Patton’s (1997) utilization-focussed approach to evaluation. This collaboration is evident in a 2003 publication co-authored by an academic and officials ‘The Numeracy Development Project: Policy to Practice’. In that paper the authors explain the significance of shared leadership, open communication and the valuing of conflict and challenge in the policy approach:

‘The learning community that has developed around the project is characterised by high levels of trust, confidence and ownership...Conflict and challenge are not viewed as threatening, but as leading to new insights. (p. 167)’

Recent policy work has provided a framework and strategy to achieve sustainability in this national programme.

While developing a unique fit-for-purpose approach to processes, BES has fundamentally modelled its processes on the Numeracy Development Project strategies. A range of international research and analysis including Fullan’s (2005) analysis of what works in educational leadership at a system level is also informing our processes. Key elements are: emphasis on moral purpose, incentivizing collaboration, engaging in continuous reflective action (that does not remain at the level of just thinking), building capability at each stage and underpinning growth with a press for growing financial investment in R & D in education.

In the following section of this paper BES development processes are explained with consideration of the approach to collaborative knowledge building across research, policy and practice as a change strategy.
Developing National Guidelines for Best Evidence Synthesis Development

One of the key challenges for EBPR is the contestation of what counts as rigorous evidence amongst researchers. In order to gain the confidence of the educational research community and their engagement in iterative processes of BES development and use, the Ministry of Education drew upon expertise across the country to strengthen the approach and to get a high level of agreement about the methodology to be used.

In 2003 and 2004 the Ministry of Education brought together national reference groups of researchers, methodological advisers, BES writers, policy workers and teacher union representatives to develop formal and agreed Guidelines for Generating a Best Evidence Synthesis Iteration. The approach taken was to gain agreement about the purposes which then informed a fit-for-purpose methodology. As part of the international and national formative quality assurance for each BES, feedback is commissioned also about the adequacy and short-comings of the Guidelines for Generating a Best Evidence Synthesis Iteration to help strengthen the Guidelines.

The national advisory groups particularly emphasised the importance of interaction in the processes of BES development. This advice has been operationalised in the Guidelines and through the structuring of a series of six contractual milestone reports on progress for each BES development. BES writers are required to provide an update on a draft methodology chapter for each milestone, and to successively provide scoping outlines and partial draft samples through to a whole draft report. The draft is submitted for national and international formative quality assurance some months before the final report is due. This final stage enables the QA to feed into optimising the quality of the final product. Each milestone report is considered by a BES management team that includes cross-Ministry and sector representatives. BES writers also fill-in a quick self-audit against the Guidelines at each of the preliminary milestones that together with the developing draft provides the basis for dialogue, critique and collaboration as the BES develops. This process assists with transparency, capability building and wider ownership of the knowledge building.

The full account of the methodological approach, its underpinnings in a realist philosophy of social science, its rationale for the privileging of outcomes-linked case studies, and the weight given to theoretical coherence in BES can be found in the Guidelines at www.minedu.govt.nz/goto/bestevidencesynthesis. Dr Brian Haig, philosopher of science at the University of Canterbury, advises BES on the realist underpinning.

The formative quality assurance processes are providing valuable critical feedback on the Guidelines for Generating a Best Evidence Synthesis Iteration. In a March 2006 QA report Professor Paul Cobb advised that: (a) the Guidelines need to give BES writers more concrete advice on ways to manage the multiple audiences of BES, (b) there needs to be more distinction made between two different kinds of causality claims in BES (process oriented explanation and regularity type of causal description), (c) there needs to be more concrete advice on using health-of-the-system and other systemic perspectives in BES, and revision should strengthen the consistency of the use of a ‘responsiveness to diversity’ framework for BES with particular attention to applying the discussion of the complexity of individual identity across the Guidelines.

Professor Cobb’s criticism will inform the iterative development of the Guidelines. His report has also been useful in confirming strengths of the approach:

The Formative Quality Assessment Seminar held in Auckland on February 13, 2006 exemplified transparency and provided an opportunity for members of a wide range of constituencies to present and debate their views. The BES
Guidelines are outstanding and are clearly grounded in the hard-won experience of synthesizing research findings to inform both policy and practice. Strengths of the Guidelines include:

- The three detailed checklists for developing a BES iteration (pp. 15 – 17).
- The mature view of evidence apparent in the call for theoretical pluralism and methodological pluralism.
- The consistent call for attention to issues of language and culture.
- The consistent call for attention to the worth of explanatory theories, including explanatory coherence.
- The commitment to make the BES approach transparent.
- The use of a grounded or bottom-up approach for interrogating studies.

Distinctiveness of Iterative BES Methodology amongst Evidence-Based Policy Approaches

The recognition of the distinctiveness of BES methodology by our international quality assurers is increasingly critical because of the growing international literature of discontent associated with overseas approaches to evidence-based policy work in education.

There has also been wider positive feedback for the fit-for-purpose, innovative nature of the Ministry of Education’s approach internationally. For example, there has been a call to develop a parallel approach in Australia. Notably, Professor Allan Luke and David Hogan (2006) from the Centre for Research on Pedagogy and Practice in Singapore have considered the Iterative BES Programme approach in depth in *World Yearbook of Education: Educational Research and Policy*.

The most comprehensive approach to evidence is the New Zealand Ministry of Education’s Iterative Best Evidence Synthesis Programme... What is distinctive about the New Zealand approach is its willingness to consider all forms of research evidence regardless of methodological paradigms and ideological rectitude, and its concern in finding contextually effective, appropriate and locally powerful examples of “what works”. Its focus is on capturing and examining the impact of local contextual variables (e.g., population, school, community, linguistic and cultural variables). Indeed, ‘what authentically works’ in educational interventions may be locally effective with particular populations, in particular settings, to particular educational ends. This stands against the base assumption of the US model: that there are instructional treatments that can be shown to have generalisable and universal efficacy across and in spite of contexts, that this efficacy at the production of educational outcomes can be assessed solely through standardised achievement test results, and that the matter of ‘reform’ of systems requires the mandating, standardisation and implementation of these approaches. Our position concurs with the New Zealand approach.

The later sections of this paper endeavour to make transparent our approach to a cost-effective, principled agenda for collaborative knowledge building and process for collaboration.

Fit-for-Purpose Selection of Best Evidence Synthesis Writers

The selection of BES writers is also guided by fit-for-purpose considerations for both knowledge development and use.

First, our approach requires the best evidence synthesis lead writers to be New Zealand educational researchers who have shown national research leadership in the BES area of
focus, or demonstrated capability to take on a professional and research leadership role in the field in New Zealand.

Our purpose is to ensure capability development within New Zealand. Strategies are used to access international expertise including international quality assurance but the writers must be local. Some funding is also provided to writers to enable them to publish widely from the BES after publication in order to continue the iterative process of peer scrutiny and critique and to support the national leadership role sought from BES writers.

Second, we aim to embed the iterative BES work across the New Zealand tertiary infrastructure. This differs from an approach that might develop expertise within a national policy centre or located within one specialised external unit focussed on methodological expertise in evidence-based synthesis. Accordingly, we seek to have BES developments situated in, and spread across, Universities, Colleges and Wananga so there is also institutional support for, and ownership of, BES development.

Institutions are asked to demonstrate commitment through contributing to the resourcing of the BES development process, for example, contributing to teaching release time for BES writers and funding writers to attend international conferences. Our rationale is that there is value returned to the institution through the collaborative BES opportunity because it helps to inform their core practice and supports institutions in taking a national leadership role in knowledge building and R & D.

Third, we are seeking BES writers who are also teacher educators (or in the case of the educational leadership BES involved in principal and leadership development and so on). For the BESs to support an embedded R & D approach to teacher education and teaching in New Zealand they need to be used by teacher educators in ongoing and iterative processes of both using and strengthening the evidence base. There is a need for New Zealand teacher educators not only to be informed about the work but also to take some ownership of the emerging knowledge. Accordingly, a substantial proportion of the contract funding for a BES development is provided to the BES writers to include teacher educator/researcher colleagues from across New Zealand as advisors to, and beneficiaries of the development process. This strategy helps to overcome the disincentives for collaboration of a nationally competitive tender process.

The BES development process strengthens the work, builds ownership and has other gains. For example, the process strengthens the kinds of networks and social capital amongst researchers and teacher educators nationally that are conducive to developing enhanced infrastructure for R & D. Our experience shows that the BES development processes can involve writers and their advisers taking the time to read the work of colleagues that has been so siloed few are aware of the work. This process is one of valuing and acknowledgement that can have substantial rewards not only for the wider processes of knowledge building but also for the individuals involved.

The Role of BES as a Research-Policy Link Informing R & D Investment
There are other strategic benefits for the evidence-practice agenda that arise out of this link between policy and research. For example: BES developments provide critical and systematic insight into major gaps and areas of need for targeted R & D investment.

Linkages Between Policy and Teaching?
The lesson we have taken from both the importance of teaching and the risks of ineffective policy responses to the need to strengthen teaching for diverse learners, is to work in partnership with both New Zealand teacher unions in advancing the Iterative Best Evidence Synthesis work. While the decision to work with the teacher unions was a practical way of establishing a broad partnership with New Zealand teachers, there is evidence for there being
a link between more intensive teacher union activity and higher student outcomes in the US (Carr Steelman, Powell & Carini, 2000). The teacher unions have a history of professional leadership in New Zealand particularly in the areas of curriculum and subject associations.

The New Zealand Teachers Council (NZTC), a new professional body for all registered teachers working in early childhood, primary, secondary, tertiary and other teaching situations, was established in 2002. The Iterative BES Programme has also established a partnership with the NZTC and council policy workers including the CEO are also involved in the collaborative approach we are jointly building. The NZTC has been proactive in ensuring that the BESs also inform their work and are assisting to fund the leadership BES development.

Through the partnerships with the teacher unions and the New Zealand Teachers Council, representatives are engaged with:

- the development of requests for proposals;
- selecting the successful tenderer;
- providing advice;
- engaging with an iterative and collaborative process with BES writers through managing the milestones reports;
- participating in national Think Tanks and seminars organised to support BES development;
- contributing to the formative quality assurance of new BESs; and
- continuing advice about approaches to use of BESs.

In Wright & de Joux’s (2003) case studies of successful innovation in the public sector they find collaborative and not contractual relationships to advance innovation. However, contractual relationships are central to BES. The process of policy and stakeholder representative engagement in contractual management is a strategy to maximise collaboration, consultation, capability development, fairness and transparent contract management. Ongoing advice from Ministry legal advisers and strong, collaborative relationships with BES writers are both critical to the process working optimally.

In New Zealand we are watching with interest the innovative ways in which the UK Centre for Use of Research and Evidence in Education (associated with EPPI) is engaging policy workers and teacher union representatives in synthesis development processes to optimise the ways in which content and form serve function.

The partnership with teacher unions is greatly strengthening the Iterative BES Programme. The programme has also been instrumental in empowering teachers to reclaim the research on educational practice as their own. As teacher union representatives were talking to researchers within the context of a national Think Tank for BES development, it was interesting to note the use of the term ‘our BESs’.

Recently the teacher unions have taken a pro-active lead in strengthening the policy-research-practice dialogue about evidence. In May 2005, the primary (NZEI) and secondary (PPTA) teacher unions organised a cross-national forum with the Australian Curriculum Studies Association entitled Quality teachers: Quality teaching –Creating a new agenda for action by practitioners, researchers and policy makers. They invited Keynote addresses (including one focussed on BES) and 100 or so policy, teacher and research leaders from Australia and New Zealand to engage in the forum. The secondary teachers’ union (PPTA) has initiated and organised a national professional conference for April 2006: ‘Quality Teaching: Leading the
Way’. PPTA has invited a keynote address and eight workshops from the Iterative BES Programme.

In the most recent formative quality assurance forum held for the Effective Pedagogy in Pāngarau/ Mathematics BES the NZEI prepared a quality assurance report signed-off by their national president. In this report the teachers involved exemplified the iterative process of R & D by drawing upon their own experiences of the Numeracy Development Project to highlight important aspects of project effectiveness omitted or under-emphasised by the BES writers at the draft stage.

In the case of syntheses focussed on teaching, we seek each BES to be accessible to its multiple audiences; but it is teachers and others closest to the teaching who are the primary audience. The teacher unions have formally asked the Ministry of Education to ensure in all communications about the use of BES that the desire of teachers is to be first afforded time and opportunity to read and discuss the syntheses. Through the quality assurance process the teacher unions have now asked for distribution of BESs to all schools.

Accessibility and Impact: Developing an Evidence based Approach to Presentation

The issue of an evidence-based approach to what works for multiple audiences, and in particular for a teacher audience is arguably where evidence-based knowledge is most impoverished. What form of synthesis is most useful for teachers? Despite the commonly espoused view that simplifying the message will make them more accessible and more useful to teachers, the evidence about educational change does not readily support this view. There is a strong case for the use of research-based vignettes of practice embedded in syntheses, to exemplify theoretical tools that are of use to teachers adapting and using the findings in their own contexts. Kennedy (1997) reviewed studies of research use by teachers that showed research was more likely to be used conceptually than instrumentally:

‘practitioners did not take from research tools that could be directly applied in their classrooms, but instead took ideas: concepts that could, especially when combined with other ideas, help them invent specific responses to local situations.’ (p. 7)

We seek from our BES writers, attention to embedded vignettes (not anecdotes but actual data narratives) that explain the broader findings with appropriate attention to the complexities of actual practice. Frequently such vignettes not only bring the findings to life for teachers, but also for policy workers and other researchers. Theoretical tools derived from the research are seen as enabling teachers to use research findings conceptually to inform their own work.

Current BES writers Drs Graeme Aitken and Claire Sinnema have attended to research on teacher learning not only as part of the focus of their BES but also to inform the way in which they present the evidence. In their words:

...in developing this format we have been conscious of the need to respond to the particular needs of adult learners whose approach to learning is characterised by (Edmunds, Lowe, Murray, & Seymour, 1999):

1. deciding for themselves what is important
2. the need to validate information based on their beliefs and values
3. the expectation that what they are learning will be immediately useful, and
4. fixed viewpoints based on considerable experience.

These characteristics have been supported by research into resource design that enhances teacher learning (for example: Aitken, 2005; Davis & Krajcik, 2005; Spillane, Riser, & Reimer, 2002). This research argues that it is important to:
1. acknowledge existing schema by integrating new learning into structures and approaches that are familiar (hence the case study format);
2. alert readers to possible misconceptions about the ideas presented by explaining what the research shows and, more importantly, what is does not (hence the marginal comments to the left of each page);
3. minimise complexity through transparent structures and clear expression (hence the use of white space and bold headings);
4. integrate new learning at the level of detail most likely to be attended to by teachers (hence the use of case studies that have strong face validity);
5. support teacher adaptation and transfer to their own familiar settings in ways that do not compromise the validity of the research findings (hence the use of marginal comments in the text and prompts within the case studies)’ (p. 20 Draft BES December 2005)

The draft case study provided over ‘Facilitative inclusion for Ian and his Peers’ (see Appendix A) exemplifies the ways in which the BES writers have drawn upon the research cited above.

Like many examples from the quality teaching BESs\textsuperscript{74,75} the research focussing on Ian exemplifies the ways in which effective pedagogy simultaneously addresses a range of outcomes for diverse students at the same time – achievement, social skills, cultural identity and potential ‘behaviour problems’. The case study illustrates also the significance of teacher agency in the ways students learn and practice (or not) values such as respect as part of their moment by moment experience of schooling. The responses to Ian demonstrate compellingly how ‘quality teaching for diverse students’ is not about adding more but about transforming business-as-usual. Everybody benefits, including the teacher, because the teacher’s actions in strengthening the peer learning culture, lessen teacher stress. This example is particularly important for the wider public sector because it gives insight into ways in which a non-bullying culture can be proactively forged within education institutions.

This case study exemplifies recent research on overcoming the problem of overassimilation when novices use the same language but without the depth of understanding needed to engage in a way that changes practice:

\textit{One method for overcoming this assimilation problem is to use carefully calibrated sets of contrasting cases, grounded in practice, as well as in theory, that help people progressively differentiate their understanding rather than simply assimilate new information to pre-existing ideas (p. 368)}\textsuperscript{76}

In the case study example in Appendix A, BES writers Claire Sinnema and Graeme Aitken have used contrasting cases, drawn upon the research cited above, advice from stakeholders and consultation with the researcher involved, Christine Rietveld of the University of Canterbury. This case study is still work in progress exemplifying both the case and its linkages to the wider findings of the synthesis.

The international quality assurer for this BES is Professor Jere Brophy, from Michigan State University. Professor Brophy is an international expert in research on teaching in social studies, editor of the Advances in Research on Teaching series and author of many influential texts and Handbook chapters in the last 40 years of research on teaching. Professor Brophy’s formative review of the draft BES included the comment:

\textit{I believe that the authors are well on their way toward developing an outstanding document that will be of value not only for its intended}
purposes and audiences in New Zealand but for an international audience of social educators.

The status of this work at present is that the authors are responding to the range of formative quality assurance reports from New Zealand academics working in English and Maori medium education, the National Education Monitoring Project, the Teacher Unions, and teacher educators to strengthen the final synthesis to ensure its validity, rigour and usefulness across early childhood education and schooling.

The BES writers have also been invited to present work-in-progress to the Invisible College of Research on Teaching in San Francisco in April 2006 and will be presenting their work at the American Educational Research Association Conference (the largest international conference held annually in education) to enable wide international critique and advice to inform the final stage of BES development. The requirement for presentation of work in progress at an international conference is a requirement of the request for proposals for BES development. BES writers’ institutions are required to fund this aspect of BES development to support capability building and in recognition of the benefit accruing back to tertiary institutions from engagement in BES developments. That is: engagement in a collaborative knowledge building process bringing together the evidence about effectiveness in education will deeply inform the practice of teacher education in the host university or wananga.

Outcomes-linked Evidence about Teacher Professional Learning Informing BES

The case study about the teaching of Ian in Appendix A is of itself however, still just a document. Effective use of this BES tool needs to be informed by evidence about how this kind of outcomes-linked evidence can inform business-as-usual practice in New Zealand education. Both the Teacher Professional Learning and Development BESs and the Leadership BES will inform policy thinking about ‘use’.

The complexity of teacher learning is exemplified in the framework for mapping studies Professor Timperley of the University of Auckland has created out of early work on the Teacher Professional Learning and Development BES (See Appendix B). The diagram provides a framework to map the different studies and is neutral with regard to particular outcomes. Once the studies retrieved for the synthesis have been mapped, then the synthesis will reveal what does or does not work across this body of evidence, and the framework will evolve further in the light of later analyses.

Because the Teacher Professional Learning and Development BES for Schooling will be so influential in the Ministry of Education’s value-for-money work the collaborative processes across policy, research and practice have been particularly critical for this BES. Because academics/ teacher educators/ researchers in this field tend to be working within specific curriculum areas or projects there has been very little networking across this ‘field’. In order to create a more strongly networked community engaged in the BES development two national Think Tanks were held. The Think Tanks created an intensive dialogue amongst leading researchers working with outcomes-linked evidence and other stakeholders.

After an extended iterative process Professor Timperley received unanimous agreement to a mapping framework for this BES (as shown in Appendix A) at the 2nd National Think Tank for BES Development in September 2005.

This BES is due for completion in September 2006. Dr Lorna Earl, who is the international quality assurer for this BES has recommended that the final stage of BES development involve two advisers from the Ministry funded school support services in order to help inform the use of the BES findings to inform in-service teacher education work carried out nationally.
As the new cohort of BESs is completed we are seeking to bring together BES writers and our national advisors to explore the possibilities for evidence-based approaches to BES use. We are seeking advice on the possibilities for setting up nationally networked postgraduate courses for teachers offered across tertiary teacher education institutions. One possibility is that such development may be linked to progress in getting Centres of Research Excellence in Teaching and Teacher Education. This strategy would only be one of a whole range of multi-level system, and school-based strategies to strengthen R & D models for teacher professional learning.

The goal for the postgraduate courses would be for the pedagogy and practice of the courses to be consistent with the findings from the forthcoming Teacher Professional Learning and Development BES. Emerging evidence suggests that the courses might be school-based, or teacher-education based (for advisers to schools or mentors within schools), use a collaborative action research approach, provide ongoing opportunities for collaboration and networking amongst teachers, enable observation and reflection linked to student learning data and lead to changes in practice which become embedded. Outstanding examples of teacher or teacher educator engagement in R & D through such courses, and the findings from the evaluations of the impact of such courses on the students of the teacher participants would also feed back into future BES iterations.

Use of BES with/in Policy Work
A consideration of the strengths and weaknesses of the policy dimensions of this collaborative knowledge building work should first acknowledge that having the leadership of a collaborative knowledge building programme situated within a national policy agency is unusual internationally. It is unusual because the focus of the policy advice arising from the programme is on medium-term and long-term strategy across election cycles. The possibility to lead such work within a central policy environment exists because the New Zealand Ministry of Education has, as do other New Zealand policy agencies such as the Treasury and the Ministry for Economic Development, a Medium Term Strategy Policy Division.

Perhaps the most substantial gap in the available evidence-base is that which explains the links between policy decisions, activity and outcomes for diverse learners, or explains the communication, organisational learning and other processes that mediate policy decisions and activities.

Nutley, Walter and Davies’ (2003) Framework for Understanding-the Evidence-into-Practice Agenda’ helpfully suggests six research fields that may advance knowledge about research utilisation. These are research on: diffusion of innovations, institutional theory; managing change in institutions, knowledge management, individual learning and organisational learning. Work is in progress internally within the Iterative Best Evidence Synthesis Programme to draw upon these literatures to inform our thinking about BES utilisation within the wider Ministry and inter-agency policy context.

Significant challenges arise out of bringing together bodies of outcome-linked evidence that can challenge current practice. Such challenges require the kind of double loop learning that promote continuous organisational improvement. Agyris and Schön (1996) developed the theory of single-loop and double-loop learning to describe organisational learning. Single-loop learning operates to correct errors, whereas double-loop learning occurs when error is detected and corrected in ways that involve the modification of an organization’s underlying norms, policies and objectives. Nutley et al. similarly signal the importance of the distinction between adaptive learning and generative learning in organisations:
‘Adaptive learning routines can be thought of as those mechanisms that help organisations to follow pre-set pathways. Generative learning, in contrast, involves forging new paths. Both sorts of learning are said to be essential for organisational fitness but by far the most common are those associated with adaptive learning.’ (p. 136)

From a BES Guidelines perspective research that focuses on ‘what works’ (but attends to what doesn’t work also), explains links between influences, mediating processes and outcomes, and attends to context, particularly local context will be most helpful in illuminating policy processes. We are seeking through the Educational leadership BES, particularly, to systematically interrogate this evidence for educational policy.

The eleven case studies of innovation in the public service commissioned by Treasury, the Department of Prime Minister and Cabinet and the State Services Commission (Wright & de Joux, 2003) identified four key themes and 14 attributes of successful innovations in the New Zealand Public Service. Of particular resonance to BES are the following:

- Forward-looking, externally focussed organisations
- Continuous implementation process
  - Monitor and evaluate to identify problems, trigger ideas and assess success
  - Develop diverse and diffuse invisible colleges, partnerships, and collaborations across agencies, individuals and organisations
  - Exploit opportunities by consistent forward planning and engagement with stakeholders
  - Ensure senior management support, mandate, commitment, faith and trust
  - Provide sufficient resources to support innovation
  - Manage diverse stakeholder interests, concerns and their tolerance for risk at appropriate times during stages of innovation
  - Manage projects and risks tirelessly for each stage of innovation (p. 3)

The Wright & de Joux (203) analysis is fruitful but also signals the value of commissioning more rigorous secondary analysis of public sector effectiveness. For example, the roles of University researchers and research and development as critical levers in innovation are implicit rather than explicit within the analysis of the Strengthening Education in Mangere and Otara innovation. Ministry of Education Change Manager, Brian Annan is completing a doctorate in which he is developing a grounded theory of policy effectiveness, to explain change processes in educational development in New Zealand. His particular focus is the interface between local stakeholders and wider policy settings and approaches in change processes that have led to demonstrable improvement. A conference paper presented at the 2005 American Educational Research Association received favourable comment from discussant Michael Fullan; a leading academic in the area of educational leadership and system-level change.

Cranefield’s (2005) masters research project: ‘Inter-organisational knowledge transfer in the New Zealand State Sector’ is a further example of case study research that can helpfully inform both within and inter-agency policy practice. The research project identified key factors that impacted on knowledge transfer within and across agencies in the Pathfinder Project, the two year project to introduce the Managing for Outcomes framework into the New Zealand public sector.

Key factors affecting knowledge transfer for each stage of the model are outlined. These differed according to the challenges of each stage, but three broad groups of factors were identified: organisational factors, knowledge-related factors, and gatekeeper-related factors.
Key organisational factors were: the perceived degree of fit of new knowledge with an organisation’s discipline and experience, CEO support, the type of team approach used, silo-based structures, subcultures, and a wide geographic distribution of staff. Key knowledge-related factors were related to (a) representations of knowledge: the nature of language used, the transferability of case studies and examples, and the use of boundary objects; and (b) knowledge processes: codification, translation, interpretation, storytelling, a ‘trickle-down’ approach to disseminating knowledge, and exposure of staff to small, regular, ‘doses’ of new knowledge.

Gatekeepers were found to have played a critical part in enabling knowledge transfer. Key gatekeeper-related factors were based around a diversity of roles undertaken concurrently by gatekeepers in the course of the project. These roles were flag-bearer, advocate, translator and interpreter, scout, facilitator, storyteller, and expert. The combined role of translator and interpreter is identified as particularly important, involving the active conversion of knowledge to meet different recipients’ needs, and thereby increasing the organisation’s absorptive capacity.

Policy Progress and Challenges

The Iterative Best Evidence Synthesis Programme has been influential within the New Zealand Ministry of Education. For example, in influencing the corporate Statement of Intent and in informing the development of a five-year ‘Schooling Strategy’ agreed by stakeholder and sector groups which has evidence-based development as a central part of the strategy. A key role for BES is to show where greater magnitude of impact and sustainability is already evident in Ministry work. However, to avoid pitfalls such as misuse of evidence, failures of empty rhetoric, and magical notions of change undermining the potential of evidence-based approaches, there needs to be a significant strengthening of knowledge in this area for the New Zealand context. The need for strengthening the kind of evidence-base outlined above and the need to enhance the potential for generative learning are significant challenges. As it impacts on practice across our work, the Ministry of Education’s new Evaluation Strategy will play a significant role in informing and supporting the effectiveness of BES as a catalyst for change.

Dr Lorna Earl, co-evaluator of the UK Numeracy and Literacy Strategy is advising BES on several aspects of the next phases of our wider evaluation framework for BES. Dr Earl is developing a protocol for the evaluation of sector-led innovation using BES with the first case study commencing in September 2006.

There are emerging examples of deep iterative and reciprocal processes of engagement with BES across the Ministry of Education. For example, BES is being informed by the evidence emerging from Te Kotahitanga. Te Kotahitanga is a New Zealand secondary school improvement project developed by leading Māori researchers, professional developers, community elders and teachers. Emerging evidence of substantial effect sizes in student achievement increases in essential skills assessments suggests a powerful change model has been developed. Professor Emeritus Christine Sleeter, currently Vice-President of Division K (Teaching and Teacher Education) for the American Educational Research Association recently visited the schools and reviewed the programme. She concluded:
The project is exceptionally well conceived, very comprehensive, very consistent with the literature on culturally responsive teaching and professional development, and backed by a sound research program. As you know, I’ve worked on these same issues for about twenty-five years, as both a higher education faculty member working with pre-service and practicing teachers, and as a researcher/theorizer. I see more potential to make significant and sustained improvements in schools for students from historically underserved communities in this project than in any other project that I have had contact with. (March 28, 2005)

Deepening evidence-based attention to issues of scaling and sustainability is particularly critical given the vexed international policy history of attempts to ‘scale up’ school improvement. Ministry colleagues overseeing the contract for Te Kotahitanga over the past three years have proactively engaged the project leaders in a reciprocal process of informing and being informed by work in the Iterative Best Evidence Synthesis Programme. For example, they have proactively used Coburn’s (2003) landmark overview of research Rethinking scale: Moving beyond numbers to deep and lasting change and her framework which has been used within the Ministry and in engagements with stakeholders. Coburn notes that for the US context:

‘the history of public schooling is replete with evidence of reforms that barely scratched the surface of schooling, failing to reach into the classroom to influence instruction’ (p. 4)

Coburn’s analysis of what works identifies depth, sustainability, spread and shift in reform ownership as critical and inter-related dimensions for systemic and sustainable development.

Professor Russell Bishop, who co-leads the Te Kotahitanga programme has been granted funding by a New Zealand Centre of Research Excellence, Nga Pae o te Maramatanga, to provide an analysis and interrogation of Te Kotahitanga in the light of the study findings and the implications of the wider evidence about scaling and sustainability. This iterative process is, in turn, now informing the development of the new teacher professional learning and development BES.

There are emerging examples also of synergies between BES work and the work of other agencies. Newlands Intermediate School implemented a two year whole school development plan using the ‘Quality Teaching for Diverse Students in Schooling BES’. Along with systematic use of pre and post testing around the teaching of units in each curriculum area, the school has been monitoring student enjoyment of learning showing dramatic improvements (see Appendix C). This work exemplifies a principal-led research and development approach taken by a school using BES with no external involvement of researchers.

Recently the principal, Wendy Esera remarked that she has been using the Ministry of Youth Development’s (2005) Resource “Making it happen…”- Strengthening youth development in schools” (Principles 2 and 4) in the School’s Charter (Strategic Goal No.5 2006-2008 Charter).

A consideration of the “Making it Happen” resource reveals a policy framework informed by both the Ministry of Education’s Schooling Strategy and the Iterative Best Evidence Synthesis Programme. The document does not just reference the syntheses but also exemplifies key findings. Although I was unaware of these linkages being forged, through business-as-usual interagency consultation the Ministry of Youth Development has created alignment and synergy in our shared work.
The iterative approach is not only critical to the processes used in knowledge building and use. As contexts change, and new evidence emerges, our understanding of evidence about what works is, and should be, continually changing and developing. Through embedding a sense of ‘knowledge building’ as iteration BES is able to act as a catalyst to R & D. BES deeply values what the past work of others can offer to educational development and explains and guides how we might make a bigger and cumulative, positive difference for all learners now and in the future.


Note: For formatting reasons this Appendix has been provided with this paper rather than within it.
Appendix B: Framework for mapping studies in the development of the Teacher Professional Learning and development BES (in progress). Professor Helen Timperley, University of Auckland. (Work-in-progress October 2005)
Appendix C. Newlands Intermediate School Trend Data on Student Enjoyment of Learning (October 2004)
Feedback and critique of this paper is welcomed at adrienne.altonlee@minedu.govt.nz

2 Although the terms evidence-based policy research [EBPR] and evidence-based practice [EBP] are used to mean quite distinctive approaches in the literature, in this paper I explain a perspective where there is a continua between the two areas.
43 Tarr, C. (November 8, 2004). Quality teaching not the only influence. President’s Viewpoint. New Zealand Educational Institute, Rourou.
67 http://www.readingtogether.net.nz/
66 www.minedu.govt.nz/goto/bestevidencesynthesis
56 Characteristics of pedagogical approaches that facilitate learning for diverse learners in early childhood and schooling in Pāngarau/Mathematics. (In progress) Due publication date: mid-2006. Writers: Professor G Anthony & M Walshaw, Massey University. G.J.Anthony@massey.ac.nz M.A.Walshaw@massey.ac.nz
55 Characteristics of pedagogical approaches that facilitate learning for diverse learners in early childhood and schooling in Tikanga-ā-īwi/ social studies/social sciences. (In progress) Due publication date: early 2007. Writers: G Aitken & C Sinnema, The University of Auckland. g.aitken@auckland.ac.nz c.sinnema@auckland.ac.nz
48 http://www.readingtogether.net.nz/


75 www.minedu.govt.nz/goto/bestevidencesynthesis


