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Education research in the knowledge society

Key trends in Europe and North America

Peter Kearns

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Key trends in Europe and North America

Peter Kearns

Peter Kearns and Associates

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Contents

Figures 5

Executive summary 6

A shifting context for education research 8

- Background 8
- European Union 9
- North America 10
- Scope of this report 10
- Information and knowledge 11
- Cross-currents and complexity 11

Organisaton of the vocational education and training research and development system 12

- Introduction 12
- United States 12
- England 13
- European Union 14
- Canada 15

Building the knowledge base and achieving evidence-based policy and practice 17

- OECD contribution 18
- CEDEFOP contribution 19
- British developments 20
- The foresight dimension 21
- The German approach 21
- General comment 22

Dissemination and impact strategies 23

- CEDEFOP approach 23
- Strategies to foster interaction and impact 24
- Other strategies 27
- General comment 27

Strengthening international links 28

Implications for the National Centre for Vocational Education Research 30

- Research in the knowledge accumulation process 31
- National Centre for Vocational Education Research role in knowledge accumulation 32
- Focal areas for evidence building 33
- Cross-sectoral links 34
- General comment 34

References 35
Attachment A 36
Some useful web addresses 36
Attachment B 37
Canadian web addresses 37

Figures

1	Knowledge creation, transfer and integration	19
2	Research, collaborative learning and co-development of knowledge (from CEDEFOP)	20
3	Research, collaborative learning, co-production of innovation and co-development of knowledge (from CEDEFOP)	20
Box 1:	National Centre for Career and Technical Information: Spectrum of Communication Formats	26

Executive summary

This paper examines certain key trends in education research in a selection of the Organisation for Economic Co-operation Development (OECD) countries in Europe and North America and considers their implications for the work of vocational education and training (VET) research agencies such as the National Centre for Vocational Education Research (NCVER).

The countries and international agencies included in the study are Britain, Germany, the United States of America, the OECD and the European Union. The report pays particular attention to the role of education in building the knowledge base for educational policy and practice in a world of constant and unpredictable changes to society and the economy, with growing pressures for lifelong learning.

Two key questions are discussed:

- ✧ In what ways can research-based knowledge in education accumulate and be accessible for policy and practice?
- ✧ How can a stronger interaction and interface between research, policy, and practice be achieved so that the impact of research on practice is strengthened?

These questions are significant in a context where pressures for knowledge and evidence-based policy and practice have come to the fore in public discussion of education in both Europe and North America. In the United States for example, legislation was passed during 2002 to establish the Institute of Education Sciences in the Department of Education to strengthen the research role in education reform.

While such efforts have been made in both Europe and North America over the past decade to strengthen the role of educational research, and its impact on policy and practice, this has been accompanied by a so called 'crisis of confidence'—a loss of faith in the influence and impact of this area of research. The OECD has returned to this theme on a number of occasions over the past decade, and it has been a recurring theme in the United States where it has accompanied concern at the slow process and seeming failure of education reform. The impact of education research is often compared with the impact of research in other sectors such as health.

In addition to these central themes, two other major themes examined are:

- ✧ a heightened concern with cross-sectoral linkages so that a common knowledge base is built up for all sectors of education and training
- ✧ a concern to strengthen international linkages so that the evolving knowledge base for education policy and practice can draw on international experience and research findings.

The implications of these trends for the work of VET research agencies such as the National Centre for Vocational Education Research are examined.

The heightened importance of developing and maintaining the knowledge base of society is likely to broaden the research role to one which encourages collaborative learning and co-development of knowledge. This involves moving away from traditional linear research–development–implementation models to interactive models for knowledge development, with closer relations between research, policy and practice. The European Union's Centre for the Development of Vocational Training

(CEDEFOP) has been innovative in testing these models through programs such as the Centre for the Development of Vocational Training's Research Arena (CEDRA).

It is suggested that the knowledge development process in vocational education and training might be seen as one involving primary, intermediate, and mature stages in the progression towards the development of a robust research base to underpin policy and practice. There are resource implications in strengthening the research role, but if VET policy and practice is to be truly based on knowledge and evidence in a context of unpredictable change and shifting roles and relationships, an investment in a strengthened research role will be necessary. These questions merit extensive discussion in the context of strategic planning for 2004–2010.

A shifting context for education research

Background

In 1992 Peter Kearns and Associates was commissioned by the Vocational Education, Employment, and Training Advisory Committee (VEETAC) to prepare a report on research and development arrangements for the vocational education and training (VET) sector in selected Organisation for Economic Co-operation Development (OECD) countries. This report was prepared by Peter Kearns and George Papadopolous, and was published by the National Centre for Vocational Education Research (NCVER) in 1993 under the title *A review of research and development structures and practices for vocational education, training and employment in five OECD countries.*[1]

After a decade of VET development in a substantially different social and economic context, the present report revisits some of the questions examined in 1992.

While the 1992 report was prepared on the threshold of the 'information age', emerging trends noted in that report have now impacted more deeply on society across all OECD countries, with consequent implications for education and training policy and practice, and for the research role.

The current context of the information society and its 'knowledge economy' has raised fundamental issues concerning the research role in supporting education and training systems in adapting to the conditions and pressures of this environment. This is what this current report aims to explore.

There is now a heightened urgency for education reform in a context of mounting pressures for lifelong learning, a burgeoning impact of technology and an escalating pace of change in much of industry and in society. These pressures have been accompanied by a renewed concern with equity issues in a society that appears to have increasing inequalities.

While these imperatives might be expected to give a new prominence to the research role in guiding policy and practice, the decade has also witnessed what has been termed a 'crisis of confidence', or a blind faith in the outcomes of educational research, and the extent of its impact on policy and practice (OECD 1995a; Coalition for Evidence-based Policy 2002; National Research Council 2002). The impact of research on educational practice has often, over the decade, been adversely compared with the impact of research in sectors such as health (OECD 1995a).

This so-called crisis of confidence has stimulated a search for better ways to heighten the impact of research relating to educational policy and practice. The OECD has taken a lead in this search over the decade following comments resulting from the 1990 meeting of OECD ministers of Education, such as 'the potential of educational research as an integral element of improvement remains largely underdeveloped' (OECD 1995a, p.9).

The OECD ministers' critique contained the following elements:

- ✧ The level of investment in educational research and development was far lower than in other sectors of comparable size.

[1] The countries examined were Britain, United States, Germany, France, and Sweden.

- ✧ Research needs to be more closely linked to practice in a constant process of diagnosis, comparison and analysis.
- ✧ More experimentation and innovation are needed.

(OECD 1995a, p.9)

The OECD in its 1995 report on educational research and development interpreted this critique by the ministers to mean that the systems for educational research and development in OECD countries were in need of restructuring to enable funds to be more effectively used.

Improving the interface between research, policy and practice has been a persistent theme over the decade; however, as the concern for knowledge management in education and training has grown, this theme has been re-interpreted. The OECD returned to this theme in 1999 with its report on *Knowledge management in the learning society* (OECD 2000).

Over the decade, the OECD has returned on a number of occasions to the question of strengthening the impact of educational research and development on policy and practice. This interest has included:

- ✧ country studies of educational research and development in Austria, Germany and Switzerland in 1995 (OECD 1995b)
- ✧ a general report on trends, issues, and challenges in 1995 (OECD 1995a)
- ✧ the 1999 report, on *Knowledge management in the learning society* (OECD 2000)
- ✧ further country studies of educational research and development in England and New Zealand in 2002 (OECD 2002a, 2002b).

A comparative analysis of the England and New Zealand studies was not yet completed at the time of this report, but was to go to the Centre for Educational Research and Innovation Board. The examiners' report for the 2002 England country study is of particular interest in providing an informed critique on the efforts of England to modernise its educational research and development system and to increase its impact on policy and practice.

European Union

The trends noted above in the work of the OECD over the decade are also reflected in the educational research and development activities of the European Union, including the work of CEDEFOP, the European Union research agency for the VET sector. Ways in which CEDEFOP has been innovative in seeking a better interface between research, policy, and practice—and in heightening the impact of educational research—are discussed below.

The European Union has also followed the OECD in having a strong concern for the ramifications of the information society (European Commission 2000), in the promotion of lifelong learning (European Commission 2001a), and actively fostering the role of information and communication technology in education (European Commission 2001b). These interests are reflected in the revised mandates of the European Union education programs (European Commission 2001a), and in the work of CEDEFOP with such activities as its Electronic Training Village and the outcomes from CEDEFOP Research Arena (CEDRA).[2] A 2002 CEDEFOP report on the process of knowledge development in education provides a valuable overview of this subject (CEDEFOP, 2002).

[2] See <http://www2.trainingvillage.gr> for the Electronic Training Village and <http://www2.trainingvillage.gr/etv/cedra> for CEDRA.

North America

The trends evident in Europe over the decade may also be seen in North America with a similar concern to heighten the impact of research on educational reform through the establishment of a proven knowledge base and facilitating its application in practice.

In the United States these concerns have been caught up in the overriding concern to reform the American school system, following the report, *A nation at risk* (National Commission on Excellence in Education 1983) with its portrait of under-achievement. This has led to a particular focus on evidence-based policy and practice accompanied by a re-assertion of the case for 'scientific research in education' as, for example, in a 2002 report of the National Research Council (National Research Council 2002). These issues in the United States debate on educational research led to the *Education Science Reform Act* of 2002 which established the Institute of Education Sciences in the Department of Education to replace the Office of Educational Research and Improvement.

The language of this legislation, using terms such as 'scientifically valid research' and 'scientifically based research standards' reflects a re-assessment of the case for educational research as a science and as an essential tool of educational reform. However, in some ways it also restricts the kinds of research undertaken.

The interest in building and applying the knowledge base of education is also evident in Canada, although in a more diffuse form in a country lacking federal powers in education, and without a national education agency.

Scope of this report

This report has produced in regard to the trends outlined above and is focused on two key questions:

- ✧ In what ways can research-based knowledge in education accumulate and be accessible for policy and practice?
- ✧ How can a stronger interaction and interface between research, policy, and practice be achieved so that the impact of research on practice is heightened?

These questions are discussed in the sections of this paper which follow. The implications for the work of agencies such as NCVER are summarised in the final section of the paper. The analysis is based on research relating to Britain, Germany, the United States, Canada, the OECD and the European Union.

While these questions have been the dominant themes in the debate over educational research in both Europe and America over the decade, two other significant themes have also emerged which have implications for the work of agencies such as NCVER in the context of the global knowledge society and the consequent pressures for lifelong learning in many contexts.

These have been:

- ✧ a heightened concern with cross-sectoral linkages so that a common knowledge base is established for all sectors of education and training in a context where future education policy is likely to be increasingly systemic rather than focused on sectoral divisions
- ✧ a concern to strengthen international linkages so that the evolving education and training knowledge base can draw upon international experience and research findings.

The countries examined are at various stages in responding to the pressures associated with these themes. The different ways in which research is organised and managed in these countries is discussed in the next chapter.

Few countries have an exact counterpart to the Australian VET sector, although similar systems are more evident in Europe than in North America. For this reason, this report has a general concern

with education research and development, rather than the specific focus on VET research and development of the 1992 report. Cross-sectoral linkages are likely to be increasingly important as education policy responds to the pressures, in a context of lifelong learning, for systemic solutions rather than sectoral. This trend will have significant implications in the longer term for sectoral agencies such as NCVER.

Information and knowledge

A key conceptual distinction underpins the analysis of this report. This lies in the distinction between information and knowledge which CEDEFOP asserts is often blurred. However, CEDEFOP, along with researchers such as Jonscher, Nonaka and Takeuchi, Davenport and Prusak (Jonscher 1999, p.59; Nonaka & Takeuchi 1995, p.58; Davenport & Prusak 1998, pp.4–5) make a conceptual distinction between information and knowledge:

- ✧ Most people have an intuitive sense that knowledge is broader, deeper, and richer than data or information (Davenport and Prusak 1998, p.5)
- ✧ Information is a flow of messages while knowledge is created by the very flow of information, anchored in the beliefs and commitment of its holder (Nonaka & Takeuchi 1995, p.58).

CEDEFOP, in its report on the process of knowledge development, joins these scholars in affirming 'the intrinsic subjectivity of the concept of knowledge' (CEDEFOP 2002, p.25). The recognition of the significance of tacit knowledge which lies within the experience of individuals and which has a powerful influence on the practice of teachers, is fundamental to consideration of the implications for research practice of the two key themes discussed in this paper—building the evidence base for policy and practice, and strengthening the impact of research on practice.

In research agencies such as NCVER this distinction brings with it the implication of progressing beyond information dissemination strategies, as in traditional linear concepts, to a broader and richer concept of the role of research in the generation and management of the knowledge base for educational policy and practice. Implications for research agencies such as NCVER of this conceptual shift are discussed in the final section of this paper.

Cross-currents and complexity

It should not be assumed that the themes identified above represent a linear progression towards a new condition for education research and development. As always with education, there are cross-currents and additional complexities. While the pressures for a better interface between research, policy and practice have given prominence to strategies such as action research and action learning, the strong re-assertion of 'scientific research' in the United States adds an influential dimension in the interplay of these influences.

Kearns and Papadopoulos in 1993 observed that: 'In vocational education and training, as in education more generally, the demarcation between what is research and what is policy is never very clear' (Kearns & Papadopoulos 1993, p.1). In the globalised knowledge society, this demarcation is even less clear in 2003 than it was in 1993. But perhaps this represents an advance towards more integrated research, policy and practice which would serve Australian society more usefully in the information age.

Organisation of the vocational education and training research and development system

Introduction

In their 1993 report, Kearns and Papadopoulos identified three broad approaches to the organisation of research and development for VET. These approaches were:

	Approach	Countries
A	The establishment of a government research agency	Germany, France
B	The establishment of a national centre in the university system	United States
C	A decentralised pluralist system with no central focal point	England, Sweden

While these approaches are still in evidence presently, there have been a number of developments in the way these arrangements operate, in particular in categories B and C, in line with the shifts discussed below.

These developments include:

- ✧ a greater concern for strategic planning and coordination of effort in a decentralised, pluralist system such as that in England
- ✧ a heightened interest in cross-sectoral linkages and cooperation
- ✧ closer links between research and policy development.

These developments may be seen in England, and are reflected in the 2002 report of the OECD *Review of educational research and development in England* (OECD 2002a), and in the United Kingdom Department for Education and Skills background report prepared for this review (Department for Education and Skills 2002).

Canada was included in the present study and may also be seen as a further example of a decentralised, pluralist system with no central focal point since Canada lacks both a federal power in education and a national education agency.

Some of the main developments in the organisation of VET research in the United States, England and Canada since the 1993 study are discussed below.

United States

In 1993 VET research in the United States was given focus by the role of the National Centre for Research in Vocational Education located, since 1988, at the University of California at Berkeley and funded by the United States Government under the *Carl E Perkins Vocational Education Act* of 1984 (Kearns & Papadopoulos 1993, p.8).

However, following the re-authorisation of the Perkins act, this centre was relocated, with the contract given to a consortium—the Career and Technical Education Consortium. This comprised of:

- ✧ the National Centre for Career and Technical Education at the University of Minnesota
- ✧ the National Dissemination Centre for Career and Technical Education at Ohio State University
- ✧ the University of Illinois, Oregon State University, and Pennsylvania State University.

The allocation of the dissemination function to the Ohio State University allows an alignment of this function with the role of the Ohio State University as the Educational Resources Information Centre (ERIC) for career and technical education.

While the former Berkeley National Centre for Research in Vocational Education arrangement covered vocational education in schools as well as post-school vocational education, the use of the term career and technical education, in the name of the consortium reflects the strong focus on school reform in American education policy, with the role of career and technical education largely seen in that context.

A further recent development in the United States has been the passage of legislation during 2002 to establish the Institute of Education Sciences within the Department of Education. The mission of the institute is defined in the *Education Sciences Reform Act* in the following terms:

> The mission of the Institute is to provide national leadership in expanding fundamental knowledge and understanding of education from early childhood through postsecondary study, in order to provide parents, educators, students, researchers, policymakers, and the general public with reliable information about:
>
> A the condition and progress of education in the United States, including early childhood education;
>
> B education practices that support learning and improve academic achievement and access to educational opportunities for all students; and
>
> C the effectiveness of Federal and other educational programs.
>
> (Educational Sciences Reform Act of 2002)

How the role of the institute will relate to the work of the Career and Technical Education Consortium, and impact on vocational education, remains to be seen.

England

While England in 2003 continues to have a decentralised, pluralist system of education research and development, there has been considerable progress since 1993 in efforts to secure a more strategic focusing of research, coordination of effort across the sectors and between stakeholders, and to improve the interface of research, policy and practice. These developments are reflected in the Department for Education and Skills background report for the 2002 OECD review of education research and development in England (Department for Education and Skills 2002), and the examiners' report on that review (OECD 2002a).

The general directions are also reflected in the Department for Education and Skills research strategy (Department for Education and Skills 2002b) which states:

> The Department has refocussed its research effort towards meeting the Department's more strategic, longer-term information needs. To tackle those wider issues we need to increase our understanding about the underlying causes of problems and what works in tackling them.
>
> (Department for Education and Skills 2002b, p.1)

The ways in which the department has undertaken this refocusing are discussed below and includes the two underlying themes which have driven the revitalised strategy.

Other initiatives to achieve enhanced coordination of effort across the sectors and between the players in the research enterprise include:

- ✧ the establishment of the National Education Research Forum in 1999 to develop a strategic framework for research
- ✧ the development of Current Educational Research in the United Kingdom (CERUK) as an educational research database covering all sectors of education and training
- ✧ the establishment of a research liaison group to coordinate effort across government agencies working on educational research.

(Department for Education and Skills 2002)

This strong interest in coordination of effort, improved strategic planning and cross-sectoral linkages reflects the commitment of the British Government to lifelong learning and the development of Britain as a learning society (Secretary of State for Education and Employment 1998). It is recognised that a learning society requires a more systemic approach to policy development with 'joined-up policies', rather than the traditional approach based on education sectors. Education research policy is being driven by these considerations.

The National Educational Research Forum was established in 1999 by the Department for Education and Skills to provide strategic direction for education research. It has an independent chair appointed by the Secretary of State and members appointed by an independent panel following open advertisement. It currently has 19 members. Sub-groups of the forum have focused on priorities, funding, capacity, quality and impact, leading to a strategy document released in September 2001. The forum plans to establish an Education Observatory to examine current and emergent developments, as well as medium and longer-term trends likely to shape the future (Department for Education and Skills 2002, pp.11–12).

The Current Educational Research in the United Kingdom database, was launched in September 2001 as an education research database covering all sectors of education and training. All the Department for Education and Skills research contracts now require that research findings are logged onto the database; other funders are considering the imposition of a similar requirement (Department for Education and Skills 2002, p.15).

In addition to these initiatives, a Learning and Skills Research Centre has been established to support the role of the Learning and Skills Council and its national network of local councils. This centre has a particular role in modelling a vocational learning system for the twenty-first century (see <http://www.lsrc.ac.uk>).

Overall, the English educational research scene shows considerable development since 1998 in line with the government's objectives to promote lifelong learning for all and the development of Britain as a modern learning society attuned to twenty-first century conditions.

European Union

The European Union was not included in the 1993 Kearns and Papadopoulos report. As noted above, education research in the European Union is of interest because of the commitment to fostering Europe as an information society, promoting lifelong learning and using information and communication technology in innovative ways in furthering these objectives (Kearns 2002).

These emphases are reflected in the work of CEDEFOP, the European Union's research centre for vocational education and training. CEDEFOP has supported a number of innovative developments, for example, the Electronic Training Village (see <http://www2.trainingvillage.gr>) in its exploration of the process of knowledge development in education (CEDEFOP 2002) and in projects such as the Research Arena auspiced by CEDEFOP Research Arena. The Research Arena is discussed later in this report.

CEDEFOP monitors the progress of VET in Europe, and in 2001 produced its valuable three-part second report on vocational education and training in Europe. The synthesis report in this series provides a comprehensive overview of trends in VET in Europe (CEDEFOP 2001).

Canada

Canada was also not included in the 1993 Kearns and Papadopoulos report. Like England and Sweden, Canada has a decentralised, pluralist system without a central focal point. Thus VET research is scattered across a range of stakeholders at both national and provincial levels.

While this situation is exacerbated by the absence of a federal education power under the Canadian constitution, the Council of Ministers of Education has taken several initiatives to give some coherence to Canadian education research. In addition, a number of federal agencies support education research relating to their mandates.

The Council of Ministers of Education initiatives include:

- the establishment of the Government Education Research Network website (see <http://www.cmec.ca/gern/indese.asp>)
- the initiation of the Pan-Canadian Education Research Agenda in 1997 as a partnership between Statistics Canada and the Council of Ministers of Education (see <http://www.cmec.ca/stats/pcera/indexe.asp>).

The role of the Government Education Research Network is to make education research conducted by provincial and territorial governments more accessible for both public and other governments. The Government Education Research Network website provides links to Canadian education research across Canada.

The task of the Pan-Canadian Education Research Agenda, from its inception in 1997 as a partnership between Statistics Canada and the Council of Ministers of Education, is to bring interprovincial/territorial research issues important to ministers of education to the attention of the Canadian research community, and to promote open discussion of these issues. The Pan-Canadian Education Research Agenda promotes policy-related research and encourages communication among stakeholders.

Seven themes have been selected as priorities for the Pan-Canadian Education Research Agenda. These are transitions, learning outcomes, teacher education, diversity and equity, special needs, citizenship and social cohesion, and technology.

A number of other Canadian departments fund education research and development activities. These include the following:

- Human Resources Development Canada sponsors research on labour market and learning-related issues, mainly through its Applied Research Branch. Human Resources Development Canada takes a close interest in lifelong learning and has recently established a Canadian Learning Institute (see <http://www.hrdc-drhc.gc.ca/common/news/dept/oziiig.shtml>).
- Industry Canada funds Canadian Schoolnet which sponsors innovation in schools using information and communication technology, with grassroots collaboration and partnership between schools (see <http://www.schoolnet.ca>).

Canadian education systems show a strong interest in open and lifelong learning and in the role of information and communication technology in advancing these objectives, resulting in many

innovative developments.[3] Research in these areas is normally sponsored by agencies with a mandate to promote open and lifelong learning.

Examples may be found in the work of the British Columbia Open Learning Agency and Alberta Learning. Alberta Learning has recently launched a Commission on Learning to review the situation of education in the province, with a research component built into the work of the Commission (see <www.learningcommission.gov.ab.ca>).

A list of useful Canadian websites for education research in Canada is given in Attachment B to this paper.

While this overview highlights a number of shifts in the organisation of VET research and development since the 1993 Kearns and Papadopoulos report, the most significant development involves the way in which policy for education research has responded to the challenge of increasing the impact of research in the context of the global knowledge society with its imperatives for lifelong learning, generating and using knowledge, and innovation. The sections of this paper which follow will take up two key aspects of this challenge:

- ✧ How research contributes to the accumulation and use of an evidence base for education policy and practice.
- ✧ How a better interaction and interface between research, policy and practice can be achieved.

[3] An overview of the Canadian approach to building an information and learning society is given in a recent report by the author of this paper on international trends in policy for information and communication technology in education (Kearns 2002, pp.15–18).

Building the knowledge base and achieving evidence-based policy and practice

Throughout the past decade there has been a growing concern to advance educational reform and achievement through the greater utilisation of evidence-based policy and practice. This increased interest has coincided with the emergence and impact of the globalised knowledge society and economy, with objectives such as effective knowledge management assuming increased importance.

While this theme is important in both Europe and North America and is reflected in the work of bodies such as the OECD and the European Commission and its agencies, nuances have been identified which have differentiated the United States and European approaches to the question of achieving evidence-based policy and practice in education.

In both continents, this movement is a response to a 'crisis of confidence' in the impact of education research and concern at the slow pace of education reform. In the United States, however, there is a strong link to a deep concern at the seeming failure of much school reform and the need to achieve more effective reform through evidence-based policy (Coalition for Evidence-Based Policy 2002; National Research Council 2002).

The movement for evidence-based policy and practice has led to a heightened significance for educational research and its role in the accumulation of knowledge about what works in education and training. In this process the research role in education has been broadened. Also raised has been a spectrum of issues about how knowledge accumulates in education—an area likely to influence practice—and how the process of knowledge accumulation and integration can be speeded up (OECD 2000, 2002a; National Research Council 2002; Coalition for Evidence-Based Policy 2002).

This in turn raised a range of issues concerning the relationships of research, policy and practice which are discussed in the next chapter of this report. The OECD country reviews of educational research and development over the decade have sought to improve the knowledge base for educational practice and policy-making through the clarification and strengthening of the role of educational research and development (OECD 2002b). A theme present in the reviews undertaken for Austria, Germany, and Switzerland and the Nordic countries in 1995 (OECD 1995b), and in the 2001–02 reviews for New Zealand and England (OECD 2001, 2002b).

The more general issues relating to knowledge management in education and in a learning society were taken up by the OECD in its 2000 report, *Knowledge management in the learning society*. This report explores how knowledge is accumulated and used in education, the development of a more evidence-based research system and the role of the educational knowledge base in fostering and supporting cumulative innovation in education (OECD 2000).

The 2000 OECD report promotes the theme that the rate, quality and success in knowledge creation, mediation and use are relatively low in the education sector compared with other sectors (OECD 2000, p.3).

This theme, which reflects the crisis of confidence motif discussed above, has also been strongly articulated in the United States by those pressing for 'evidence-driven progress in education'. (Coalition for Evidence-Based Policy 2002; National Research Council 2002).

The American Coalition for Evidence-Based Policy has been at the forefront of this action with its 2002 report to the Department of Education setting out the case for a stronger evidence-based approach to policy and practice (Coalition for Evidence-Based Policy 2002).

The weak knowledge base in education, which was also noted by the OECD, was seen as a major cause of 'decades of stagnation in American education' with 'evidence-based programs' seen as the remedy to the stagnation (Coalition for Evidence-Based Policy 2002, pp.i–ii).

These issues discussed in the report of the Coalition for Evidence-Based Policy were taken further in the 2002 report of the American National Research Council on Scientific Research in Education (National Research Council 2002). This report contains a sophisticated analysis of the ways that knowledge accumulates in the natural and social sciences with the implications for 'scientific' education research identified.

The scientific process is seen as a 'constant process of refining theory and knowledge' through a sequence of interrelated descriptive and causal studies with a vigorous contestation of the findings (National Research Council 1992, pp.126–8). Enabling conditions that support this process are identified along with the characteristics of good practice that facilitate the progression of scientific insights (National Research Council 1992, pp.44–9).

The National Research Council report included a set of six scientific principles which were seen as relevant to educational research as to any other field of research. These principles are set out below:

1 Pose significant questions that can be investigated empirically.

2 Link research to relevant theory.

3 Use methods that permit direct investigation of the question.

4 Provide a coherent and explicit chain of reasoning.

5 Replicate and generalize across studies.

6 Disclose research to encourage professional scrutiny and critique.

(National Research Council 2002, pp.3–5)

OECD contribution

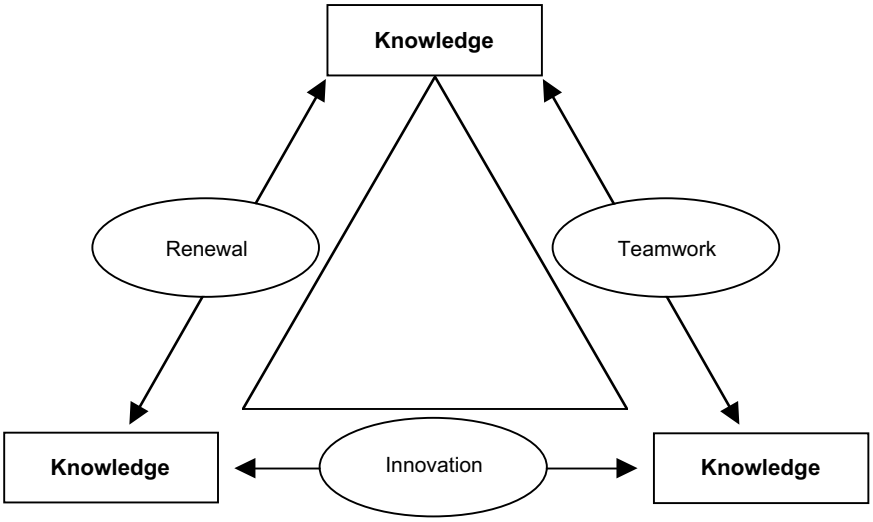
While the strong United States interest in evidence-based policy and practice has contributed much to understanding how knowledge accumulates in the field of education, there has also been a substantial contribution from Europe through the significant work of the OECD and the European Union (mainly through CEDEFOP), with a number of practical applications being implemented in Britain.

The OECD work on educational research over the decade provided a foundation for the 1999 report, *Knowledge management in the learning society.* While this report contains the general argument for strengthening the education knowledge base and developing a more evidence-based research system (OECD 2000, pp.3–4), a significant aspect of this report concerns its linking of the knowledge management process to a concept of cumulative innovation in education (OECD 2000, p.118).

This theme is developed in a valuable chapter of the report by Richard Nelson on knowledge and innovation systems in which Nelson argues that cumulative innovation should be understood as a process of cultural learning or evolution. This process is seen as involving the co-evolution of technique and knowledge (OECD 2000, p.18). Nelson, like many management theorists of knowledge (Nonaka & Takeushi 1995; Davenport & Prusak 1998; Leonard 1998) recognises that much knowledge is tacit, existing within people and having a major influence on practice in many fields. The relationship of the knowledge base derived from research and the tacit knowledge of practitioners is discussed in the following chapter.

The OECD has shown the relationships of knowledge creation, transfer, utilisation and innovation as an interactive model, as indicated by figure 1.

Figure 1: Knowledge creation, transfer and integration



Source: OECD 2000, p.74

While the 2000 OECD report, *Knowledge management in a learning society* represented a valuable synthesis of the state of knowledge at that time, the current cycle of country education research and development reviews for England and New Zealand may provide a platform to enable the OECD to progress this work in terms of its implications for the research role in education.[4]

CEDEFOP contribution

CEDEFOP has also paid close attention to knowledge development processes in education in line with the European Union work on the information society and the goal for developing Europe as a learning and knowledge society.

A valuable source of the CEDEFOP work is the 2002 publication, *Taking steps towards the knowledge society: Reflections on the process of knowledge development*. This report articulates the concept of knowledge development as interactive and collaborative, involving social interactions and exchanges between the different actors (researchers, policy-makers, practitioners, consumers, communities etc.) so that the intrinsic subjectivity of the concept of knowledge is affirmed in a clear distinction between information and knowledge.

This concept leads to what is seen as a new and broadened role for research in developing knowledge for VET, with research assuming an active role in 'development coalitions' involving the range of stakeholders (CEDEFOP 2002, p.26–7).

The analysis contained within the CEDEFOP report is based on several models of collaborative learning which involve the co-development of knowledge by stakeholders. These models are shown in figures 2 and 3.

The concept of co-production of innovation and co-development of knowledge involves a restatement of the concept of educational reform as an organic learning system (National Research

[4] The overview report on these reviews will be considered by the County Economic Research Institute Board during 2003 and is not yet available.

Council 1992) which has also been applied to knowledge management in industry (Leonard 1998, p.7). This question is examined further in the next chapter when considering the interface of research, policy and practice.

Figure 2: Research, collaborative learning and co-development of knowledge (from CEDEFOP)

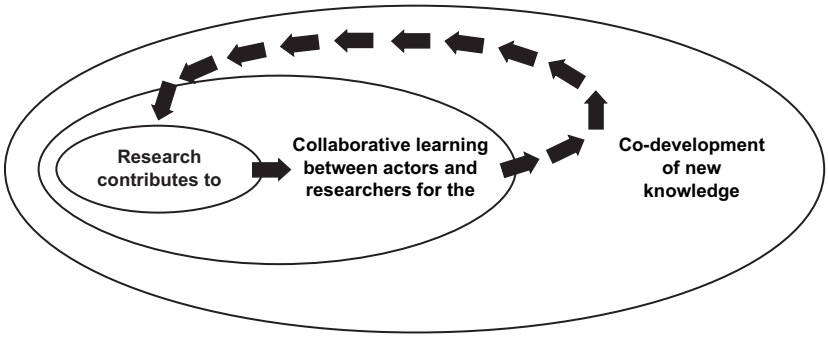
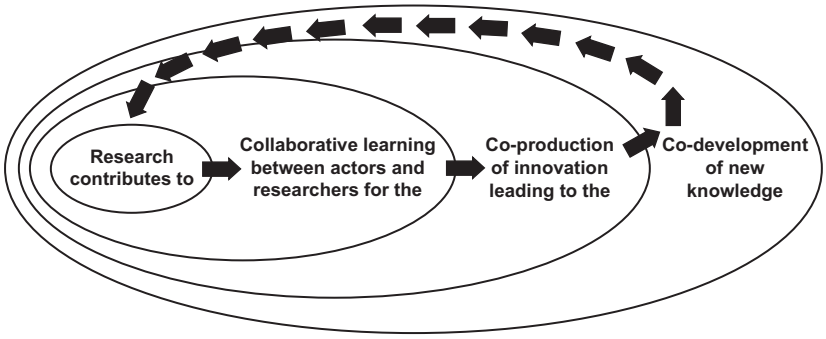


Figure 3: Research, collaborative learning, co-production of innovation and co-development of knowledge (from CEDEFOP)



Source: CEDEFOP 2002, pp.22, 29.

British developments

Britain has been active in redefining the role of research in the broader context of knowledge management in education and the trend towards evidence-based policy and practice. The refocusing of the research effort of the Department for Education and Skills is discussed in the department's current research strategy (Department for Education and Skills 2002a), and in the background report undertaken by the department for the 2002 OECD review of English educational research and development (Department for Education and Skills 2002b).

An early British step towards stronger evidence-based policy was taken with the establishment of the Evidence for Policy and Practice Information and Co-ordinating Centre in 1993 at the Social Science Research Unit of London University (see <http://www.eppi.ioe.ac.uk>). This centre provides centralised resources and support for those wishing to undertake systematic reviews relating to a range of educational policy and practice issues (Department for Education and Skills 2002b, p.13). The OECD examiners' report on England noted with approval the Evidence for Policy and Practice Information and Co-ordinating Centre role and placed high priority on its work (OECD 2002a, p.29).

Britain has taken other steps to build the evidence base for policy and practice, including, as noted earlier, the establishment of the Current Educational Research, United Kingdom as a database for education research covering all sectors (Department for Education and Skills 2002b, p.15). Other

British initiatives of interest include the work of a network of seven research teams across Britain committed to developing the knowledge base and building access pathways to it for the user community.

The foresight dimension

A significant theme in the British Department for Education and Skills research strategy and in other research agencies, such as the German Federal Institute for Vocational Training (Bundesinstitut für Berufsbildung), is that research should anticipate future needs and explore their implications for policy. In this way research serves as a light into future policy.

The Department for Education and Skills background report for the OECD review of English education research and development articulates two underlying themes which guide the department's approach to educational research. These are:

> Better use of the current evidence base and greater investment in a high quality evidence base for the future. (Department for Education and Skills 2002b, p.8)

This 'foresight' dimension, whose role it is to identify future evidence needs, is expressed in the Department for Education and Skills Research Strategy in the following terms:

> Research helps us understand and anticipate emerging issues and challenges and the future environment in which the Department will have to operate. The Department has refocussed its research effort towards meeting the Department's more strategic, longer-term information needs. To tackle these wider issues we need to increase our understanding about the underlying causes of problems and about what works in tackling them.
>
> (Department for Education and Skills 2002a, p.1)

This strategic orientation towards the future is reflected in the priorities of the department's research program and in the department-funded dedicated research centres. These include the National Information and Communication Technology Research Centre, the Centre for Research on the Wider Benefits of Learning and the Evidence for Policy and Practice Information and Co-ordinating Centre.

In the case of Canada, this orientation towards the future is reflected in the strong research interest in open and lifelong learning, and in the role of information and communication technology in extending learning opportunities.[5]

The commitment of the German Federal Institute for Vocational Training centre towards the future is discussed below in terms of the structure of seven research corridors.

The German approach

The nature of the German dual system of VET has meant that the research undertaken by the German Federal Institute for Vocational Training, the national research agency for the sector, has always focused on evidence-based practice. This has resulted, for example, in many pilot projects in related fields directed at building up the knowledge base. The German Federal Institute for Vocational Training orientation towards applied research of this nature has meant that an ongoing interaction between researchers, policy-makers and practitioners has long been a characteristic of the German system. Good examples are provided by the development process associated with implementing qualifications and training regulations.

While this general approach means that Germany has required less change in working towards evidence-based policy and practice than countries such as England and the United States, measures

[5] See Attachment B for an overview of Canadian developments of interest.

have nevertheless been adopted to increase the impact of the German Federal Institute for Vocational Training research. Recent initiatives include the establishment of a unit in the institute to improve VET knowledge management.

Further, the German Federal Institute for Vocational Training research program has been restructured in seven 'research corridors', reflecting the following aspects of knowledge accumulation: objectives, state of the art, current projects, future needs. Because this approach focuses on emerging and future research needs, an ongoing process of relating research to emerging needs has been institutionalised.

General comment

The strong interest in evidence-based policy and practice in both Europe and America is leading to a healthy dialogue on how knowledge accumulates and is applied in education and training. It has also led to a range of practical initiatives directed at building the knowledge base more effectively. A number of these are discussed in the following chapter.

Since the debate is directly relevant to the work of agencies such as the National Centre for Vocational Education Research there are compelling reasons to keep abreast of international developments and to stimulate discussion in Australia in the light of the Australian experience in building the knowledge base in key areas, such as flexible learning, teacher professional development and equity strategies for particular disadvantaged groups like Indigenous people and those with disabilities.

Dissemination and impact strategies

The issues discussed earlier have led to a heightened interest in how the impact of research on policy and practice can be strengthened in the context of the knowledge and learning society. This has led to a questioning of traditional education research and development dissemination strategies and a search for new ways to increase the impact of research. This search has, in turn, provoked a focus on the relationships between research, policy and practice.

The interaction between research, policy and practice has been a persistent theme in the work of the OECD over the decade and is reflected in both the 1995 and 2001–02 cycles of country reviews of educational research and development (OECD 1995a, 1995b, 2002a).

In a paper prepared as background for the 2001–02 reviews of educational research and development, the OECD asserted that there were basically three models which explain the connectivity between research and development activities and educational practice. Two of these are linear models, while the third, the interactive model, has been increasingly favoured over the decade (OECD 2002a, p.4). The models are:

- ✧ the traditional knowledge-driven model whereby fundamental research leads to applied research and development, which in turn leads to application in a linear process
- ✧ the problem-solving model where the problem is formulated by the users (for example, policy-makers) and steers the process
- ✧ the interactive model in which there is a complex pattern of communication and interaction between the parties (researchers, practitioners, policy-makers).

(OECD 2002a, p.4)

The 2000 OECD report, *Knowledge management in the learning society,* advocated the third model as the most effective one for knowledge creation and application (OECD 2000, pp.81–9). This interactive model involves researchers and practitioners in a much tighter partnership whereby they engage in sustained dialogue to design, implement and evaluate research and development with their partners (OECD 2000, p.83).

The interactive model has been seen by the OECD and others (National Research Council 1992) as creating an organic learning system, linking research, policy and practice. It is significant, that, as early as 1992, the American National Research Council was advocating the interactive model as superior to the traditional linear dissemination model as an instrument for educational reform (National Research Council 1992, p.15). Within this concept schools and colleges were seen as learning communities actively engaged in the production of new knowledge in partnership with researchers.

CEDEFOP approach

CEDEFOP has also favoured an interactive approach, its 2002 report on the process of knowledge development asserting that knowledge development was a process of 'interactive and collaborative learning' involving exchanges between the different stakeholders in education (CEDEFOP 2002, p.29). In this way a new role for research in developing knowledge for VET through 'development coalitions' is envisaged (CEDEFOP 2002, p.26).

Like the OECD and the United States bodies discussed above, the CEDEFOP approach is based on a recognition of the relative lack of impact of research on educational practice. Thus the favoured interactive model is seen as a way of bringing research, policy and practice closer together so as to increase the impact of research (CEDEFOP 2002, pp.26–7).

CEDEFOP has sought to foster greater interaction in the research system through projects such as the Research Arena conducted by CEDEFOP (Centre for the Development of Vocational Training's Research Arena). This project is directed at providing opportunities for researchers to collaborate in sharing and developing knowledge about vocational education and training in integrated knowledge development strategies (see <www2.trainingvillage. gr/etv/cedra/>). The Centre for the Development of Vocational Training's Research Arena is discussed below in the context of network strategies.

Strategies to foster interaction and impact

Overall, strategies to encourage greater interaction between stakeholders and to ensure that research exerts a substantially increased impact include the following:

- ✧ building networks that link researchers, policy-makers and practitioners to foster ongoing dialogue
- ✧ dedicated research centres in priority areas of development
- ✧ the use of multiple communication formats and strategies directed at particular audiences
- ✧ linking research directly to policy development processes
- ✧ recognition of the key role of information and communication technology in fostering interaction between stakeholders.

Building networks to foster ongoing dialogue

A good example of this approach is provided by the research network established by the British Educational Communications and Technology Agency which explicitly aims to promote interaction between researchers, policy-makers, teachers and industry. Because the membership of the network spans each of these stakeholder groups the network has the capacity to establish a community of researchers, policy-makers, teachers and employers for an ongoing dialogue (see <www.becta.org.uk/research>).

The European Union with its aim of connecting all schools to research networks by the end of 2002 provides another example. Active network building across national boundaries has been fostered by the European Union through programs such as European Schoolnet and the European Research Area for New Learning Environments which is directed at strengthening the impact of research and e-learning in education and learning.

The Centre for the Development of Vocational Training's Research Arena provides a further example of active network building which enables researchers to collaborate in sharing and developing knowledge about vocational education and training. It aims to embed VET knowledge development in human and social interaction as participants in the Research Arena networks jointly search for a deeper shared understanding of VET practices and needs.

The Centre for the Development of Vocational Training's Research Arena has three strands which give effect to these principles:

- ✧ *Strand one*: sharing information and resources.
- ✧ *Strand two*: thematic knowledge development which focuses mainly on learning strategies and processes.

- *Strand three*: knowledge development methodologies which provide an arena for reflection on research and development methodologies.

(CEDEFOP 2002, p.74-85)

The Centre for the Development of Vocational Training's Research Arena makes extensive use of information and communication technology in building networks. It shares common ground with the Australian National Training Authority (ANTA) program, Reframing the Future, in its assumption that knowledge development is closely related to continuing professional development and learning, with innovation taking place through interaction between ideas and activity (CEDEFOP 2002, p.75).

The VET sector in Australia has built multi-levelled networks through programs such as Flexible Learning Advisory Group (FLAG) and Reframing the Future. These programs have been developed over a number of years and networks through the projects and activities undertaken have been established. A comparative analysis of the lessons learnt from these programs and those of the European Union and its education agencies and programs in building networks to foster ongoing dialogue and knowledge development would prove a valuable exercise.

Role of dedicated research centres

An important aspect of the British Department for Education and Skills strategy to improve the impact of educational research has been to invest in dedicated research centres in strategic areas of development for policy and practice.

Following a recommendation along these lines in the Hillage et al. report, *Excellence in research on schools* (Hillage et al. 1998), the Department for Education and Skills has developed the concept of a dedicated research centre with the following attributes:

- It should focus on a particular area and be cross-institutional and interdisciplinary, drawing on the key researchers in a given field, regardless of where they were located.
- They should involve collaborative teams of researchers from different disciplines and institutions working on a longer-term research program for 3–5 years.
- This sustained work in priority areas should lead to better quality evidence, theoretical advances, as well as shorter-term practical and evaluative research.
- Each centre will serve as a focus for dialogue, involving the full range of stakeholders (for example policy makers, teachers, communities).

(Department for Education and Skills 2002b, p.9)

These principles have been applied in the dedicated research centres funded by the Department for Education and Skills. These include:

- Centre for Research on the Wider Benefits of Learning located at London University (see <www.learningbenefits.net>)
- National Research Centre for ICT in Education, Training and Employment located at the University of Wolverhampton which is supported by a broad consortium of industry linked to the Learning Lab (see <www.learninglab.org.uk>)
- Research Centre on the Economics of Education located at the London School of Economics and involving a consortium which also includes the Institute for Education and Institute for Fiscal Studies (see <www.cee.lse.ac.uk>)
- Adult Basic Skills Research and Development Centre involves a consortium led by the Institute of Education in London and including the Universities of Lancaster, Nottingham, Sheffield and other partners.

The support of dedicated research centres by the Department for Education and Skills has the merit of building networks of researchers and other stakeholders to facilitate an ongoing dialogue in strategic areas of education and training.

Role of multiple communication formats and strategies

The objective of strengthening interaction between research, policy and practice has led to a growth of multiple communication formats and strategies targeted at particular audiences and needs. Overall, this trend is based on the recognition that busy policy-makers and teachers are unlikely to read long research reports but require the implications of key research findings presented in concise, reader-friendly formats. The role of the communication formats in building the evidence base is becoming increasingly important and requires careful consideration.

This trend may be observed in the communication formats adopted by the American National Dissemination Centre for Career and Technical Education and by NCVER. The main communication formats adopted by the American National Dissemination Centre for Career and Technical Education are shown in box 1.

Box 1: National Centre for Career and Technical Information: Spectrum of communication formats

Format	Purpose
In essence: Key findings from National Centre for Career and Technical Education	A one-page summary of relevant findings from studies produced by the National Centre for Career and Technical Education
In brief: Fast facts for policy and practice	A two-page product which succinctly summarises key findings on issues and provides accessible sources for follow-up
Highlight zones: Research at work	Synthesises research findings and other relevant information into practice applications e.g. career clusters, contextual teaching and learning, diversity in the workplace
Exemplary Exchange	The purpose is to identify successful Career and Technical Education programs and to disseminate information on the practices adopted. To date, National Dissemination Centre for Career and Technical Education has identified 22 exemplary and 45 promising secondary and post-secondary programs in 2000–2002. Exemplary and promising programs can be accessed from the National Centre for Career and Technical Education web site (see <http://www.nccte.com>).

NCVER has a similar array of communication formats which are described in a title in the *At a glance* series. The NCVER set of communication products tends to give priority to the *At a glance* series which provides a concise synthesis of research findings somewhat along the lines of the National Centre for Career and Technical Education *Highlighted zone* publications.

However, there is no Australian counterpart to the National Centre for Career and Technical Education Exemplary Exchange communication format. Exemplars and case studies of good practice are becoming increasingly common in programs such as European Schoolnet and Canadian Schoolnet, in fulfilling a benchmarking role in setting standards of good practice. It is likely that exemplars have been developed through programs such as those auspiced by the Flexible Learning Advisory Group and Reframing the Future, and much could be gained through an 'exemplary exchange' coordinated and managed through NCVER.

The question of how NCVER communication formats align with a strategy for building the evidence and knowledge base for vocational education and training is discussed later in this report.

Linking research directly to policy development and review

A further strategy for increasing the impact of research involves linking research directly to policy development and review processes, a practice which occasionally takes place in major policy review exercises as, for example, in the current Commission on Learning of Alberta Learning review of the situation of education in Alberta (see <www.learningcommission.gov.ab.ca>). A good test for Australia will be the way in which research is linked to the new ANTA National Strategy for 2004–2010.

The key role of information and communication technology in fostering communication between stakeholders

The potential for effective interactive strategies linking research, policy and practice has been greatly strengthened by the role of information communication technology (ICT) in facilitating communication between stakeholders. The range of information communication technology-enabled strategies include the provision of information and summaries in websites, the role of email in building interactive networks and communities of practice, and technologies such as videoconferencing. The role of information and communication technologies is likely to increase in the future, as the impact of technology on education intensifies, opening new ways to link research, policy and practice.

Interesting innovations noted in this study whereby information and communication technologies were used to foster interaction between stakeholders include its use made of by the British College for School Leadership. The website of this program provides a number of good practice models in such areas as building online communities, developing the 'knowledge pool' and networking learning processes (see <www.ncsl.org.uk>).

Other strategies

Other innovative strategies in addition to those discussed above, are emerging. An interesting innovation adopted by the British Government Teaching Council is a scheme entitled Research of the Month, which enables research to be interrogated on behalf of practitioners. For each topic selected, a team from the Centre for Using Research and Evidence in Education reviews the research evidence and prepares questions reflecting the perspectives of teachers which are then used to interrogate the research evidence (Department for Education and Skills 2002b, p.21).

General comment

This overview points to an active search across the countries studied to find more effective ways to increase the impact of research on policy and practice by securing a closer and more efficacious interface and interaction between research, policy and practice. This search is central to the role of agencies such as NCVER in the development and management of a knowledge base for VET policy and practice. The final section of this paper provides an overview of key implications for the work of the centre.

Strengthening international links

A further significant theme which emerges from this review of trends in education research and development policy in selected countries is an interest in strengthening international links and exchanges through formal and informal arrangements. In the context of globalisation, the internationalisation of the VET sector is a necessary development which has implications for research as well as for policy and practice.

In the case of European Union countries,[6] strengthening relations and collaboration across the European Union has been an explicit policy towards the goal of European integration. In this way research networks are extended across Europe, at times, in the case of the VET sector, facilitated by the role of CEDEFOP.

However, in addition to formal European Union policies, a range of informal networks have developed which link European countries with countries elsewhere in the world for exchanges of information and ideas, often with a research component built into the exchanges.

The Information Communication Technology League and Asia-Europe Meeting may be taken as examples of such informal networks:

- The *Information and Communication Technology League* links the Nordic countries, Canada, and the Netherlands in an informal network to explore ways to progress policy for information communication technology in education to a third phase of development (Kearns 2002, p.29; Netherlands Ministry of Education, Culture & Science, 2002).
- *Asia-Europe Meeting* is an informal network of European and Asian countries whose aim is to strengthen dialogue and exchanges of experience on ways of promoting lifelong learning. Asia-Europe Meeting activities under the Lifelong Learning initiative have included pilot projects in Asia-Europe Meeting countries (see <www2.trainingvillage.gr/etv/dialogue.asp>).

European countries often build international coalitions for particular projects, for example, the German Federal Institute for Vocational Training comparative project on qualifications development in the electronics business involved three countries in Europe, North America and East Asia. Such projects are rare in VET research.

The report of the OECD review of New Zealand education research and development observed that the geographic isolation of New Zealand reduced 'the level of natural interchange of information, ideas, and people' (OECD 2001, p.6). New Zealand was seen as being disadvantaged compared with a European country of comparable size such as Denmark.

NCVER has been active in concluding memoranda of understanding with overseas agencies as well as with Australian research bodies.[7] While a substantial body of such agreements now exist, the

[6] Britain and Germany in this study.

[7] Memoranda of understanding have been established with the German Federal Institute for Vocational Training, the Central Institute for Vocational and Technical Education, People's Republic of China, CEDEFOP, Colorado Plan Staff College, Korea Research Institute for Vocational Education and Training, Overseas Vocational Training Association, Japan, and the Sourh East Asian Ministers of Education Organisation Regional Centre for Vocational and Technical Education. In addition to these memoranda of understanding, a UNESCO Centre of Excellence agreement has been set up and agreements to exchange publications with a further three bodies in Britain and Italy.

question is how actively have they been implemented in developing the knowledge and evidence base for VET.

While these agreements have been useful in obtaining information on developments in the countries through the exchange of publications, they also contain provision for jointly undertaking VET research, a component which appears to have been less utilised. It is now crucial that memoranda of understanding facilitate the involvement of Australian vocational education and training in international dialogues on strategically important issues relevant to its future in order that larger international input to the growing knowledge and evidence base for VET is realised.

Building the knowledge and evidence base for VET policy and practice should take account of the experience and knowledge of other countries. In this way an international input into key areas of policy development will be seen as normal practice in the context of the globalised knowledge society, a requirement recognised by the British Department for Education and Skills in its research strategy (Department for Education and Skills 2002a, p.3).

NCVER is well placed to advance this objective in its work through the use of existing agreements and a strengthening of its links with research agencies and departments in comparable countries. These links can subsequently be used to build collaborative initiatives and partnerships and an ongoing dialogue in key areas of development.

One area where this process could be initiated is the use of information and communication technology in vocational education and training (including flexible learning). During the recent international study of policy relating to the use of information communication technology in education undertaken for the Australian Department of Education, Science and Training (Kearns 2002) by the author of this paper, interest was expressed by the British Department for Education and Skills in establishing an ongoing dialogue with Australia in this field.

The Department for Education and Skills now funds a national research centre for information communication technology in education, training and employment which would provide a focal point for such exchanges. The United States Department of Education may also be interested in participating in an international network through its Office for Educational Technology. The opportunities for establishing an informal network between Britain, Australia and the United States for an ongoing dialogue on information communication technology in education and training would be worth pursuing. The option of a further link to the Information Communication Technology League could also be examined.

Building an international dialogue in a number of key policy areas could bring substantial benefits to Australian VET. However, there is also the question of building an internationalised culture in vocational education and training through a heightened awareness of international developments. This will require an ongoing communication strategy.

NCVER could also contribute in this area by preparing and circulating regularly an international report, perhaps quarterly, which provides news for the VET community on key international developments, as well as thematic and country reports designed to advance the VET knowledge base on international developments. Such a report could be prepared either within NCVER or outsourced to an appropriate expert, institution or organisation.

Implications for the National Centre for Vocational Education Research

Over the past decade NCVER has demonstrated that it is a responsive agency in the way it has readily adapted to shifts in the environment of its work. Moreover, there has been considerable change as well as a number of significant developments in the work of the centre since the Kearns and Papadopoulos report on the organisation and management of VET research in 1992. These developments have included a strengthening of NCVER's role in the dissemination of research information, through a range of communication products and formats, with a recent development being the establishment of the position of manager in product development and innovation in the senior management of the centre.

Nevertheless, the three themes discussed in this paper have significant implications for the further expansion of NCVER's role in building the knowledge and evidence base for VET policy and practice, and in achieving a strengthened interface and interaction between research, policy and practice in the context of the global knowledge economy with its pressures for innovation, learning, and higher skill levels.

While the NCVER role in the management of the VET research effort will continue to be significant, the imperatives of this environment place an enhanced significance on the leadership role of this organisation—in partnership with ANTA and others—in building the VET knowledge and evidence base as well as strengthening its impact on VET policy and practice.

This role involves a recognition of the crucial distinction between information and knowledge discussed in this paper, a distinction central to strategies for improving the interface between research, policy and practice. Thus NCVER should progress further in its communication strategies beyond a linear information dissemination concept[8] to embrace interactive knowledge management strategies, as illustrated by the CEDEFOP models discussed earlier, with feedback loops drawing on ongoing process of knowledge accumulation. This ongoing cycle of knowledge accumulation and application will, in turn, serve to drive a process of continuous innovation in VET and build the necessary culture and underpinning values to support these developments.

Recent major initiatives in VET, such as initiatives undertaken through the auspices of the Flexible Learning Advisory Group (FLAG) and Reframing the Future, have accumulated a good deal of experience in network building that links research, policy and practice and which has the potential to be incorporated into planning for strengthening NCVER's research role during 2004–2010.

The thrust of the themes discussed in this paper may be summed up in terms of future directions for NCVER by the following:

- ✧ Accumulating and applying the knowledge and evidence base for VET policy and practice.
- ✧ Developing a strengthened interface and interaction between research, policy and practice.
- ✧ Promoting a greater involvement in future-orientated studies that build a high-quality evidence base for future policy so that issues are identified at an early stage as a basis for policy responses.

[8] The title of a 2001 NCVER publication, *At a glance* (*Developing the vocational education and training sector through better information*) suggests that NCVER's role is still seen in terms of information dissemination rather than knowledge development and management.

- ✧ Fostering 'boundary cross-over research' and partnerships so that VET policy and research is aligned more strategically with significant developments in related sectors, for example, the sustainability of rural and regional communities.
- ✧ Strengthening ongoing international links for VET, including Australian participation in international dialogues and networks addressing key strategic issues for the sector, so as to strengthen an international input into building the Australian VET knowledge evidence base.

The cumulative impact of these directions will involve a refocusing of the VET research effort and the NCVER role over the period of the next ANTA national strategy (2004–2010)—similar to the refocusing of the research effort of the British Department for Education and Skills on 'meeting the Department's more strategic, longer-term information needs' (Department for Education and Skills 2002a, p.1; Department for Education and Skills 2002b, p.8)[9]. This change in direction has already taken place in the European Union with CEDEFOP and also appears likely in the United States with the establishment of the new Institute for Education Sciences within the Department of Education under the terms of the 2002 Education Sciences Reform Act.

Such a refocusing will bring a stronger research effort to support the key objectives of the ANTA national strategy for 2004–2010 and will be especially significant if the period 2004–2010 is seen as one of major transition for the VET sector in response to the conditions and imperatives of the global knowledge economy with its pressures for lifelong learning, enterprise and innovation, maintaining employability for the workforce and the provision of creative knowledge workers for business and industry.[10] This perspective brings with it a compelling case for strengthening the research role in guiding policy and practice, including consideration of resource implications, in the light of the low investment in research of the education sector compared to similar sectors.

Research in the knowledge accumulation process

The shift from a linear information dissemination process to an interactive knowledge accumulation and management paradigm brings with it a requirement to clarify how knowledge accumulates in the VET sector and influences practice. This core requirement will require systematic analysis and reflection by NCVER, ANTA, policy-makers and practitioners and other stakeholders in the Australian VET system.

This is also an area where international experience will be useful in the context of the strong interest—in Europe and North America—in the three themes discussed in this paper. Reports such as *Knowledge management in the learning society* published by the OECD in 2000, OECD education research and development reviews as well as the CEDEFOP publication, *Taking steps towards the knowledge society: Reflections on the process of knowledge development* provide useful insights for the process of evaluating Australian experiences.

It could be anticipated that action in the United States through the work of the new Institute for Education Sciences within the Department of Education in furthering an evidence-based approach to education policy and practice will be of interest to the Australian VET sector.

In building a framework for a knowledge and evidence-based approach to VET policy and practice, NCVER will need to work with a range of partners, including ANTA, state and territory agencies, industry, communities and other stakeholders. The value of network building, which links research, policy and practice through major programs such as those conducted by the Flexible Learning Advisory Group and Reframing the Future, is one of the lessons of recent years where relationships

[9] The Department for Education and Skills shift in its research effort is also described in terms of two underlying themes: better use of the current research base, and greater investment in a higher quality evidence base for the future (Department for Education and Skills 2002b, p.8).

[10] See Florida 2002 for a useful outline of the case for creative knowledge workers and the implications of the rise of 'the creative class'.

between NCVER and other networks could be strengthened. The value of such networks in bridging the cultural divides between research, policy and practice has been demonstrated and is a lesson to be promoted in strategic planning activities for 2004–2010.

Network building of this nature affords a proper recognition to the significance of tacit knowledge residing within the experience of practitioners, recognition as an integral component in building a knowledge base for VET. If these networks are regarded as communities of practice (or learning communities), the research role in adding value to the activities of these networks can be enhanced. Recent steps taken to link NCVER's role with the Flexible Learning Advisory Group point the way to sound practice in building the knowledge base for VET.

National Centre for Vocational Education Research role in knowledge accumulation

The shift from a linear information dissemination paradigm to an interactive knowledge accumulation paradigm has significant implications for NCVER communication strategies. While the centre has already taken some steps in this direction through its approach in the *At a glance* series and other communication formats, there is some evidence which suggests that more could be undertaken, particularly if further resources were available to support this critically important NCVER function.

If the focus is on knowledge accumulation and management rather than information dissemination, a framework for NCVER activity along the following lines could be developed. If a framework along the lines suggested above were adopted by NCVER, the Scientific Principles for Education Research developed by the American National Research Council could be incorporated in the framework.[11]

Primary stage of communication

Information on individual reports is provided through summaries, news items etc.

Intermediate stage and feedback loops

The intermediate stage would take the knowledge accumulation process a stage further through communication formats such as discussion papers, synthesis publications of various kinds which range over research in a selected field, and models and exemplars which appear to provide evidence of good practice. Formats such as the Exemplary Exchange of the American Career and Technical Education Centre would have value at this stage.

This stage may be seen as a formulation of *prima facie* evidence which requires further discussion and testing. A primary purpose would be to secure feedback from policy-makers and practitioners. Methods such as forums and seminars would provide a useful complement to print formats.

The intermediate stage would provide for enhanced mediation and translation between researchers and practitioners. This stage may be seen as the stage of collaborative learning, in terms of the CEDEFOP model given earlier in this paper, leading to the co-development of new knowledge.

In securing a lively interaction between researchers, policy-makers and practitioners in this stage of knowledge development, consideration might be given to some of the strategies being adopted commercially to build knowledge, such as knowledge exchange through marketplaces and knowledge fairs (Davenport & Prusak, pp.46–7).

[11] These principles are set out earlier in this report.

Electronic knowledge markets such as the internet, intranet discussion groups and groupware discussion databases function in somewhat similar ways to commercial electronic shopping and empower consumers (practitioners and policy-makers). The innovative models adopted by the British National College for School Leadership are discussed earlier.

Where networks such as Flexible Learning Advisory Group and Reframing the Future exist, it would be valuable to secure their feedback in refining the knowledge base which has been tested and extended through this intermediate stage in the knowledge and evidence accumulation process.

State and territory VET agencies and institutions could also be active contributors to this process of testing and applying research evidence at this intermediate stage of development. In some cases, feedback will point to the need for further research on particular aspects. The idea of 'theme teams' at NCVER accords well with this approach.

Mature stage of evidence building

The mature stage of evidence building will follow the intermediate stage of feedback and testing and should lead to concise NCVER summaries along the lines of *At a glance*. At present however, *At a glance* appears to serve both intermediate and mature stage functions and it might be desirable to rename this publication to make clear its purpose. If an intermediate stage of evidence building is recognised as relevant and useful in the work of NCVER, then appropriate designations and devices such as colour coding might be adopted to clarify the purpose.

An approach along these lines could provide a systematic means for building the evidence base for VET policy and practice during the period of the ANTA 2004–2010 national strategy with an evidence-building process applied in each of the priority goal areas of the national strategy. Formulations of the evidence base in each of the priority goal areas would have considerable value.

Focal areas for evidence building

In recent years the VET system has moved to some extent in recognising the value of focal areas in the process of knowledge and evidence accumulation. Major network programs such as Flexible Learning Advisory Group and Reframing the Future provide examples here. However, this process could be taken further in a coordinated systematic approach to knowledge accumulation and management in VET.

As noted previously the priority objectives of the ANTA national strategy for 2004–2010 could point to key focal areas for evidence building over that period. Draft aims built into the *Shaping our future: Discussion starter* (ANTA 2003) suggest possible key focal areas. These include:

- ✧ supporting communities
- ✧ enabling individuals to learn throughout life.

The British Department for Education and Skills recognises the role of key focal areas in its research strategy, with focal areas in some cases advanced through the role of a dedicated research centre such as the National Centre for Information Communication Technology in Education, the Centre for Research on the Wider Benefits of Learning and the National Research and Development Centre for Basic Skills.

Australian dedicated research centres could play a similar role as focal points for knowledge and evidence accumulation.

Cross-sectoral links

The current British education research strategy recognises the significance of cross-sectoral links in building the knowledge and evidence base for education policy and practice. This includes both links across the sectors of education and training and links between educational research and research in other sectors of social and economic development. An objective for vocational education and training such as *supporting communities* will, by its nature, include a requirement to link VET research to policy and research in a broad spectrum of social and economic areas.

In the case of British policy, cross-sectoral strategies include both the development of a common database (Current Educational Research, United Kingdom) serving all education sectors and the role of bodies, such as the National Educational Research Forum, which provide advice on education research across all sectors.

The conditions of the global knowledge society result in cross-sectoral linkages becoming increasingly important in progressing towards whole-of-government/whole-of-community responses. Increasingly the purview of NCVER will need to extend increasingly beyond VET sector in forging necessary links to build more comprehensive cross-sectoral perspectives. Links with other research agencies (such as the Australian Council for Educational Research), joint projects, and strengthened international links can all play a role in this broadened vision and role.

The area of *supporting communities* (or *the vocational education and training role in sustainable communities*) provides an opportunity to work towards a broadened framework for VET research in creative ways, building on the Australian experience to date (and international experience) with learning communities. Establishing the current knowledge base would be a necessary initial step.

General comment

NCVER, like all research agencies discussed in this paper, is subject to growing pressures to strengthen the impact of research on policy and practice. Responses discussed in this paper to the so-called 'crisis of confidence' in education research demonstrate a number of strategic shifts in the research role in building the knowledge and evidence base for education policy and practice and for achieving an improved interface and greater interaction between research, policy and practice.

While NCVER has already taken steps to strengthen its work in addressing these issues, the international experience discussed in this paper suggests that this action could be taken further—in partnership with ANTA and other stakeholders.

Planning for the VET national strategy for 2004–2010 affords an opportunity to reconsider the research role, and the role of NCVER in advancing the priority objectives of the agreed strategy. The internationally recognised requirement for evidence-based policy and practice in a world of constant change carries with it an imperative to strengthen the research role within the sector and to build more effective bridges between research, policy and practice. This is a central challenge for the VET sector in planning for the 2004–2010 national strategy.

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Attachment A

Some useful web addresses

Britain

Department for Education and Skills Research	<http://www.dfes.gov.uk/research>
National Education Research Forum	<http://www.nerf.uk.org>
British Educational Communication & Technology Agency research (Becta)	<http://www.becta.org.uk/research>
Current Educational Research, United Kingdom (CERUK)[12]	<http://195.194.2.100/infoservice/ceruk.asp>
Learning & Skills Research Centre	<http://www.lsrc.ac.uk>
Centre for Research on Wider Benefits of Learning	<http://www.learningbenefits.net/home/htm>
National Information Communication Technology Research Centre	<http://www.learninglab.org.uk/stm/nrc>

Canada

See Attachment B over

European Union

European Centre for the Development of Vocational Training	<http://www.cedefop.eu.int>
European Training Village (ETV)	<http://www2.trainingvillage.gr>
CEDEFOP Research Arena (CEDRA)	<http://www2.trainingvillage.gr/etv/cedra>

Germany

Bundesinstitut für Berufsbildung (BIBB)	<http://www.bibb.de>
Organisation for Economic Co-operation and Development (OECD)	<http://www.oecd.org>
Centre for Educational Research and Innovation	<http://www.oecd.org>

United States

National Research Centre for Career & Technical Education	<http://www.nccte.org>
National Dissemination Centre for Career & Technical Education	<http://www.nccte.org>
Institute for Education Sciences, United States Department of Education	<http://www.ed.gov/offices/IES>

[12] Research database serving all sectors of education and training.

Attachment B

Canadian web addresses

There is no federal education power under the Canadian constitution so that there is no federal education agency or education research agency. However, several Canadian departments administer education programs with research components built into these programs.

These departments include the following:

- ✧ Industry Canada which administers Canadian Schoolnet
- ✧ Human Resources Department Canada which established an Office of Learning Technologies (OLT) in 1996 to contribute to building a centre of lifelong learning
- ✧ Statistics Canada which has supported the Council of Ministers of Education Canada (CMEC) in some areas of educational research.

In the absence of a federal agency, the Council of Ministers of Education Canada has initiated and administered several education research programs.

- ✧ The Pan-Canadian Education Research Agenda (PCERA) is designed to bring interprovincial/ territorial research issues to the attention of the research community. The Pan-Canadian Education Research Agenda operates with seven themes as research priorities.
- ✧ The Government Education Research Network (GERN) operates as a website to make research conducted by provincial/territorial governments more accessible to the public and other users.

In September 2002 the Canadian Government announced that a Canadian Learning Institute will be established to promote learning and skills for the knowledge society.

Against this background, useful web addresses for Canadian education research include the following:

Pan-Canadian Education Research Agenda (PCERA)	<http://www.cmec.ca/stats/pcera/indexe.asp>
Government Education Research Network (GERN)	<http://www.cmec.ca/gern/indexe.asp>
UNEVOC-Canada (Canadian Centre for UNESCO's International Network on Technical & Vocational Education)	<http://www.umanitoba.ca/outreach/unevoc/index.shtml>
Statistics Canada	<http://www.statcan.ca>
Canadian Schoolnet	<http://www.schoolnet.ca>
education @ canada (CMEC)	<http://www.educationcanada.cmec.ca>
Smart Communities	<http://www.smartcommunities.ic.gc.ca>
Office of Learning Technologies (OLT)	
Alberta Learning Commission on Learning	<http://www.learningcommission.gov.ab.ca>
Canadian Vocational Association (CVA)	<http://www.cva.ca>
Canadian Alliance of Education & Training Organisations (CAETO)	<http://www.caeto.ca>
Association of Canadian Community Colleges	<http://www.accc.ca>



The National Centre for Vocational Education Research is Australia's primary research and development organisation in the field of vocational education and training.

NCVER undertakes and manages research programs and monitors the performance of Australia's training system.

NCVER provides a range of information aimed at improving the quality of training at all levels.

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