A SITUATIVE PERSPECTIVE ON THE GAP BETWEEN RESEARCH AND PRACTICE

Simone Volet
Murdoch University

Introduction

The theme of the Conference *Changing practice through research: Changing research through practice* addresses one of the greatest challenges faced by researchers and practitioners in post-compulsory education and training. Changing practice through research is essential to ensure that learning environments in formal educational institutions and the workplace facilitate the development of the domain-specific competence and generic knowledge required for productive performance, adaptability and future learning. Alternatively, changing research through practice is critical to ensure that the issues that teachers, trainers, instructors, mentors and facilitators themselves consider as important for improving their everyday professional practice are addressed in research. The invitation by the conference organisers to consider these two aspects of change in the research-practice nexus from a bi-directional and even reciprocal perspective is appropriate and timely.

Around the world, there is a generalised perception that considerable public funds are being spent on educational research and that this research has little impact on educational practice. In the past, the debate has tended to focus exclusively on the research related to schools. This situation has changed in recent years, with various interest groups raising concerns about weak links between educational research and educational practice in the field of post-compulsory education and training. Efforts are being made to improve the process of knowledge dissemination and utilisation, to build up the research capabilities of practitioners and in the process legitimise pactice-based knowledge, to induce researchers to develop professional research partnerships with practitioners, and more generally to assist the two "planets of research and educational practice" move into "reciprocal engagement" and "synergy" (Huberman in press).

This paper will discuss the issue of gap between research and practice in the field of post-compulsory education and training, as it applies to the specific domain of teaching, learning and training. The term research, therefore, refers to education and psychology research on the nature of generic and domain-specific knowledge, skills and expertise, and on the characteristics of learning environments and instructional processes which foster their development. Practice refers to the activities of teachers, instructors and trainers aimed at facilitating learning and the development of professional or vocational competence in educational and training institutions, as well as in the workplace.

Examining the gap between educational research and educational practice

The relatively large body of literature exploring the nature of the gap between research and practice stresses the complexity of the problem and the multiplicity of interacting factors. The key concepts emerging out of this literature reflect the alternative foci of the analyses,

types of explanations and proposed strategies to address the problem, for example: theory-practice gap (e.g. Jones & Vesilind 1996; Yeatman 1996b); knowledge dissemination (e.g. Guthrie 1998; Huberman 1990; Louis 1992); knowledge utilisation (e.g. Glaser, Abelson, & Garrison 1983; Huberman 1994; McDonald 1998); interactivity between practitioners and educational researchers during knowledge production (e.g. Huberman 1990, 1994; in press); collaboration between teachers and researchers (e.g. Bickel & Hattrup 1995); and partnerships between teachers and researchers (Grundy 1996; Teitel 1994, 1997, 1998) or between school and university (e.g. Sirotnik & Goodlad 1988). Regardless of the conceptual focus, there seems to be a general agreement about the existence of fundamental cultural differences between the researchers' and practitioners' professional communities. According to Goodlad (1993), school systems and universities are not "from the same cultural cloth. The norms, roles and expectations of educators in each of these educational realms could not be more different" (p.31). Similarly, in the vocational education and training sector, Selby Smith, C., Hawke, McDonald and Selby Smith J. (1998) noted state level officials arguing that with regard to policy decision-making "research is 'not given a high priority' ... there is 'no research culture'... VET policy makers 'are not very research literate' ... do not understand the 'research language' and that "research 'can't deliver the goods'" (p.7). The situation is not much different at the level of practitioners, where "there is not a strong research base culture" and where according to Boud et al (1998, cited in Selby Smith et al), decisions between different alternatives are likely to be made "according to past practice, [practitioners'] perceptions of industry needs and local constraints rather than based on research" (p.10). Selby Smith et al claim that the situation may get worse due a decrease in the number of TAFE lecturers undertaking university-based qualifications where they would get some opportunities to develop an appreciation and understanding of research. Across educational sectors, there seems to be a convergence of views that the scientific knowledge culture of the researchers clashes with the craft and pragmatic knowledge culture of the practitioners.

Numerous strategies are proposed in the literature to enhance the likelihood that research findings will be used to inform practice. These strategies focus either on the *dissemination process* i.e. what to do *after* knowledge has been produced by researchers, or on the *knowledge production process*, i.e. what to do *during* the process of knowledge production.

Improving the dissemination process

The dissemination perspective on bridging the gap between research and practice is based on a uni-directional research-to-practice principle, where knowledge producers are distinct from knowledge users. The knowledge dissemination literature discusses a range of problems assumed to prevent research findings having an impact on practice. One of the most frequently mentioned problems is inaccessibility of research. It is often claimed that research is not used to inform practice because it is mostly published in specialised literature not readily available to practitioners (Goodlad 1988). A straightforward strategy to address the problem has been to develop comprehensive data bases of existing research, with the hope that practitioners will make use of them to improve their practice. This was already the rationale behind the development of ERIC (the American Education Research Information Centers system) in the 1950s (Louis 1992). In Australia, research databases of educational materials relevant to teaching, learning and training have also been developed. For example, UltiBASE, a World Wide Web service for tertiary educators, provides up to

date teaching and learning resources, including new articles, resources and information on state, national and international teaching and learning conferences, seminars, workshops and events. In 1997, the Australian National Centre for Vocational Education Research (NCVER) launched VOCED online, a world-wide research database of national and international resources directly related to vocational education and training. NCVER aims at transforming VOCED into a comprehensive world-class international VET research database (Robinson 1999).

Yet, a knowledge-base-driven approach may not be sufficient to address the problem of low levels of research use, unless it is integrated into a problem-solving approach - ideally located within a school or department, as the "unit[s] of knowledge use and change" (Louis 1992, p.302). The degree of impact of UltiBASE and VOCED on educational practice would need to be established. But assessing such an impact may not be easy, since the effects of research are often "untraceable" or "occuring over extended periods of time" (McDonald 1998). Nevertheless, UltiBASE records of 3000 to 4000 hits a month since its establishment in 1996, and VOCED's statistics of close to 2000 since it went online in 1997, and increasing to 3000 this year after the database was expanded, indicate that these resources are readily accessible.

Another frequently mentioned problem is the specialised language used by researchers to present their findings. Academic jargon is often discouraging educational practitioners from reading research-based literature. The success of the politically-driven document, "What Works: Research About Teaching and Learning", released by the White House in 1986 was due to its "plain language review of research" (Glass 1987). This document, which was criticised by academics for not representing "scholarly consensus about which research findings will improve teaching and learning" and for selecting research "to legitimize political views" became nevertheless "the most widely read document in the history of educational research" in the US (Glass 1987, p.5). Disseminating research information in plain English is one of the measures recently identified by the Australian National Centre for Vocational Education Research (1999) to improve the dissemination and utilisation of VET research produced locally and overseas (Guthrie 1998; Robinson 1999).

The importance, for improving knowledge utilisation, of bringing closer together educational researchers and educational practitioners has been being recognised in the Australian context. From its inception, the Australian National Training Authority Research Advisory Council had stressed that the quality of the proposed knowledge dissemination process described in research proposals would be one of the major criteria for the award of its research grants (Ramsay 1998). The National Centre for Vocational Education Research is showing further leadership in this direction by promoting a number of research utilisation strategies, such as "provider roadshows" and "focussed workshops" to provide opportunities for interactive discussions between researchers and potential research users (Robinson 1999). The added value of interactive forms of "getting the message out face to face" strategies may partially address the problem of translating research findings for non-scientific communities and of practitioners' frustrations about unidirectional flow of information from expert to practitioner (Huberman in press). According to Huberman, uni-directional flows have "a short shelf life" while conversations produce "thinking devices" which facilitate retention and appropriation. Furthermore, professional conversations

between researchers and practitioners would also enhance practitioners' conceptual understanding of the meaning of the research findings and empower them to make informed decision as to whether the research findings should be implemented in their practice, given other influential factors (Selby Smith & Selby Smith 1998). Reciprocally, two-way conversations with practitioners, where "the field talks back", would provide researchers with highly valuable experiential and contextual knowledge - otherwise not available - to enrich the interpretation of their current findings and enhance the conceptualisation of their future research.

Other critical issues in the dissemination process involve the lack of incentives for academic researchers to write for non-scientific audiences and reciprocally for practitioners to spend time reading research material. Goodlad (1988) argues that school teachers and administrators rarely read publications in specialised journals, and "inhabit a culture that values action over reading, reflection, and dialogue about alternatives" (p.11). The situation is not different in the vocational education and training sector which seems to show minimal theoretical interests in the field (McIntyre & Barrett 1998)

Re-thinking the knowledge production process

A more radical approach to addressing the issue of gap between research and practice is to re-think the process of knowledge production. The idea is to promote greater interactions between researchers and practitioners, on the assumption that knowledge utilisation would increase if practitioners were participating in the process of knowledge production. Support for this proposal comes from various sources, including empirical evidence from rigorous studies of the process of knowledge production (e.g. Huberman 1990, 1994, in press), anecdotal evidence from educational literature on partnerships between researchers and primary school practitioners (Sirotnik & Goodlad 1988; Teitel 1998; Wagner 1997; Yeatman 1996), secondary school practitioners (Bullough & Kauchak 1997) vocational education and training practitioners (Henry & Arnott 1998; Weaver 1998) or university practitioners (Volet 1993), and politically-driven government agencies in search of external sources of funding to replace shrinking government monies for research.

Huberman's comprehensive studies of the social dynamics between researchers and practitioners (in schools and vocational education) during the process of knowledge production (1987, 1990, 1994, in press) has provided empirical evidence that the greater the amount and quality of interactivity between the two groups during the whole life of research project, the more likely the main findings have a impact on practice. According to Huberman, although the conceptual world of researchers and the practical world of teachers and trainers have different "constructs, conventions, routines and practices", bi-directional meaningful interactions assist the development of reciprocal understanding and the generation of shared agendas. The goal of research, therefore becomes reframed "from one of primarily informing the practitioner to one of jointly constructing knowledge through shared activity" (p.2). Within this perspective, even dissemination is conceptualised as "a social activity, a series of interactions or "intertextual dialogues' [Wertsch 1991], rather than only the separate actions of individual actors" (p.3).

Critical to productive interactions between researchers and practitioners is the extent to which their relationships reflect a democratic, symmetrical pattern of authority and influence (Huberman in press; Grundy 1996), both communities perceive that they share equal power in the relationship (Goodlad 1988) and both value and reward their members' participation in collaborative research-practice activities (Yeatman 1996a). Huberman's use of the term "reciprocal taming" highlights the short-term and long-term benefits for both communities of not only developing insight into each others' language, representations, priorities and 'cultural practices' (Miller & Goodnow 1995), but also preparing themselves for productive frictions (Vermunt & Verloop 1999), disequilibrium (Prawat 1989), conceptual change (Vosniadou 1996) and the "grafting [of] new understandings from their own framework" (Huberman in press). Based on his empirical examination of the benefits for researchers of interacting with practitioners, Huberman argues that researchers may achieve even greater benefits from exchanges with practitioners than with their own community of discourse.

Development of partnerships between educational researchers and practitioners
The body of literature discussing the mutual benefits but also problems and limitations of partnerships between educational researchers and school teachers is substantial. In the literature, partnerships are viewed as particularly effective for facilitating educational change and teachers' professional development simultaneously. The benefits of partnerships on research and researchers are also mentioned, but usually as anecdotal evidence. Partnerships can obviously be conceptualised in different ways but Goodlad's (1985 cited in Clark 1988) definition is useful for the conceptualisation of collaborative ventures within the field of education and training. Goodlad specifies that in a partnership, "the partners need to have a degree of dissimilarity, the goal should be mutual satisfaction of self-interests, and each party must be selfless enough to assure the satisfaction of these self-interests" (p.1). Similarly, Grundy (1996) advocates the development of professional research partnerships in education which involve researching *with* the profession, rather than *for* the profession. Central to her argument is the view that the knowledge production processes which are the most valuable are those which advance theory and practice at the same time. The "workbench community" of practice described by Palincsar, Magnusson, Marano, Ford & Brown (1998) is based on such principles and includes high interaction and interdependence of researchers and teachers. The authors argue that the differential knowledge of the groups and individuals is essential to reach the community's common goals, which is the "co-construction of formal knowledge of the practice of [inquiry-based science] teaching". One essential aspect of the success of the "workbench communities", according to Palincsar et al, is that membership is meeting all participants social and professional needs.

The notion of joint construction of knowledge between researchers and practitioners working in partnership (Huberman in press) agrees with Grundy's (1996) claim that professional knowledge is embedded in 'praxis'. It also reflects the view that many cognitions are socially and culturally distributed (Salomon 1993) and that capitalising on distributed networks of expertise (Brown 1993) has a greater chance of enhancing the knowledge and understanding of all members of a community of practice. If community members assume that the diversity of experience and expertise is relevant to the community goals, then that diversity provides a natural reason for the interaction (Palincsar et al 1998)

which in turn enhances the quality of knowledge which is generated. Productive co-construction of knowledge, however, can only happen if "the responsibility for understanding is shared and the authority for knowing is internal and collective" (Palincsar et al, p.9). With regard to the professional development of teachers and trainers, this position represents an alternative to both the top-down expert to novice approach where teachers attend in-service courses or are getting mentored, and the bottom-up approach where teachers or schools take the full responsibility of their own professional development (Rogoff 1994).

Goodlad (1985 cited in Clark 1988) also argues that partnerships between universities and schools are essential since the respective professional responsibilities of faculties of education (preparation of teachers) and schools (offer the best educational practice) make them "virtually inseparable" (p.42) from one another. The case is not as strong in the field of post-compulsory education and training. According to Clark, however, although the benefits of partnerships are strongly advocated in the literature, examples which meet Goodlad's criteria of "symbiotic relationship" between partners are not frequently found. Specific benefits of school-university collaboration for research purposes have been stressed by Lieberman (1986a), but interestingly, her list details only the advantages for teachers' professional development, and does not mention any benefits of the jointly produced knowledge for the researchers. Concentrating on the benefits of partnerships for the practitioners is in line with the professional development literature advocating "the right of educational practitioners to control the production of their professional knowledge" (Grundy 1996, p.8) and arguing for the legitimisation of professional, non-scientific knowledge, for too long marginalised by the dominant culture of academic knowledge (Yeatman 1996b).

Developing genuine partnerships between researchers and practitioners would require valuing "practice" as much as we do "theory" (Yeatman 1996a). But, according to Yeatman, how many academics trained into a culture which values "theoretically-oriented analysis and critique as requiring the resolute bracketing out of all vulgar, pragmatic commitments and engagements" are prepared to spend time and energy in a "reflective dialogue oriented to enabling practitioner audiences to develop and improve their practice?" (p.28)? Reciprocally, from the perspective of practitioners immersed in a culture of action, to what extent do they realise that the conduct of everyday activities "integrates different types of knowledge, both scientific and non-scientific within their practice", that their work is "a highly sophisticated process of both implicit and explicit judgement, a judgement which can involve an extraordinarily complex tapping of a vast menu of traditions of influence, specific models or literature, collegial suggestion, experience, and interpretation of the client's voice in context of what is known about the client from other sources of information" (Yeatman 1996b, p.289)?

Further obstacles to the development of partnerships between academics and teachers involve the lack of professional rewards in either community for individuals to engage in collaborative ventures with one another (Lieberman 1986b), and to publish in collaboration (Nixon 1998). Successful partnerships seem to end up being dependent on the initiative and persistence of an innovator-leader who acts as an "intermediate engineer" (Smith & Goodlad 1966, cited in Clark 1988) and is determined to make the partnership work.

Partnerships in the post-compulsory education and training sector

This general discussion of the benefits, but also cultural, professional and institutional difficulties, of addressing the research-practice gap through partnerships between researchers and practitioners applies to the post-compulsory education and training sector as well. A number of factors, however, are specific to that sector and create unique research-practice dynamics between the two groups. One key factor is the researchers' typical lack of familiarity with the disciplinary knowledge taught by the practitioners. While educational researchers are quite familiar with the knowledge taught in schools - and especially primary schools where the majority of partnerships seem to be located - it is generally not the case in the post-compulsory education and training sector. Educational researchers' status of experts, therefore, becomes limited to knowledge and understanding of general issues related to teaching, learning and instruction. This situation makes the development of professional relationships between educational researchers and educational practitioners in that sector more complex and challenging. The situation is further complicated by the fact that teaching staff throughout the post-compulsory sector are still hired and promoted mainly on the basis of their discipline expertise demonstrated through research, professional or industry experience. Teaching qualifications and a record of successful of teaching experience are considered, at best, only desirable attributes.

Bridging the gap between educational research and educational practice within the university sector

The traditional lack of attention given to the quality of teaching at university is gradually changing. In recent years - often under the influence of economic factors - universities have shown a growing interest in the quality of student learning, and indirectly in the quality of the methods of instruction. Professional development units have been set up in most universities, with the mandate of assisting teaching staff improve their educational practice. This is usually achieved through induction programs, seminars, workshops and individual consultation related to issues of teaching and learning. The extent to which such programs are solidly grounded in research depends on professional development staff's own knowledge base, and their commitment to keep abreast of the latest developments in education and psychology research related to learning and instruction. It also depends on their ability to develop professional relationships with academic staff which acknowledge the complementary expertise of the two parties rather than create an educational expert to educational novice professional development climate. Their adoption of a facilitating role may even open the door to research-practice dynamics where professional development staff and teaching staff combine their resources (general teaching / learning theory and research methodology; domain-specific experiential teaching / learning knowledge) and embark on an applied research project in collaboration. The development of partnerships between these two groups is however inhibited when professional development staff are also responsible for conducting students' evaluation of staff performance. The power relationship implicit in the evaluation process is incompatible with the symmetrical relationships advocated for the development of genuine partnerships.

Furthermore in the Australian higher education context, recent initiatives aimed at inducing educational practitioners to develop innovative ways of improving their practice, have not provided any incentives for projects which could have brought closer together the communities of educational researchers and educational practitioners. Quite the contrary.

The Committee for the Advancement of University Teaching (CAUT) and its successor (CUTSD) made it clear in their guidelines that their teaching/learning grants could not include any research component. In other words, rather than rewarding educational practitioners and educational researchers for developing genuine partnerships which would combine their complementary domains of expertise for the achievement of mutual benefits, they deliberately prevented them to do so.

Another possible explanation for the lack of incentives for professional research partnerships may be the fact that researchers into learning in higher education are not found in all faculties of education. Furthermore, in the academic community, like in the broad community, education is often equated with school teacher education. But it may also reflect a perception among university teaching practitioners, that since educational researchers are not familiar with the complexity of their specialised field of expertise, they may not have much to contribute to the design of its teaching and learning. Practitioners' general lack of interest in research-practice partnerships for the improvement of learning is ironical, given that major advances relevant to the development of complex bodies of knowledge and vocational expertise were achieved by multi-disciplinary research teams including non-educational experts (e.g. work at the University of München Germany by Mandl & colleagues, at the University of Nijmegen The Netherlands by Simons & colleagues, at IRACS France by Tiberghien & colleagues, at Griffith University, Australia by Stevenson & colleagues, or at Murdoch University, Australia by Volet & colleagues).

Opportunities for bridging the gap between research and practice, can also be found in a growing number of international, national and local conferences and forums related to learning and instruction in higher education. For example, the *Improving Student Learning Symposium*, specifically encourages practitioners' paper contributions on the conditions that "they take a sufficiently scholarly research-based approach" and provides practical workshops in quantitative and qualitative research methodologies for those interested in "pedagogic research" (Rust 1998). In addition, many professional fields of study have created their specialised journals of education, for example, *International Journal of Technology and Design Education, Australian Journal of Environmental Education, Journal of Economic education or Australasian Journal of Engineering education,* where research-based studies on learning and instruction related to a particular field of study can be published. This literature may be more palatable to practitioners seeking research-based ideas for improving their professional practice.

Bridging the gap between educational research and educational practice in the vocational education and training sector

Overall, the field of vocational education and training displays characteristics similar to the higher education sector. Subject matter knowledge is usually practical in nature but it involves high levels of domain-specific expertise which educational researchers are unlikely to be familiar with. Like in the field of higher education, expertise in a particular domain - usually in combination with industry experience - is more highly valued than teaching qualifications and evidence of successful teaching experience. In addition, but perhaps specific to the Australian context, the educational basis of vocational education and training has been somewhat eroded in recent years, with politically-driven curriculum innovations developed without the involvement of practitioners and educational specialists

(McBeath 1995; Hawke & Cornford 1998). Hawke and Cornford have deplored the fact that the training packages developed under the new Australian frameworks lack "any suggestions for teaching and learning as mandatory components" (p.111). They acknowledge the argument that this gives greater freedom to teachers for developing their own style of teaching and to become innovative. But the absence of guidance on "depth of coverage, time to be spent on specific aspects, suggested teaching techniques, types of assessment and types of teaching resources available" (p.111) may well contribute to undermine the future professional development of teachers in the area of teaching, learning and training.

In a climate where university-based education of TAFE lecturers is no longer encouraged and where research activities on curriculum development and delivery is decreasing (Selby Smith 1998), one may indeed wonder, where teachers, trainers and instructors will develop the conceptual understanding about learning which is necessary to facilitate the development of vocational expertise. The provision of user-friendly, research-based material related to teaching, learning and training, which practitioners can use to engage in "professional conversations" with their peers and with educational researchers, may be a critical starting point towards engaging in reflective practice, action research and collaborative research-practice initiatives aimed at improving the quality of learning outcomes. Falk, Sefton and Billett (1998) argue that the culture of practice in vocational education and training needs to value and encourage research, particularly that of the critically reflective workplace educator. Unlike their university colleagues, however, vocational education lecturers, instructors and trainers are not surrounded by a research culture, do not have a research mandate as part of their job specifications and consequently generally lack competence in methods of social inquiry. Thus, in the absence of a personal obligation to systematically assess the outcomes of the teaching and learning process (OECD 1995, cited in Selby Smith et al 1998), or of institutional incentives for becoming "inquiring practitioners" (Grundy 1987; Carr & Kemmis 1986), they are not likely to develop an interest in research-practice initiatives related to their professional practice, and other priorities may take over.

Across all educational sectors - schools, higher education, vocational education and training - there is converging support for the view that to minimise the gap between research and practice in the area of teaching, learning and training, all opportunities need to be seized to assist practitioners become more familiar and appreciative of the significance of research-based professional practice. The work environment must encourage, support and reward practitioners' engagement in a whole range of research-practice activities aimed at improving the quality of practice. Some activities may simply involve practitioner's reflection on their own practice, individually or through professional conversations with peers and professional development staff in their own institutions. This may create an interest in more "systematic and intentional inquiry" into their own experience of teaching and training in the classroom or workshop (Cochran-Smith & Lytle 1990). Such inquiries can be carried out as part of a team project or under a research mentoring arrangement or even in collaboration with a external researcher. In turn, the professional knowledge generated under different research-practice dynamics can be shared in public forums on post-compulsory education and training attended by practitioners and researchers. These forums provide opportunities for practitioners to realise the value of their action-oriented

"teacher-research" (Cochran-Smith & Lytle 1990) for the wider professional community. At the same time, it gives them exposure to other types of research which may be of value to their local practice. One research-practice activity leading to another, gradually, and through repeated experience in a variety of inquiry-based activities, practitioners are expected to develop a greater appreciation of the value of both research-based practice and university-based research for improving their professional practice.

This position agrees with Huberman (1990) and McDonald (1998), who argue that while the impact of a single piece of research may be limited, researchers and practitioners' engagement in research-practice collaboration over a period of time has a cumulative effect and creates a climate conducive to change in educational practice. But to what extent can practitioners' practice-based research activities and generated knowledge be integrated into the overall research effort into teaching, learning and training in the field of post-compulsory education? Is there a place in academic research for non-scientific, experiential knowledge which is welded to local situations and not intended for generalisation (Richardson 1994)? Interestingly but not coincidentally, educational and psychology research relevant to teaching and learning in post-compulsory education and training, is currently experiencing a paradigmatic shift, which may in fact bring closer together researchers and practitioners in the future.

Recent developments in cognitive and educational research related to post-compulsory education and training

University-based research relevant to the nature, development of knowledge required to be productive and adaptable in the workplace, and the characteristics of learning environments and instruction which facilitate its development has grown dramatically in the last decade. The major contributions come from cognitive psychology studies of the nature of expertise and cognition at work, educational research related to the psychology of learning, problem-solving and instruction, and socio-cultural perspectives on productive learning in communities of practice. This research can be summarised in a number of proposals which are presented in Table 1.

Overall, this research has led to major re-conceptualisations of the nature of learning and of the research methodologies most appropriate to investigate learning, teaching and training. The long dominant cognitive psychology paradigm, with its focus on the cognitive and motivational characteristics and processes of individual learners, has recently been under attack from situativity theories which stress the significance of socio-cultural influences in the development of cognition, motivation and learning. While our understanding of teaching, learning, training and the development of complex knowledge has been enriched by cognitive constructs such as "processing strategies, knowledge representations and metacognitions" (Vosniadou 1996, p.105), studies of socially organised activities, such as communities of practice in education or at work, have highlighted the situated nature of cognition, the reciprocal interplay of individual competencies and distributed cognitions, and the significance of social mediations in the construction of knowledge.

Table 1: Recent developments in cognitive and educational research related to post-compulsory education and training

Knowledge is organised, and productive use of knowledge involves higher order thinking processes

- Knowledge is organised in mental representations or cognitive structures which determine the potential use of that knowledge and any further related learning (prior knowledge) (Vosniadou 1996)
- Expert knowledge is meaningful, well-organised, accessible and structured around the principles of the discipline (Chi, Glaser & Farr 1988)
- Productive performance in the workplace requires competent use of procedural skills but also higher order thinking processes for adaptable and flexible use of those skills (Stevenson 1994)

Conceptual understanding develops through the mental activity of the learner and powerful learning environments which foster individual self-regulated learning processes

- Learning is an active, goal-directed, cumulative and constructive activity (Shuell 1988)
- Metacognitive, self-regulatory processes facilitate learning and problem-solving (Boekaerts 1997; Zimmerman 1998, Vermunt 1998)
- Process-based forms of instruction are well suited to foster the development of domain-specific conceptual understanding (De Jong & Van Hout-Wolters 1994; Vermunt 1995; Volet 1995)
- Fostering the development of self-directed and self-regulated learning strategies prepares individuals cognitively and motivationally for lifelong learning (Candy 1991; Simons 1997)
- Embedding the development of domain-specific thinking strategies within the teaching of a particular discipline (process and content) (Lonka & Ahola 1995; Vermunt 1995; Volet 1991) instigates "mindful" learning and knowledge which is more usable to solve novel tasks (Salomon & Globerson 1987)
- Effective teaching practices promote congruence and constructive frictions with learners' learning practices (Vermunt &Verloop 1999)

Individual knowledge development is socially mediated

- Individual development of knowledge, skills and understanding takes place in a social context, with various degrees of social mediation (Salomon & Perkins 1998)
- Expert knowledge is generated in the collaborative, social constructions of solutions and innovative ways of doing things (Engeström & Middleton 1996)
- Novices can be induced to gradually use the strategies displayed by more competent individuals via modelling, cognitive coaching, expert scaffolding, reciprocal teaching, and other forms of social support, guidance and enculturation processes (Collins, Brown & Newman 1989; Brown & Palincsar 1989)
- Proximal and distal forms of guidance in the workplace assist in the process of appropriation, transformation, structuring and co-construction of conceptual understanding (Billett 1996)
- Productive participation in communities of practice require contextual affordances (e.g. Greeno 1998), social enablements (Hatano & Greeno 1999) and congruence in intersubjectivities (Volet 1999)
- Solo and social forms of learning complement each other in productive "spiralling dynamic of reciprocal influences" (Salomon & Perkins 1998, 13)

Motivational, volitional and emotional processes play a critical role in the process of learning

- Individuals' cognitive, motivational, and emotional appraisals of their immediate learning situation has a significant impact on their commitment to invest personal energy and resources in a learning activity (Boekaerts 1997).

The development of alternative conceptual perspectives has led to productive tensions, and opportunities to question the basic assumptions underlying each position, to analyse critically their respective merits and limitations, and to work on the production of new enriched conceptual frameworks. A number of researchers have recently attempted to reconcile the tensions between cognitive psychology and socio-cultural perspectives on cognition, motivation and learning (Billett 1996; Greeno 1998; Hickey 1999; Volet 1999; Vosniadou 1996). Based on a similar principle, it could be argued that the diversity of knowledge generated through different sources and methods of inquiry in the field of post-compulsory education and training, has the potential to be used in productive ways to question researchers' conceptual understanding as well as practitioners' professional practice, and to ultimately produce a reciprocal enrichment of both professional worlds.

The conceptual and practical importance of bringing closer together researchers and practitioners has already been demonstrated in the psychology and educational research summarised in Table 1. Within both cognitive-motivational and socio-cultural perspectives, one can note an interest in studying the learner/worker-in-context and in real-time, for example, the "situational dynamics of student-task-teacher interactions" (Salonen, Lehtinen & Olkinuora 1999), "students' sensitivity to learn in concrete situations" as they unfold (Boekaerts 1999), "the mutual reciprocal influences of effectivities and affordances" at the person-context interface (Volet 1999), "the dynamic interplay of personal beliefs, situational interpretations and subsequent action" (Järvelä & Niemivirta 1999) or "situated studies of work practices in transformation" (Engeström & Middleton 1996). To address these issues, research methodologies have incorporated multiple types of process data, such as observations, on-line questionnaires, think aloud protocols, audio or video recordings of learners' activities and interactions with peers and teachers, or of colleagues during their work practices, transcripts of conversations, visual representations, records of artifacts used at different times, stimulated-recall interviews, use of diaries in addition to more traditional modes of inquiry. None of these methodologies can be used without the support, collaboration and social enablement of practitioners. These developments, therefore, present a unique and timely opportunity for fostering greater interactivity between researchers and practitioners with potentially enhanced benefits of both research and practice.

Promoting a diversity of research-practice dynamics for bridging the gap between research and practice

In the final part of this presentation, I would like to argue that research and practice in the area of teaching, learning and training should be brought closer together within a perspective which fully recognises the multiplicity of ways in which each can contribute to knowledge production and utilisation. Recognising that valid knowledge about learning can be produced by different key players, and that these different types of knowledge not only complement each other but can reciprocally enhance each other, leads to a re-conceptualisation of traditional research-practice dynamics.

Rather than searching for a new best practice model, I propose a conceptual framework which legitimises and capitalises upon a whole range of alternative research-practice dynamics. The idea of promoting diversity rather than best practice is based on the assumption that research-practice dynamics which may seem to be incompatible, can in fact

cross-fertilise each other once they are conceptualised in an overall framework which values the complementarity of different types of knowledge and different processes of knowledge production. I believe that such a framework has the potential to not only contribute to developing a more comprehensive research base in the field of compulsory education and training but to also enhance practitioners' capabilities in producing and using research-based knowledge in their professional practice. The overall framework presented in Table 2 is organised along a continuum of research to practice and reciprocally practice to research, with research-practice partnerships in the middle. At one end of the continuum (first row in the table) are researcher-driven initiatives aimed at enhancing conceptual understanding about teaching, learning or training. At the other end of the continuum are practitioner-driven research initiatives aimed at improving local practice.

Table 2: A diversity of research-practice dynamics

	Purpose of research	**Status of participants**	**Underlying research principles & direction of relationship**
1. Researcher autonomous from Practitioner	Enhancement of conceptual understanding (Basis for improvement of practice)	Researcher as Expert Practitioner occasionally as facilitator	Autonomy and total responsibility with the Researcher Academic knowledge emphasised Uni-directional
2. Researcher supported by Practitioner	Enhancement of conceptual understanding (Basis for improvement of practice)	Researcher as Expert Practitioner as facilitator, advisor or contributor	Responsibility with the Researcher Practitioner's local, experiential knowledge recognised & valued Essentially uni-directional
3. Researcher/ Practitioner partnership	Enhancement of conceptual understanding + Improvement of local practice	Researcher & Practitioner as joint experts	Shared responsibility, negotiation & reciprocity Academic & experiential knowledge both valued as complementary knowledge Bi-directional
4. Practitioner-Researcher supported by External Researcher	Improvement of local practice	Practitioner as legitimate researcher External researcher as advisor or mentor	Responsibility with the Practitioner External researchers' academic knowledge recognised & valued Essentially uni-directional
5. Practitioner as single Practitioner-Researcher operator	Improvement of local practice	Practitioner as legitimate researcher No external researcher	Total responsibility with the Practitioner Experiential knowledge emphasised Not applicable

The core principle of the framework is in line with the theme of this conference, inviting us to examine the significance of bi-directional and reciprocal influences of research on practice and practice on research. Five research-practice dynamics are identified along the continuum. Each is well suited to achieve certain research objectives but has limitations to achieve others. Each dynamic involves different types of research-practice activities, assigns different roles to researchers and practitioners, reflects different principles in their relationship and produces different types of knowledge. The literature on the research-practice gap reviewed above has highlighted the uneasy relationships between the communities of researchers and practitioners which has led to valuable resources being under-used. The proposed framework seeks to reconcile the two communities by removing the a-priori value judgments placed on different types of knowledge, different types of knowledge production and different research-practice dynamics. Implicit within the idea of diversity is also the notion of multi-directional developmental paths towards reciprocal recognition and valuing. The respective merit and limitations of each research-practice dynamic is now discussed.

The *Researcher autonomous from Practitioner (1)* refers to researcher-driven initiatives aimed at the enhancement of conceptual understanding related to teaching, learning and training. There is an implicit assumption in that dynamic that the knowledge generated by researchers will subsequently form the basis for improvement of practice. This approach reflects the traditional research model, with the researcher having total autonomy in the development of a research program or project. A practitioner may occasionally be solicited as a facilitator, for example, to be the subject in a project, or to provide access to a group of learners or workers to enable the researchers to carry out their research. The status of the researcher is that of an educational expert with the mandate of generating abstract conceptual knowledge which might subsequently be translated and used to improve practice. Such knowledge is often perceived by practitioners as having little direct relevance to their practice, therefore their involvement in this dynamic is expected to be minimal.

This dynamic is critical in any field of academic research as it enables researchers to carry out their scholarly activities using the specialist language of the discipline, and free of pressures from groups having vested interests in the research outcomes. Theorising about issues, reviewing current thinking about those issues, exploring relationships, critically analysing assumptions and beliefs, generating and testing hypotheses are all essential for enhancing our understanding of the world around us, questioning the assumptions underlying its established order, predicting future worlds and providing the conceptual basis for changing their direction. This type of research not only uses specialised academic discourse but it also requires a large degree of autonomy for researchers since the research findings may not necessarily support existing practices. Researchers embarking in this type of research should therefore be accountable to the international community of scientific inquiry and not be dependent on the vagaries of local political agendas. In the field of post-compulsory education and training, it is this type of research which has requestioned our fundamental assumptions about learning and about effective instruction and training. Yet, ironically, it is this future-oriented research which is the most vulnerable when public funding becomes limited. The problem is exacerbated by the fact that this approach does not help bridging the gap between research and practice. All the problems of dissemination

and translation of research findings discussed above apply to this research-practice dynamic.

The *Researcher supported by Practitioner (2)* approach also refers to researcher-driven initiatives but in this case the research typically has an applied component and the practitioner is assigned a more or less important role. In this research-practice dynamic, the researcher is responsible for conceptualising, designing and carrying out their research but with some involvement of the practitioner. Degree of involvement of the practitioner can vary widely. It can range from simple consultation for practical advice on local circumstances to collect data, to a much greater input, for example, having a say in the research design, being regularly consulted, being given interim reports, being solicited to provide comments and feedback on interpretation of findings, and being invited to assist in the dissemination process. A researcher's typical purpose for involving a practitioner is to maximise the chance of the research project running smoothly, the methodology being appropriate and the research outcomes meaningful. Some researchers may be genuinely concerned by designing projects which are perceived as useful by practitioners. In this dynamic, the researcher has the status of an expert and the practitioner the status of a facilitator, advisor or contributor. The practitioner's local knowledge is recognised by the researcher as having significant value in the process of knowledge production. Depending on the degree of practitioner's involvement, the direction of their relationship may range from primarily uni-directional to incorporating important elements of bi-directionality. Overall, the Researcher supported by Practitioner dynamic has the advantage of being efficient and of making good use of the strengths of each interested party, without the complex process of negotiation operating in partnerships. Yet, it may be time-consuming due to the need for researchers to switch modes of discourse to accommodate the needs of the two different professional communities. Its potential for bridging the gap between research and practice would vary across situations. High levels of interactivity in this dynamic lead naturally to the next research-practice dynamic, the partnerhips.

In the proposed conceptual framework, the *Researcher / Practitioner partnership (3)* has the dual research-practice aim of enhancing conceptual understanding and improving local practice. Partnerships which bring together educational researchers and non-education tertiary teachers, instructors or workplace trainers can be negotiated on the basis of complementary expertise. Both parties can enjoy equality of power and share the status of experts - the researcher on the basis of their conceptual understanding of general issues related to teaching, learning, and training, and the practitioner on the basis of their practical knowledge of local circumstances but also expertise in the subject matter knowledge and skills. The adoption of a dual research-practice aim and the acknowledgement of complementary expertise facilitate the development of bi-directional relationship and the application of the principles of shared responsibility, negotiation and reciprocity. Genuine Researcher / Practitioner partnerships in the field of post-compulsory education and training would involve joint applications for research funding and collaboration throughout the whole duration of the research project, including the dissemination process. This dynamic is particularly appropriate and well suited for research involving field experimental work where the researcher and the practitioner have interdependent roles. For example, the conceptualisation, implementation and evaluation of a new form of instruction rely ideally on a combination of conceptual understanding of effective mechanisms of

learning and knowledge development (provided by the researcher) and knowledge of the subject matter, local circumstances, and capacity to implement the new approach (provided by the practitioner). Each partner is therefore indispensable to the success of such research-practice initiatives. No research-practice gap is experienced since improvement of practice is an integral part of the partnership.

Although partnerships appear to meet the needs of all parties, they should not be considered as the single best model of research-practice dynamics for a number of reasons. First, partnerships are not well suited to all types of research. As discussed in the first research-practice dynamic (1) researchers not only need to use specialised academic language to contribute to theory development in their field of expertise, but they also need academic autonomy to pursue scholarly activities away from applied concerns. Similarly at the other end of the continuum, practitioners need opportunities to pursue their legitimate desire to take some responsibility and ownership of their professional knowledge within their community of practice. Second, and as highlighted in the literature, partnerships which achieve mutual self-interests in productive, symbiotic relations (Bickel & Hattrup 1995) are difficult to achieve. The worlds of research and practice are so far apart in their professional purposes, modes of operation, incentive systems and institutional cultures that problems inevitably emerge, requiring re-negotiation and learning from experience. Bickel and Harttrup (1995) argue that "talking and writing about the value of teacher-researcher collaborations are easier than building them" (p.56). Similarly, Goodlad (1994) talks about partnerships as "paradise envisioned, not gained" (p.218). Yet, it is essential that all researchers and all practitioners get opportunities on a regular basis, to engage in some form of partnership with each other. The rich professional experience gained from participation in a collaborative research-practice venture is expected to have a beneficial impact research as well as practice.

The *Practitioner-Researcher supported by External Researcher (4)* dynamic is similar in degree of interactivity to the Researcher supported by Practitioner dynamic (2) but with a reversal of roles. It is the practitioner - or a community of practitioners - who initiates research [typically action-research] aimed at improving their local practice, and an external researcher is approached to provide research support. Experiential professional knowledge, embedded in 'praxis', is given prominent importance. Degree of consultation and involvement of the researcher could vary from one-off advice to regular interactions and support throughout the life of the project. It may involve assistance with an action research project or a mentoring arrangement where support for the project incorporates an element of research development for the practitioner. A major advantage of this research-practice dynamic, is that practitioners exercise professional autonomy in their research activities, while at the same time they are benefiting from the research expertise of the external researcher and ultimately develop research capabilities. The practitioner has the status of legitimate researcher and the external researcher the status of advisor or mentor. The direction of their relationship is essentially uni-directional but involves a recognition of the value of the external researcher's academic knowledge. No research-practice gap is experienced in this dynamic since the purpose of the research is to improve local practice. But while this dynamic is ideal for maximising the chance of research being relevant to practice, its essentially local and practical focus places limitations on its potential for addressing broader conceptual issues.

Finally at the end of the continuum is the *Practitioner as single Practitioner-Researcher operator* (5) research-practice dynamic. Like the previous one, it refers to practitioner-driven research initiatives aimed at improving their local practice but without the involvement of any external researcher. A practitioner is exercising their right to control the production of their professional knowledge through action research, where both "action and research are brought together in the same process but also the one person (inquiring practitioner)" (Grundy 1996, p.xx). In other words, practitioners turn themselves into autonomous "teacher-researchers" (Stenhouse 1976) or practitioner-researchers for the purpose of improving their own practice. On the ground that professional knowledge is intrinsically connected with practice practitioners claim that they are in a privileged and legitimate position to study themselves, and to improve their teaching, learning or training through reflective practice. This research-practice dynamic assigns full responsibility to the practitioner and emphasise experiential knowledge at the expense of scientific, academic knowledge. In the educational literature, action research is often advocated as the most powerful form of teacher professional development.

In conclusion, this conceptual framework stresses multiple ways in which research and practice can support each other. From autonomy (See Table 2, Rows 1 and 5) to cooperation (Rows 2 and 4) and partnerships (Row 3), a researcher and a practitioner can be engaged in several research-practice dynamics either consecutively or simultaneously, each research-practice fulfilling a different purpose within an overall project. Research-practice dynamic arrangements can also be modified over time, or move back and forth between partnership and autonomy, to accommodate change in professional agendas, preferences or external circumstances. Increased interactivity in a range of research-practice dynamics makes researchers and practitioners better equipped for deciding which form of cooperation may be the best match to their specific needs and expectations at a particular point in time. The nature of education and psychology research is already moving in this direction, and reciprocally, recent efforts to enhance the professional development of practitioners have stressed the need for research-based practice. Yet, there is a risk that protectionism and sectorial divisions created by decreasing research fundings may inhibit the process. To prepare the ground for productive and rewarding research-practice dynamics in the future, we need to develop a vision of research and practice communities assisting each other in their respective professional roles and responsibilities. In my view, such a vision should be based on a blend of diversity, interactivity, reciprocity and cross-fertilisation. It should promote and nurture multiple types of research-practice dynamics in the process of knowledge production. Diversity generates multiple interactions, perspectives, interpretations, methods of inquiry, languages and types of knowledge to improve, reflect upon, investigate and theorise about teaching, learning and training. Recent developments in education and psychology research, stressing the domain-specific nature of expertise, the situated nature of learning and the significance of distributed cognitions and mediated forms of learning, provide the conceptual rationale for promoting greater interactivity between the two communities in the field of post-compulsory education and training. Reciprocally, the literature on action research has highlighted how teachers use their local knowledge about learning to continuously improving their practice, but also how the experiential knowledge of practitioners represents a precious resource largely neglected by researchers.

Interactivity between researchers and practitioners working in the field of teaching, learning and training is essential, but however significant, it should neither be forced upon theory development research nor imposed upon the process of knowledge production through praxis. Interactivity should be conceived as a means of maximising the benefits generated by the professional communities' interface. Overall, it is hoped that promoting researchers and practitioners' multiple engagement in diverse research-practice dynamics will set in place a process of cross-fertilisation of different types of knowledge and ultimately promote greater reciprocal understanding between the two professional cultures. Within a diversity and reciprocity perspective, research-based knowledge and practice-based knowledge become inter-dependent, each having the potential of enhancing the other, for the dual benefit of better conceptual understanding and improved practice.

References

Bickel, W., & Hattrup, R. (1995). Teachers and researchers in collaboration: Reflections on the process. *American Educational Research Journal, 32*, 35-64.

Billet, S. (1996). Situated learning: Bridging sociocultural and cognitive theorising. *Learning and Instruction, 6*(3), 263-280.

Billet, S. (1994). Authenticity in workplace learning settings. In J. Stevenson (Ed.), *Cognition at work* (pp.36-102). South Australia: National Centre for Vocational Education Research.

Boekaerts, M. (1997). Self-regulated learning: A new concept embraced by researchers, policy-makers, educators, teachers and students. *Learning and Instruction, 7*(2), 161-186.

Boekaerts, M. (1999). Motivated learning: The study of student * situation transactional units. *European Journal of Psychology of Education,* 14(4), 41-55.

Boud, D., Freeland, J., Hawke, G., & McDonald, R. (1998). More strategic, more critical, more evaluative: Perspectives on research into workplace learning and assessment. In D. Boud (Ed.), *Current research and new agendas in workplace learning.* Leabrook, Australia: National Centre for Vocational Education Research.

Brown, A.L. (1997). Transforming schools into communities of thinking and learning about serious matters. *American Psychologist,* 52(4), 399-413.

Brown, A.L., & Palincsar, A.S. (1989). Guided, cooperative learning and individual knowledge acquisition. In L. B. Resnick (Ed.), *Knowing, learning and instruction: Essays in honor of Robert Glaser* (pp.393-451). Hillsdale.

Brown, A.L, Ash, D., Rutherford, M., Nakagawa, K., Gordon, A., & Campione, J.C. (1993). Distributed expertise in the classroom. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations* (188-228). NY, USA: Cambridge University.

Bullough, R., Kauchak, D. (1997). Partnerships between higher education and secondary schools: Some problems. *Journal of Education for Teaching,* 23(3), 215-223

Candy, P.C. (1991). *Self-direction for lifelong learning.* San Francisco: Jossey Bass.

Carr, W., & Kemmis, S. (1986). *Becoming critical.* Geelong: Deakin University.

Chi, M.T.H., Glaser, R., & Farr, M.J. (1988). *The nature of expertise.* Hillsdale, Nj: Lawrence Erlbaum.

Clark, R.W. (1988). School-university relationships: An interpretive review. In K.A. Sirotnik & J.I. Goodlad (Eds.), *School-university partnerships in action: Concepts, cases and concerns* (pp.32-65). NY, USA: Teachers College, Columbia University.

Cochran-Smith, M., & Lytle, S.L. (1990). Research on teaching and teacher research: The issues that divide. *Educational Research, 19*(2), 2-11.

Collins, A., Brown, J.S., & Newman, S.E. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing and mathematics. In L. B. Resnick (Ed.), *Knowing, learning and instruction: Essays in honour of Robert Glaser* (pp.453-494). Hillsdale, NJ: Erlbaum.

De Jong, F.P.C.M., & Van Hout Wolters, B.H.A.M. (Eds.). (1994). *Process-oriented instruction and learning from text.* Amsterdam: VU University.

Engestrom, Y., & Middleton, D. (1996). Introduction: Studying work as mindful practice. In Y. Engestrom & D. Middleton (Eds.), *Cognition and communication at work* (pp.1-14). NY, USA: Cambridge.

Falk, I., Sefton, R., & Billett, S. (1998, August). What does research tell us about developing a training culture? In Lifelong learning: Developing a training culture. Creating our future: A new training culture for Australia. Collected papers from the ANTA Conference (pp 95-121). Adelaide: NCVER.

Glaser, E., Abelson, H., & Garrison, K. (1983). *Putting knowledge to use.* San Francisco, CA: Jossey-Bass.

Glass, G.V. (1987). What works: Politics or research. *Educational Researcher, 16*(3), 5-10.

Goodlad, J. (1994). Educational Renewal: Better teachers, better schools. San francisco: Jossey-Bass.

Goodlad, J. (1993). School-university partnerships and partner schools. *Educational Policy,* 7(1) 24-39.

Goodlad, J. (1988). School-university partnerships for educational renewal: Rationale and concepts. In K. Sirotnik & J. Goodlad (Eds.), *School-university partnerships in action: Concepts, cases and concerns* (pp.3-31). New York: Teachers College Press.

Goodlad (1985). *Reconstructing schooling and the education of educators: The partnership concept.* Unpublished manuscript, University of Washington.

Greeno, J.G. (1998), The situativity of knowing, learning, and research. *American Psychologist, 53*(1), 5-26.

Grundy, S. (1996). Building professional research partnerships: Possibilities and perplexities. *Australian Educational Researcher, 23* (1), 1-15.

Grundy, S. (1987). *Curriculum: Product or praxis.* East Sussex: Falmer.

Guthrie, H. (1998). Getting the message out: Disseminating the products of the national research and evaluation program. In J. McIntyre & M. Barrett, M (Eds.), *VET research: Influencing policy and practice* (pp.205-210). Sydney, Australia: The Australian Vocational Education and Training Research Association.

Hatano, G., & Greeno, J.G. (in press). *Commentary: Alternatives perspectives on transfer and transfer studies.* To appear in *International Journal of Educational Research.*

Hawke, G., & Cornford, I. (1998). Australian vocational education policy change: But will the revolution improve the quality of training? *Australian and New Zealand Journal of Vocation Education Research, 6*(2), 104-133.

Henry, J., & Arnott, A., (1998). VET research through partnerships with stakeholders. In J. McIntyre & M. Barrett (Eds). *VET Research influencing policy and practice* (Proceedings of the first national conference of AVETRA). Sydney: AVETRA.

Hickey, D. (1999, August). Epistemological reconciliation and the future of motivation research. Paper presented at the 8th Biennial Conference of the European Association for Research on Learning and Instruction, Göteborg, Sweden.

Huberman, M. (in press). The influence of interactivity with practitioners on educational researchers. To appear in *Harvard Educational Review.*

Huberman, M. (1994). Research utilization: The state of the art. *Knowledge and Policy.* 7(4) 1-16.

Huberman, M. (1990). Linkage between researchers and practitioners: A qualitative study. *American Educational Research Journal, 27*(2), 363-391.

Huberman, M. (1987). How well does educational research really travel? *Educational Researcher, 16*(1), 5-13.

Jones, M., & Vesilind, E. (1996). Putting practice into theory: Changes in the organisation of pre-service teachers' pedagogical knowledge. *American Educational Research Journal, 33,* 91-117.

Lave, J.H. (1988). *Cognition in practice: Mind, mathematics and culture in everyday life.* Cambridge: Cambridge University.

Lieberman, A. (1986a). Collaborative research: Working with, not working on. *Educational Research, 43,* 28-32.

Lieberman, A. (1986b). Collaborative work. *Educational Leadership, 43,* 4-8.

Lonka & Ahola 1995). Activating instruction: How to foster study and thinking skills in higher education. *European Journal of Psychology of Education,* X(4), 351-368.

Louis, K. S. (1992). Comparative perspectives on dissemination and knowledge use policies. *Knowledge, 13,* 276-304.

McBeath, C. (1995). *Overcoming barriers to effective curriculum change: A case study in dissemination practice.* Paper presented to 3rd International Conference on Post-compulsory Education and Training, Centre for Learning and Work Research, Griffith University, Brisbane, 21-23 November.

McDonald, R. (1998). Use and influence of research in vocational education and training. In J. McIntyre & M. Barrett, M (Eds.), *VET research: Influencing policy and practice* (pp.37-44). Sydney, Australia: The Australian Vocational Education and Training Research Association.

McIntyre, J. & Barrett, M. (Eds.). (1998). *VET research: Influencing policy and practice.* Proceedings of the first national conference of the Australian Vocational Education and Training Research Association, Sydney. New South Wales: The Australian Vocational Education and Training Research Association.

Miller, J.E., & Goodnow, J.J. (1995). Cultural practices: Toward an integration of culture and development. In J.J. Goodnow, P.J. Miller & F. Kessel (Eds.), *Cultural practices as contexts for development. New directions for child development No. 67* (pp.5-16). San Francisco: Jossey-Bass.

Nixon, H. (1998). Collaborative research partnerships for literacy education in new times. *The Australian Educational Researcher, 25*(3), 61-82.

Palincscar, A.S., Magnusson, S.J., Marano, M.N., Ford, D., & Brown, N. (1998). Designing a community of practice: Principles and practices of the GisML community. *Teaching and Teacher Education, 14*(1), 5-19.

Prawat, R.S. (1989). Promoting access to knowledge, strategy, and dispositions in students: A research synthesis. *Review of Educational Research, 59*(1), 1-41.

Ramsay, G. (1998). Conference dinner address: Vocational education research – where to from here? In J. McIntyre & M. Barrett, M (Eds.), *VET research: Influencing policy and practice* (pp.56-59). Sydney, Australia: The Australian Vocational Education and Training Research Association.

Rogoff, B. (1994). Developing understanding of the idea of communities of learners. *Minds Culture and Activity,* 1, 209-229.

Robinson, C. (1999). *Measures to increase the impact of vocational education and training research.* South Australia: National Centre for Vocational Education Research.

Rust, C. (Ed.). (1998). *Improving student Learning. Improving students as Learners.* Oxford: The Oxford Centre for Learning.

Salomon, G. (1993). No distribution without individuals' cognition: A dynamic interactional view. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations* (111-138). New York, USA: Cambridge University.

Salomon, G., & Globerson, T. (1987). Skill is not enough: The role of mindfulness in learning and transfer. *International Journal of Educational Research, 11,* 623-637.

Salomon, G., & Perkins, D.N. (1998). Individual and social aspects of learning. *Review of Research in Education, 23,* 1-24. Washington D.C: AERA.

Salonen, P., Lehtinen, E., & Olkinuora, E. (1999). The development of motivation and learning in a classroom context. Paper presented at the 8th Biennial Conference of the European Association for Research on Learning and Instruction, Göteborg, Sweden.

Selby Smith, C. & Selby Smith, J. (1998). The impact of research on VET policy, practice and performance. In J. McIntyre & M. Barrett, M (Eds.), *VET research: Influencing policy and practice* (pp.23-36). Sydney, Australia: The Australian Vocational Education and Training Research Association.

Selby Smith, C., Hawke, G., McDonald, R., & Selby Smith J. (1998). *The impact of research on VET decision-making.* Adelaide, Australia: National Centre for Vocational Education Research.

Shuell, T.J. (1988). The role of the student in learning from instruction. *Contemporary Educational Psychology,* 13,276-295.

Shuell, T.J. (1990). Phases of meaningful learning. *Review of Educational Research, 60*(4), 531-547.

Simons, P.R. (1997). From romanticism to practice in learning. *Lifelong learning in Europe, 1,* 8-15.

Sirotnik, K.A., & Goodlad, J.I. (Eds.). (1998). *School-university partnerships in action: Concepts, cases and concerns.* NT, USA: Teachers College, Columbia University.

Stenhouse, L. (1976). *Introduction to curriculum research and development.* London: Heinemann.

Stevenson, J. (Ed.). (1994). *Cognition at work: The development of vocational expertise.* Adelaide, Australia: National Centre for Vocational Education.

St-Exupéry, A. (1945). Le Petit Prince: avec les dessins de l'auteur. Paris: Gallimard.

Teitel, L. (1998). Separations, divorces and open marriages in professional development school partnerships. *Journal of Teacher Education, 49*(2), 85-96.

Teitel, L. (1997). Changing teacher education through professional development school partnerships: A five-year follow-up study. *Teachers College Record, 99,* 311-314.

Teitel, L. (1994). Can school-university partnerships lead to the simultaneous renewal of schools and teacher education. *Journal of Teacher Education, 45*(4), 245-252.

Tiberghien, A., & Megalakaki, O. (1995). Characterisation of a modelling activity for a first qualitative approach to the concept of energy. *European Journal of Psychology of Education,* X(4), 369-383.

Vermunt, J.D. (1995). Process-oriented instruction in learning and thinking strategies. *European Journal of Psychology of Education, X*(4), 325-350.

Vermunt, J.D. (1998). The regulation of constructive learning processes. *British Journal of Educational Psychology,* 68, 149-171.

Vermunt, J.D., & Verloop, N. (1999). Congruence and friction between learning and teaching. *Learning and Instruction,* 9(3), 257-280.

Volet, S. (1999, August). Learning and motivation in context: A situated, multi-dimensional perspective. Address presented at the 8th Biennial Conference of the European Association for Research on Learning and Instruction, Göteborg, Sweden.

Volet, S. (1995). Process-oriented instruction: A discussion. *European Journal of Psychology of Education,* 10(4), 449-459.

Volet, S.E. (1993, August). Improving learning and instruction at university through collaborative experimental research. Paper presented at the 5th European Conference for Research on learning and instruction, Aix en Provence, France.

Volet, S. (1991). Modelling and coaching of relevant metacognitive strategies for enhancing university students' learning. *Learning and Instruction, 1*,319-336.

Vosniadou, S. (1996). Towards a revised cognitive psychology for new advances in learning and instruction. *Learning and Instruction, 6*(2), 95-109.

Voss, J.F. (1986). Social studies. In R.F. Dillon & R.J. Sternberg (Eds.), *Cognition and Instruction* (pp.205-239). Orlando: Academic.

Wagner, J. (1997). The unavoidable intervention of educational research: A framework for reconsidering researcher-practitioner cooperation. *Educational Researcher,* 26(7), 13-22.

Weaver, G. (1998). Industry and academia: Building networks and alliances. In J. McIntyre & M. Barrett (Eds). *VET Research influencing policy and practice* (Proceedings of the first national conference of AVETRA). Sydney: AVETRA.

Wertsch, J. (1991). *Voices of the mind: A socio-cultural approach to mediated action.* Cambridge, MA: Harvard University Press.

Yeatman (1996a). Building effective university-school partnerships: Issues and possibilities. *Forum of Education, 51*(2), 21-32.

Yeatman, A. (1996b). The roles of scientific and non-scientific types of knowledge in the improvement of practice. *Australian Journal of Education, 40*(3), 284-301.

Zimmerman, B.J. (1998). Academic studying and the development of personal skill: a self-regulatory perspective. *Educational Psychologist,* 33(2/3), 73-86.