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The Education of Diverse Student Populations

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Chapter 13
Making a Bigger Difference for Diverse Learners: The Iterative Best Evidence Synthesis Programme in New Zealand

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Introduction

The Iterative Best Evidence Synthesis (BES) Programme is a collaborative knowledge-building approach across policy, research, and practice in New Zealand. The Iterative BES synthesizes and explains evidence about what works for diverse learners. The touchstone of the program is its focus on explaining the influences on a range of desired outcomes for diverse learners. The primary purpose of the program 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.

In this chapter I begin by highlighting the importance of the focus on diversity in our work and then explain the Iterative BES, its fit-for-purpose methodology, its collaborative and iterative approach to development, the emerging findings about making a bigger difference for diverse learners, early work in an evidence-informed strategy for dissemination and use, and the vision for BES as a systemic lever for sustainable development.

Foregrounding a Responsiveness-to-Diversity Framework

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 (OECD, 2001, 2004). 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 (indigenous population) and Pasifika (New Zealanders of Pacific nations heritages) 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 teaching, educational leadership, and systemic development to be more responsive to diverse learners.

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, underassessment of capability, mispronounced names, and so on (Benton, 1986; Carkeek et al., 1994; Clay, 1985; Millward et al., 2001; St. George, 1983; Thomas, 1984). Although Māori-medium education has been only 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 have performed more highly than Maori students in English-medium contexts (Alton-Lee, 2005).

As is similarly the case for many countries, New Zealand's population projections show increasing diversity by ethnicity and multiple cultural heritages. Over and above cultural heritage, classrooms and other educational groupings of students are always characterized by diversity or heterogeneity. The diversity of any group of learners can be unpacked across many dimensions. For example, diversity is a feature of the varied experiences the students bring to their learning of a particular topic and their previous achievement levels in relation to the topic or skill area whether high, average, low, or gifted. What students bring to the classroom is in turn influenced by their gender, families, and wider affiliations and heritages, and the extent to which these become resources in their in-school learning. There are substantial research literatures that show these aspects of learner identity and background to be integral to educational achievement or failure, particularly when there are cultural mismatches between home and school (Alton-Lee, 2003).

However, students do not fall into simplistic categories by identity. Rather, for students, family social class, ethnicity/ies, cultural heritages, gender, and dis/ability intersect in ways that are often likely to be salient for their participation and learning. Further, students continually change and grow. 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 center of this work through a responsiveness-to-diversity framework. Because difference is a characteristic that all learners share, the approach allows for a universalizing 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.

The daily and complex challenge for teachers is that they need strategies to teach a diverse group of learners effectively and simultaneously. 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 cultures, heritages (including indigenous heritage) and identities; and students who bring varied dis/abilities and cultural resources to their learning. This is where the evidence can be particularly helpful, because it identifies evidence-based strategies and approaches that have enabled teachers to be effective with their whole class. Accordingly our collaborative knowledge-building and use approach, in order to be useful in education, has at its foundation the goal of being more effective with diverse learners – at the same time. This goal has required a fit-for-purpose methodology for synthesis development. In the following section I provide a brief outline of the program, giving particular emphasis to the importance of learner outcomes as a touchstone, and explain how the methodology has been developed to serve its purposes.

The Iterative Best Evidence Synthesis Programme

The Iterative BES Programme synthesizes bodies of educational research and development that provide credible evidence about influences on a range of desired outcomes for diverse learners (what? what magnitude of impact? under what conditions? for whom? why? and how?). The series of BESs is successively focused on the major areas of influence on learner outcomes including family and community influences (Biddulph et al., 2003), teaching (Aitken & Sinnema, forthcoming; Alton-Lee, 2003; Anthony & Walshaw, 2007; Farquhar, 2003), teacher professional development (Mitchell & Cubey, 2003; Timperley et al., forthcoming), and educational leadership (Robinson et al., 2007, forthcoming). The touchstone for the BES methodology is the focus on learner outcomes.

Valued Learner Outcomes as a Touchstone

In taking an outcomes-linked approach, the Iterative Best Evidence Synthesis attends to a range of outcomes including for example, academic, social, well-being, learning, metacognitive, identity, and other possibilities valued by communities including those of indigenous communities.

Part of the rationale for the incontrovertible concern with impacts on diverse learners is the compelling evidence across studies that have linked educational goals, processes mediating learning, and student outcomes that well-intentioned, caring, and experienced teachers and teacher educators can unknowingly teach in ways that have impacts counter to their own goals (Alton-Lee, 2006; Alton-Lee et al., 1995; Bossert, 1979; Doyle, 1983; Nuthall, 2004; Timperley et al., forthcoming). 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 and do harm, for example, policy initiatives related to drug education that increased rather than decreased student use of illegal drugs (Biddulph et al., 2003).

An outcomes-linked approach can reveal that widely used educational practices may have little or even negative impacts, particularly on those students traditionally underserved in schooling. A report by Education Review Office (2003) showed that the learning styles approach is widely used in New Zealand. In a series of case studies (Higgins, 2001), learning styles approaches have been found to be linked to less effective instructional experiences for Māori and Pasifika than for other learners in junior class mathematics in New Zealand. Māori and Pasifika learners were classified as kinaesthetic learners and encouraged to work with blocks, while other learners focussed on metacognitive strategies, for which there is, by contrast, strong research evidence across our syntheses of positive links to higher achievement (see Cardelle-Elawar, 1992; Marzano et al., 2001).

The term "learning style" often is used loosely in practice, but in this context denotes a learner's apparent preference for an auditory, visual, tactile, or other source and/or expression of information (identified through a learning styles inventory). Within this approach teachers are encouraged to match mode of information to the learner's preference. A review by Irvine and York (1995) of evidence of about 30 instruments to measure learning styles concluded that, despite the popularity of the Learning Styles Inventory, " 'the design strategy, reliability and validity of the inventory were largely unsupported by the research evidence" (p. 487). Riding and Rayner (1998) and McMillan (2001) highlight several concerns, including distracting teacher attention from the actual learning process and the potential to restrict opportunities to learn. The intention behind the approach is undoubtedly good, but even those who argue they have found significant evidence of effectiveness tend to emphasise a multisensory approach (auditory, visual, kinaesthetic, and so on) rather than a preference-matching approach that limits rather than broadens the ways in which learners engage with new information (see Farkas, 2003).

BES has been valued by the New Zealand secondary teachers' union' for its challenge to what they call the "snake oil" myths and fads that have beset teachers, such as the myth that has and is driving the widespread focus on kinaesthetic activities

for Māori and Pasifika learners as a supposedly ethnically based learner need (Post Primary Teachers Association, 2003). BES findings, by contrast, provide insights that explain what can make a bigger positive difference for diverse students and lessen teacher stress: an emerging finding with the New Zealand Numeracy Project. Some examples are enhanced academic and social outcomes by strengthening student self-regulation, problem-solving and conflict-resolution skills, intensifying reciprocal peer supports for learning, and optimizing school-home-community linkages in ways that dramatically lift the achievement of at-risk students (Alton-Lee, 2003; Biddulph, 1983, 2004).

Methodological Mandate

Four initial BESs were published in 2003. These informed guidelines for subsequent BES development. One of the key challenges in BES development is the contestation of what counts as rigorous evidence among researchers, especially when so much of educational research traditionally has been siloed within different paradigms and methodological traditions (Alton-Lee, 2004). In order to gain the confidence of the educational research and practice communities and their engagement in iterative processes of BES development and use, the Ministry of Education initially drew upon research expertise across New Zealand. The process included not only research but also policy and teacher union representation to strengthen the approach and to get a high level of agreement about the methodology.

The approach taken was to gain agreement about the purposes, which then informed a fit-for-purpose methodology described in *Guidelines for Generating a Best Evidence Synthesis Iteration*. This allowed for the beginning of a national, structured, and transparent process of dialogue to inform BES development.

The *Guidelines* provide a critical resource to support the collaborative process and are themselves subject to iterative review. While international formative quality assurers have provided valued criticism and substantial suggestions for improving the *Guidelines*, they have been a useful and transparent tool to mediate the iterative process across different stakeholders. Professor Paul Cobb of Vanderbilt University, formative quality assurer for the Effective Pedagogy in Mathematics/Pangarau BES Iteration, commented that the BES Guidelines are outstanding and are clearly grounded in the hard-won experience of synthesizing research findings to inform both policy and practice (Anthony & Walshaw, 2007).

We have used the metaphor of a jigsaw puzzle to describe the best-evidence synthesis methodology because pieces of the puzzle about the links to student outcomes often are spread over and embedded within a wide range of research studies including practitioner research (see Pawson, 2006). Where possible, effect sizes are used or constructed to allow relative magnitude of impact of different approaches to be considered.

A realist approach gives primacy to explanation and theoretical coherence in BES (Haig, 2004). The rationale for the realist approach is that theory is the tool that

produces understanding in those using the evidence. The use of theory enables a future-focused and context-sensitive approach to building upon what has gone before.

BES writers are required to draw upon systems thinking about the interdependencies and ecological relationships that influence effectiveness of any one part of the education system. For example, the BES focused on family and community influences highlights the impact of poverty and health issues such as student hearing on educational outcomes, calling for a wider societal and interagency policy response to support educators in their work (Biddulph et al., 2003). Each successive BES contributes to a developing health-of-the-system framework for New Zealand education.

A feature of BES, and its concern to maximize accessibility without sacrificing meaning, is the use of vignette and case to exemplify the theory and bring the findings to life for educators and policymakers. We are mining research illuminating how the presentation of case can be most effective in influencing teacher practice. Our purpose is to overcome the problem of overassimilation, when novices engage with findings and use the same language as the BES findings but without the depth of understanding needed to engage in a way that changes practice:

> 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 idea. (Hammerness et al., 2005, p. 368)

The approach taken in BES has been described by Allan Luke and David Hogan (2006) in the *World Yearbook of Education: Educational Research and Policy* as

> 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. (p. 170)

Four more BESs have been developed via collaboration across policy, research, and practice with the *Guidelines* as a foundation. The first of these new BESs developed through a national iterative process became available in February 2007 (Anthony & Walshaw, 2007). That process, designed to embed use in BES development, is explained below.

The Iterative BES Approach to Knowledge Brokerage

The BES development process requires BES researcher-writers to have iterative engagement with colleagues across educational policy, research, and practice. The decision to take such a collaborative approach meant more time would be needed

for BES development but laid the foundations for more impact. While such dialogue is challenging, Ginsburg and Gorostiaga (2003) explain the costs of not taking such a collaborative:

> 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 rationale is that 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 knowledge building, then the endeavor of itself can be a transformational process that not only constructs a new kind of dialogue and understandings among policy workers, leaders, practitioners, and researchers, but also provides the foundation for using the knowledge to make a bigger difference in education.

There is a mandate within the New Zealand public service for the kind of intensive engagement with stakeholders used in BES development. 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 the following implications for effective and innovative policy development and implementation:

- Develop diverse and diffuse invisible colleges, partnerships, and collaborations across agencies, individuals and organizations
- Exploit opportunities by consistent forward planning and engagement with stakeholders

A recent review of evidence about the links between research and practice found that interactive approaches such as the development of partnerships and collaborations between researchers, policy advisers, and practitioners facilitate the adaptation of research findings to local contexts (Walter et al., 2005). The reviewers note that success is constrained by "the time and energy required to establish effective working relationships, differences in culture, goals, information needs, timescales, power, regard, systems and language, issues of project control and direction" (p. 344). The Iterative Best Evidence Synthesis Programme is seeking to negotiate these kinds of constraints through agreed national guidelines, strategic partnerships, power sharing, and iterative processes that enable policy workers, researchers, and educators to learn not only from emerging BES findings but also from each other. Such learning is critical to achieving an inclusive "responsiveness-to-diversity" approach because no one contributor or writer has the expertise needed to accomplish such challenging work.

Iterative Processes of Stakeholder Engagement in BES Development

Many collaborative strategies are used to strengthen BES development, including appointing national, international, and practitioner advisors to the BES writers; national and international conference presentations of work-in-progress; and fit-for-purpose national think tanks. The most extensive consultation occurs during a formal daylong formative quality assurance forum in which sector stakeholders and national and international experts provide and discuss formative quality assurance reports in response to a preliminary BES draft. Professor Jere Brophy, the formative quality assurer for the Effective Pedagogy in Social Studies/ Social Sciences/Tikanga-ā-iwi commented,

> I am impressed with what I have seen here in your country of the Ministry seeking to get that kind of coordination, and consensus, but in an outreaching kind of way rather than just bringing in an elite group to make decisions and push them downward. They are actively getting input from all sorts of stakeholders and seeking to negotiate as broad a consensus as possible and that is the way to do it. (Brophy, December 16, 2005)

A BES Management Group is the primary vehicle for stakeholders to engage with the iterative process. For each BES development, stakeholder representatives from across policy, research, and practice are invited to join a BES management group. Detailed notes or transcripts are made of meetings and think tanks so the oral feedback is systematically attended to in BES development and the process is transparent.

The work of a BES Management Group includes:

(a) Shaping requests for proposals
(b) Selecting the successful tenderer
(c) Iterative scoping of the BES
(d) Communicating with and from constituencies about the emerging scoping and findings
(e) Engaging with an iterative and collaborative process with BES writers through discussing, evaluating, and giving feedback to the milestones reports of work-in-progress
(f) Participating in national think tanks and seminars organised to support BES development
(g) Contributing to the formative quality assurance of new BESs
(h) Advising about approaches to the strategy for use of BESs

Educational leaders and educators are able to influence the scoping and the search strategy for a BES development by raising issues from their experience that they consider significant. This interaction can help strengthen the synthesis or identify gaps in the knowledge base that need to be highlighted in BES and addressed through future R & D. Policy colleagues from different parts of the Ministry of Education have ongoing opportunities to influence scoping, search strategies, framework development, and the naming of gaps as they bring policy needs and issues to the BES development process.

This collaborative knowledge building process has forged sector and policy ownership and greater rigor, trustworthiness, and usefulness in BES development – but is not without its tribulations. For example, when BES writers share early and emergent work in progress, sector stakeholders have the chance to proactively engage with and provide feedback. If early work in progress is used as a political weapon, then risk management is heightened in the policy context, researcher writers become vulnerable, and the iterative process may be threatened. The process needs trust to work.

The lesson we have taken from the evidence about the importance of teaching as the key system influence (Alton-Lee, 2003; Hill et al., 1996; Nye et al., 2004) 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 USA (Carr Steelman et al., 2000). The teacher unions have a history of professional leadership in New Zealand particularly in the areas of curriculum and subject associations.

The Iterative BES has a constructive partnership with both New Zealand's teacher unions, which has profoundly strengthened the best evidence synthesis work. Judie Alison, Advisory Officer (Professional Issues) Post Primary Teachers' Association commented,

> "PPTA regards itself as a partner in the BES programme. As the policy adviser at PPTA specialising in professional issues, I have been closely involved with the Best Evidence Synthesis work ever since 2003…. I believe that the BES is absolutely committed to promoting social justice, and for that reason our union, like NZEI, has committed itself to working alongside this research. (J. Alison, February 23, 2006, Personal communication)

> "The BES TPLD (Teacher Professional Learning and Development) writers have pulled the key messages from the research and have remained unbiased in their reporting and have used the research sensibly. … There is no doubt the BES TPLD in general serves to inform and has the potential to impact positively on teaching practice linked to student outcomes for a diverse student population…It would be dispiriting to see such work approached in a piece meal manner. (Liz Patara, formative quality assurance report endorsed by Irene Cooper, president of the NZ primary and early childhood teachers' union, New Zealand Educational Institute Te Riu Roa, October 11, 2006, Personal communication)

Strategy for Use of BES

As the current set of BESs is coming to completion, we are using systems thinking, collaborative and iterative processes of consultation, the findings of the BESs, and other relevant evidence to generate an evidence-informed strategy for dissemination and use.

A big step forward has occurred in the potential of the Iterative BES to make a difference to diverse learners in New Zealand education with the Ministry of Education's positive response to formal requests from both teacher unions for access to hard copies of the new BESs (with supporting materials) for New Zealand schools and early childhood centers. Within 6 weeks of the prepublication of a teacher educators' edition of the Effective Pedagogy in Mathematics/Pangarau BES, 4 out of the 7 New Zealand universities have provided this BES as a text for all final year preservice teacher education students, and inquiries have followed from private providers of initial teacher education.

The use of BES is conceptualized not at all as a prescriptive approach, but rather as an iterative inquiry process that gives precedence to outcomes-linked evidence in any particular context. Graeme Aitken and Claire Sinnema, the writers of the Effective Pedagogy in Social Sciences/Tikanga-a-iwi BES, frame the findings of their BES as being appropriately used within an Evidence Informed Inquiry and Action Model of Pedagogy (Aitken & Sinnema, 2007a, b).

This Evidence-Informed Inquiry and Action (EIIA) model conceptualizes pedagogy as a continuous cycle of evidence informed inquiry and action. The EIIA model (see Fig. 13.1) encourages teachers to view ... [the synthesis findings] as the basis for explaining findings about the impact of their own practice on their students' learning, and as sources of better informed conjectures about what might enhance learning for students in their classrooms. The ideas inherent in the model are not new. The close examination by teachers of the impact of their work on teachers is "the pedagogical imperative" (Shulman, 2002) that reflects the professional nature of teaching (Stoll et al., 2003). Cochran-Smith and Lytle, (1999) have argued, as we do here, for the value of teachers to adopting a deliberate "inquiry stance" on their own practice in which they treat "their own work as sites for systematic and intentional inquiry into their own and other's research [our emphasis] as generative of new possibilities" (Cochran-Smith, 2005). What we are arguing here is that the mechanisms, and the particular examples within each of the mechanisms, can be integrated into such a model of practice to inform both inquiry into the outcomes of teaching, and inquiry into the possibilities for revised practice. In developing this model we are conscious of Cochran-Smith and Lytle's (1999) warning about reifying researcher knowledge over the practical. The model has been designed in a cyclical way, and in a way that acknowledges multiple sources of evidence, to reinforce the close and reciprocal relationship between the research and practice. While the BES is the particular informant of the inquiry process ... paper we acknowledge that teachers do, and will continue to, draw on a much broader knowledge base to make decisions about their practice (Kennedy, 1999). Our prime intention is to encourage a tentative, questioning but not dismissive view of our findings and, in much the same way as Cochran-Smith and Lytle (1999) suggest, to conceptualize teacher learning as "associated more with uncertainty than certainty, more with posing problems and dilemmas than solving them, and also with the recognition that inquiry stems from and generates questions" (p. 294).

The model developed by Aitken and Sinnema (2007a) frames the BES findings as conjectural knowledge that is useful when teachers take an active inquiry approach that checks out impact on student outcomes. The conditions that support teachers in taking an outcomes-linked inquiry stance are emerging across the series of BES findings.
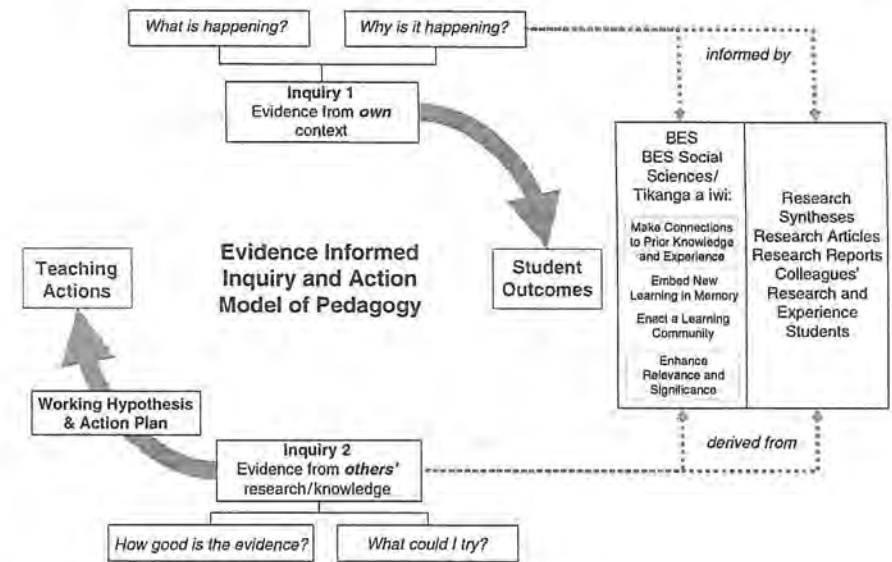
Fig. 13.1 Evidence Informed Inquiry and Action Model of Pedagogy

Because New Zealand has a highly devolved school-based management model, a strong partnership with educational leaders, particularly principals, will be critical to the potential of BES being realised.

Early findings from the Educational Leadership BES emphasize how important pedagogical knowledge is for effective school leadership, particularly when integrated with an approach to leadership that involves staff in decision making (Timperley et al., 2007). While traditionally leadership effects have been found to be relatively small, a careful analysis of particular findings across the small number of outcomes-linked studies of leadership has shown particularly high effect sizes to be associated with educational leadership practices that are linked to effective pedagogical leadership. One of the highest effect sizes (0.84) is associated with leaders promoting and participating in teacher learning and development as a leader, a learner, or both (Robinson et al., 2007).

Early findings from the *Teacher Professional Learning and Development BES* (Timperley et al., forthcoming; Timperley, 2007) also are compelling. That BES includes an analysis not only of what facilitates the kind of teacher learning that made marked improvements in student outcomes, but also analyses of interventions that led to student achievement deteriorating from what it had been before intervention. Such findings will be critical in policy development. That BES will include a table of effect sizes and selected qualitative cases for 97 outcomes-linked studies.

The findings highlight the importance of external and challenging expertise with strong pedagogical content knowledge to facilitate and support changes in practice, although poor expertise even from the research community can result in negative impacts on student outcomes. The findings indicate the importance of engaging teachers' theories and challenging discourses that are a barrier to improvements for some students. The findings highlight the importance of sufficient time for extended opportunities for teachers to learn and of the importance of using time effectively – particularly using diagnostic information about students' understandings in a teacher's own context.

In those studies that had the biggest impacts on student outcomes, teachers had opportunities to participate in professional learning communities; but in studies of ineffective professional development, teacher communities also were in place and much time was spent and/or funded, sometimes over several years, to no effect for students. In the most effective school-based studies, leadership was actively involved in supporting a learning culture. Whether or not teachers volunteered was not related to impact of professional development. What motivated teachers were the marked positive shifts they saw in the students they were teaching. The BES shows remarkable improvements to be possible for previously underserved students when effective professional development and support conditions are available. Of particular note are the extraordinarily high effect sizes across a number of studies focused on students with special needs, suggesting that traditional underserving of these students has been a particular area of education system failure.

The findings of the Teacher Professional Learning and Development BES and the Leadership BES signal the kinds of systemic conditions that will be needed for the kind of change required to better serve our diverse learners.

BES *Quality Teaching for Diverse Students in Schooling* (Alton-Lee, 2003) is intended to contribute to the development of our evidence base for policy and practice in schooling. Quality teaching is identified as a key influence on high-quality outcomes for diverse students. The evidence reveals that up to 59% of residual variance in student performance is attributable to differences between teachers and classes, while up to almost 21%, but generally less, is attributable to school-level variables.

This BES has produced 10 characteristics of quality teaching derived from a synthesis of research findings of evidence linked to student outcomes. The central professional challenge for teachers is to manage simultaneously the complexity of learning needs of diverse students. The concept of "diversity" is central to the synthesis. Evidence shows teaching that is responsive to student diversity can have very positive impacts on low and high achievers at the same time. The synthesis provides examples from the research on learning and teaching to illustrate the principles for different curricular areas across schooling from junior primary to senior secondary classes.

The 10 characteristics generated out of the synthesis (Alton-Lee, 2003) include:

1. Quality teaching is focused on student achievement (including social outcomes) and facilities high standards of student outcomes for heterogeneous groups of students

2. Pedagogical practices enable classes and other learning groupings to work as caring, inclusive, and cohesive learning communities
3. Effective links are created between school and other cultural contexts in which students are socialised, to facilitate learning
4. Quality teaching is responsive to student learning processes
5. Opportunity to learn is effective and sufficient
6. Multiple task contexts support learning cycles
7. Curriculum goals, resources including ICT usage, task design, teaching, and school practices are effectively aligned
8. Pedagogy scaffolds and provides appropriate feedback on students' task engagement
9. Pedagogy promotes learning orientations, student self-regulation, metacognitive strategies, and thoughtful student discourse
10. Teachers and students engage constructively in goal-oriented assessment (Alton-Lee, 2003, pp. vi–x)

As one of the risks of state the findings as a list is that readers will over-assimilate the findings into their existing theories of effective teaching, the explanation of the theoretical understandings, underpinning, and the vignettes exemplifying these findings are significant in ensuring their usefulness.

Brokerage from a Policy Agency: Constraints and Opportunities Where There Is an Evidence Gap

A further significant challenge in facilitating systemic conditions to strengthen educational practice occurs within the arena of the use of evidence in policy development. The Iterative Best Evidence Synthesis carries out its brokerage role from a government agency, the New Zealand Ministry of Education. The New Zealand Ministry of Education has a commitment to strengthening the evidence-base informing policy. This commitment is critical within a policy context not only for the use of BESs, but also the integrity of BES development to ensure that the outcomes-linked findings produced cannot be altered for immediate political exigencies but are a trustworthy product transparently generated through an open process.

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, organizational learning, and other processes that mediate policy decisions and activities. Reid (2003) could find no significant international or national body of academic research on the actual process of research integration with policy as seen from the policy advisers' viewpoint.

Court and Young (2003), in their study of 50 case studies in developing countries, found two critical factors influencing policy uptake of research:

1. The nature of the *evidence* and whether the research was credible and relevant in terms of operational usefulness and problem solution

2. The *social context* linking researchers and policymakers

BES brings strengths consistent with both of these findings. However, Court and Young (2003) found that political context was the most important factor affecting the degree to which research had an impact on policy.

A recent study of effective innovation within the New Zealand public sector found the following to have been critical to success: (1) sufficient resources; (2) tireless risk management; (3) senior management support, mandate, commitment, faith, and trust; and (4) management of diverse stakeholder interests, concerns, and their tolerance for risk (Wright & de Joux, 2003). Risk is a big issue in a democracy, where evidence of what does and does not work can be a gift to the political opposition particularly if current government policy is inconsistent with the findings (Levin, 2005). The risks would be heightened if a government were not briefed early and its policy agencies were not proactive in integrating the implications of new findings into its work. Cranefield's (2005) study of knowledge transfer in the New Zealand State Sector found organizational factors (such as CEO support), knowledge-related factors (such as representation of knowledge and the strategy for staff engagement with the new knowledge), and gatekeeper-related factors to be critical to a shift towards outcomes-focused policy.

A State Services Commission report (1999) concluded that policy analysis and design of delivery instrument, process coordination, and the design and management of implementation have been the focus of most attention in the policy cycle in New Zealand. Gaps were evident in New Zealand policy development around evaluation; issues identification; the notion of long-term, forward-looking, research-based policy analysis; public consultation; and strategic analysis and management. The Iterative BES has much to offer these gaps in the policy cycle. But the State Services Commission also noted that whether or not advice is backed by quality information, the brevity required in the presentation of advice, and the fact that advice generally is not referenced with information sources means that there is no mechanism to assure ministers that the assertions in advice are more than informed guesswork. Whether policy is underpinned by trustworthy outcomes-linked evidence may not be transparent in such a format.

Court and Young (2003) found that policy uptakes were greatest where influencing and communication strategies were in place from the beginning of research program. Kirst (2000) noted a discrepancy between the pervasive view that policy research either does not reach or is not used by educational policy advisers and the frequent citation or acknowledgement of policy research in the US Kirst noted that decades of research on issues in research dissemination help to explain this gap. Nutley et al. (2003) *Framework for Understanding: The Evidence-into-Practice Agenda* helpfully suggests 6 research fields that may advance knowledge about research utilization: (1) diffusion of innovations, (2) institutional theory, (3) managing change in institutions, (4) knowledge management, (5) individual learning, and (6) organizational learning. Drawing upon this framework, adding in a consideration of information literacy, and conducting an interview study about the use of BES within the Ministry of Education, a small pilot study has been carried out to

help inform developing theories of action for BES, a communication strategy and strategic planning about policy influence (Moore, 2006). A strength of the BES approach in the policy context at this time is the use of relevant policy partners to collaborate throughout each BES development so that the iterative process and emerging findings feed progressively into policy thinking from the outset.

Vision

To achieve the sustainable improvement demanded by old and new challenges of knowledge societies, more is needed of evidence work than the generation and explanation of new knowledge. To achieve its potential, knowledge building needs to be cumulative, iterative, and synergistic. BES needs to feed into, and be iteratively informed by, strategic and productive research-and-development collaborations between researchers, teachers, leaders, teacher educators and policy workers. The term "research-and-development" (R & D) is hyphenated here to denote an integrated process whereby research informs, improves, evaluates, and supports educational development. Educational development denotes not only improvement resulting in enhanced outcomes for all learners, but also transformation as education anticipates and responds to futures challenges.

This vision is of education valuing and building upon, but moving beyond, its craft practice roots, and its "rediscovering the wheel" history. The goal is not one of tired educators negotiating fads and working harder to produce a more efficient education system for new demands of a knowledge society. The vision is of shared knowledge about what works and why in local contexts as a valued, dynamic, and transformational resource enabling an education system to sustainably renew itself. A stronger and renewing evidence base about what works offers value for money, value for educator time, and value for learners. The energy for such a vision comes from the synergies and rewards of educational development that genuinely makes a much bigger positive difference not only for children and young people but also for leaders, educators, families, and wider communities.

The single most compelling finding across the BESs is that effective R & D has enabled educational practice to make a much bigger positive difference for diverse learners. In the light of Coburn's (2003) analysis of the evidence of a history of failed educational reform, the magnitude of positive impact, the responsiveness, the sector ownership gained, and the futures orientation of the most effective R & D are compelling. Often such R & D has gone through many iterations to create the kind of educational development that can work powerfully for diverse learners. As an initial step, through funding educational researchers and the collaborative and iterative processes necessary to undertake first iteration BES developments, BES is seeking to build the capability of the national research community to transform relevant but fragmented research knowledge into a more useful tool for both policymakers and practitioners. BES also is seeking to steer the research community toward a greater focus on informing educational development through R & D.

Getting policy and research support for this strategy is critical so that BES is not just a way to pull together what can be learned from past research.

Each completed BES iteration is an invitation to researchers and educators to engage with the gaps in our knowledge base, the areas of need, and the areas of most potential to contribute more deliberatively to a cumulative agenda to strengthen educational practice. The vision is that the Iterative BES will act as a catalyst for policymakers to fund, and researchers and practitioners to build, an integrated outcomes-focused research-and-development culture in education that enables systemic capability building, transformation, and sustainable renewal.

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