



Vocational
education in
schools



REVIEW OF RESEARCH

Robin Ryan



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ii

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Contents

Executive summary 1

Context 3

- literature
- policy climate
- expectations

Developments 7

- programs
- pathways and objectives

Evaluations 10

Learning from work 13

- students and participation
- resources and logistics

Findings and directions for further research 19

References 22

iii



Executive summary

DURING THE 1980S AND 1990S, sustained increases in youth unemployment and a general perception that the transition from education to employment and adult roles has become more hazardous for young people, have caused a range of the Organisation for Economic Co-operation and Development (OECD) countries to redefine education policy with a sharper vocational focus.

Australia is one of a small group of countries where completion of general secondary education remains the principal pathway to employment and training. Accordingly, the policy challenge has been to develop the vocational dimension of secondary education for an increasingly diverse student cohort within the framework of traditional certification and accreditation structures.

Policy-relevant findings from the research literature indicate that:

- ❖ Australian students, employers and parents have chosen to focus primarily on school-based, general education as the principal pathway to employment and adult life.
- ❖ Education which includes exposure to real work in real workplaces is highly valued by students and can greatly enhance the acquisition of the skills sought in general education.
- ❖ The work-based education which works best is that which results from genuine partnerships and networking at local level.
- ❖ Ways must be found for system and national support for local initiatives in accreditation and articulation, resourcing, monitoring, information provision and policy coherence without diminishing local enthusiasm and control.
- ❖ Integration of vocational and general education and of institution-based and workplace initiatives remains poor.
- ❖ The transfer of knowledge required by an integration philosophy will not take place spontaneously or because general and specific skills are both described as 'competencies'. Sustained effort and support is required to effect transference.

- ❖ Vocational education remains limited by the conception that it is for lower achieving students. At the same time, many pilot VET schemes rely on selectivity to achieve their objectives, while few possibilities of vocational education for disadvantaged or at-risk students have been exploited.
- ❖ Effective vocational education is extremely resource intensive and requires fundamental changes to schools' cultures and organisation. The incompatibility between traditional teaching cultures and those supportive of work-related learning need to be addressed by appropriate professional and organisational development strategies.
- ❖ Professional development requirements represent one of the major costs of work-related education. The resource challenge goes beyond funding. Committed personnel and appropriately innovative program designs will also be in short supply.

Literature

HERE IS A SUBSTANTIAL body of literature on vocational education in schools but, while extensive, it is characterised more by pamphlets, pronouncements, manifestos and ministerial statements than by research findings, even in the broadest sense of the term. However, sufficient material of substance exists to identify some firm conclusions and a range of emerging issues.

It is evident from the literature that vocational education has emerged (once more) as a key issue for educational policy, with resonance in the wider community. As often occurs, there is a need for policy makers to act in advance of a complete knowledge base. It is desirable, therefore, to pause to take stock of developments and to place them in a context provided by research.

Policy climate

One of the most extensively researched areas in the field concerns the pressures and motivations for increased attention to the vocational dimension of education. The trends involved have been observed world-wide. As an OECD administrator points out:

In the late 1970s and in the 1980s, most OECD countries experienced the following trends: profound technological and organisational change in many workplaces, unprecedented levels of youth unemployment and rapidly increasing participation in post-compulsory education. (Conyer 1993, p.66)

3

These ingredients have been summarised in the Australian context by Keating (Keating 1995), who points to dramatic change in the last decade. Retention rates to Year 12 have more than doubled, while full-time employment opportunities for teenagers have reduced significantly; higher education participation has grown substantially, while participation in vocational education has not. At the same time, how people participate in employment and the organisation of workplaces has changed dramatically under the impact of new technologies and in the globalisation of the economy (Keating 1995).

It is evident that the driving force in educational reform in Australia and elsewhere since the late 1970s has been the inability of policy to cope with a seemingly implacable rise in youth unemployment rates, in sharp contrast to the optimistic pursuit of social equity which marked educational innovation in the 1960s and early 1970s (Papadopolous 1994). In Australia, this has resulted in a series of public inquiries from the first School to Work transition task force in 1976 (Milligan 1976), to the Australian Education Council's *Review of young people's participation in post-compulsory education* (Finn 1991).

Initial policy responses tended to stress specific vocational instruction in a track completely separate from general educational provision. White's research has pointed to considerable similarities in the public policy response to youth unemployment, involving vocationally oriented reforms to the school curriculum, in the 1890s, 1930s and 1990s (White 1995).

Throughout the OECD, and certainly in Australia, there was initially a concentration on quantitative reform, with targets set for youth participation in education (Conyer 1993) and an emphasis on vocational education to compensate for the perceived failings of the traditional academic curriculum (Papadopolous 1994). However, just as too sharp a division of secondary education into vocational and academic streams was resisted by educators in the 1930s (White 1995), the trend in OECD countries since the emergence of renewed interest in vocational education in the 1980s has been to avoid streaming of this kind.

The early conscription of children and young teenagers into low status vocational programmes is becoming more and more anachronistic in the modern industrial state. (McFarland & Vickers 1994, p.15)

This reluctance to base policy prescriptions on too narrow a view of education has been reinforced in Australia by the clear preference of students and their parents for general education as the primary educational pathway. This is evident in participation data which show that the Australian community has firmly committed itself to school completion as the basis of education policy. From the mid 1980s, apparent Year 12 retention increased from 58 per cent to 77 per cent, before slipping back to 75 per cent in 1995 (Burke 1995, p.37). Post-school vocational education has continued to prove relatively unattractive to teenagers (Sweet 1993; Taylor 1996).

Policy-makers have thus been faced with a definitive view from the Australian community that policy options to smooth the transition of school leavers to adult life roles, and to lay the foundations of employability, must be applied primarily in the context of secondary education. Schools are correspondingly faced with a much greater diversity of students, in ability, motivation and interests.

As McGaw points out, though, this should not be contrasted with a largely mythical past when senior secondary education was primarily designed for those intending university entry: even when only 15 per cent of the cohort completed secondary education, a mere third progressed to university (McGaw 1996, p.98).

Despite what the OECD has termed the 'crisis in vocational and technical education' (OECD 1994, p.9), it is widely accepted that vocational education must be one of the options adopted to provide a satisfactory experience and outcome for young people in secondary education, including the quarter who presently leave before completing Year 12. Equally, a consensus has been developing that the primary role of work based education is in support of general education (ASTF 1996).

Australia's recent experience has been in many ways typical. As McGaw points out:

Some Australian systems started down this path of differential provision . . . when it proved difficult to achieve curriculum reform within the established Year 11–12 structure. None, however, was willing to abandon the established Australian preference for comprehensive secondary schooling. (McGaw 1996)

5

Most Australian policy-makers would probably support the OECD's twin goals of integrating vocational with general education and school with work-based learning. As always, the crucial question is how this is to be achieved. While no simple, and certainly no low-cost, solution has emerged, a body of research exists which points to some likely effective directions for policy.

Expectations

An area which has received some attention from researchers and policy makers concerns expectations which students and employers have of the educational

system as a path to employment. The evidence available supports the general policy emphasis on school completion and achievement in general education. It is clear that vocational education and work experience is highly valued by students (Chapman 1993; Schools Council 1994; 1995; Hannan et al. 1995). However, it is also clear that students perceive higher education as a more rewarding objective than vocational, with university preferred to TAFE by an almost two-to-one margin (Chapman and Smallwood 1992), although ironically there is an emerging trend for graduates subsequently to seek articulation to TAFE qualifications (Werner 1997)

While student preferences, especially for courses leading to higher education, to some degree rationally reflect the rewards of various kinds of training, the expectations of those intending early workforce entry are frequently erroneous. Surveys of students' job expectations contrast sharply and unfavourably with labour force outcomes (DETAFFE 1993).

There is a body of research evidence which suggests that employers have a clearer idea of what they prefer from the education system. Overwhelmingly, the preference is for general skills, such as those intended by the Mayer key competencies (Mayer 1992), rather than specific vocational training (Schools Council 1994; DETAFE/DECS 1994). Employers also value attitudinal and personal skills and some specify preferred academic subjects (Amy Longshaw & Associates 1996) although the Schools Council believes that with greater exposure, employers would favour some vocational and work experience subjects in the school curriculum (Schools Council 1994).

Developments

Programs

SINCE THE 1970s, and at an accelerating pace in the later 1980s and 1990s, Australian school systems and individual schools have embarked on a wide-ranging set of experiments in what may be broadly described as work-related education. It is virtually impossible to collate numbers of participants, largely because of difficulties in definition as well as the simple non-availability of data for many short, school-developed initiatives. Moreover, data at system level, for example in relation to dual accredited programs, frequently describe the availability of programs, rather than actual take-up by students.

The picture is clearer for work-experience programs surveyed by the Australian Student Traineeship Foundation in 1995. Their evidence suggests that while many students participate in programs giving a slight exposure to the world of work, very few experience programs offering extended industry experience. The 1995 survey identified:

1065 school/industry programs, but only three per cent of participants were in programs exceeding 20 days in the workplace. (ASTF 1996)

Extensive descriptions of actual programs are provided in the National Centre for Vocational Education Research's supporting material for its unpublished evaluation of Australian Vocational Training System (AVTS) pilots (NCVER 1994) and in the Compendium of Good Practice which accompanied the Schools Council's study of the role of vocational education in schools (Golding 1995).

The Curriculum Corporation, in a survey of developments (Curriculum Corporation 1994), pointed to six major innovations since the 1970s:

- ❖ work-experience programs
- ❖ school–industry link programs
- ❖ funding of specific vocational initiatives (e.g. PEP, AVTS)

- ❖ development of co-operative programs with TAFE
- ❖ integration of employment-related competencies into existing curricula
- ❖ formal career education

The corporation argues that the various approaches tend not to be coordinated and are usually not integrated into the mainstream curriculum. Attempts to create a more vocationally relevant curriculum since the late 1970s

seem only to have created a system in which the academic curriculum has remained central while vocational options have been added in a piecemeal way.
(Curriculum Corporation 1994, p.14)

Although there have been few programs for the most disadvantaged students, a major issue has been the identification of vocational programs with lower achieving students (Curriculum Corporation 1994).

Pathways and objectives

The flavour of current programs around the nation is given in a monograph by Keating, which identifies 'typical' programs (Keating 1995). For example:

- ❖ joint school–TAFE programs in NSW, which provide students with a Higher School Certificate (HSC) and a TAFE Certificate in several industry areas
- ❖ 'Pathways' in Western Australia, which give students access to accredited programs in broadly defined vocational areas and includes accredited VET curriculum
- ❖ the Engineering Careers Pathway in South Australia, which allows credit transfer from schools into TAFE National Metals and Engineering Curriculum
- ❖ E (Employment) courses in the ACT, which offer students courses using industry competency standards
- ❖ dual recognition in Victoria, which allows students to gain both a VCE and a certificate of training in a number of industry areas
- ❖ co-operative programs with TAFE, which involve 70 000 students annually in Queensland
- ❖ NT programs, which integrate elements of the school certificate and TAFE certificates

- ❖ the Tasmanian Certificate of Education, which provides a range of credit transfer arrangements into TAFE courses

Recently, there has been a shift of emphasis from simply expanding the over-crowded curriculum with dual accredited subjects towards a view of work experience as a learning vehicle in its own right. There is now a more vigorous attempt to develop curricula which utilise the unique instructional power of learning in natural settings.

The Australian Student Traineeship Foundation promotes activities in which structured learning in the workplace is viewed as a way of enhancing classroom education and in motivating learners, particularly those at risk of discontinuing. The foundation argues that the emerging consensus is that the primary purpose of structured workplace learning is to improve general educational outcomes and that the challenge is to develop school-industry programs with such consequences as an intention rather than a by-product (ASTF 1996, p.4).

Possibly the best known scheme along these lines is the TRAC program (originally, 'training in retail and commerce'). Because of its association with the Dusseldorp Skills Foundation, TRAC has the benefit of being grounded in contemporary research findings about learning-in-context and encourages evaluation of outcomes.

Evaluations

SCHARASCHKIN'S FINDINGS ON Tasmanian TRAC programs exemplify what research would expect from a successful program: it was found that this learning mode resulted in students acquiring knowledge and skills that:

- ❖ *were both generic and specific*
- ❖ *derived from both reflection and action*
- ❖ *integrate theory and practice*
- ❖ *are of both enduring and immediate value*

(Sweet 1995, 20; Scharaschkin 1995)

A range of other programs has been subject to various forms of evaluation. For example, the unpublished NCVET evaluations of AVTS pilots included a variety of school-based programs. The outcomes of these experiences seem to typify many work-related school programs.

Generally speaking, narrowly specified objectives were achieved, particularly student achievement of ASF level 1 competencies. Few schools attempted higher levels and indications were that the time required to achieve vocational competencies had been greatly underestimated for school students. Projects succeeded in producing a new range of pathways for students, with many schools emerging as vocational providers rather than using TAFE services and significant benefits in local networking with industry were reported (NCVER 1994).

On the debit side, problems were experienced in attempting flexible delivery, with few self-paced learning materials available. There was little use of recognition of prior learning (RPL) and credit transfer remained uncertain. At least in part this stemmed from complaints about the bureaucratic nature of the national framework. Assessment was also a major concern and schools experienced substantial logistical difficulties. Above all, attempts to integrate on and off-the-job training were only partially successful (NCVER 1994).

Many of the same issues were described in Scharaschkin's evaluation of an Office Skills project based in a Hobart secondary college but aimed at students who had left school (Scharaschkin 1995). Scharaschkin found that some of the attributes identified in the contemporaneous TRAC program were achieved in the AVTS pilot, but that integration of on- and off-the-job learning and collaboration between school and industry partners were more difficult to achieve and the learning outcomes were more narrowly focussed (as intended by the program) (Scharaschkin 1995).

The Schools Council's review of programs indicated that the availability of more diverse pathways has led to beneficial employment outcomes but that a danger exists of students being locked into narrow tracks. Credit transfer arrangements to TAFE were described as immensely clumsy, and dual accreditation, while an admirable attempt to allow students to keep options open, by its very existence indicated a need to bridge two separate sets of curricula and certification arrangements (Schools Council 1994).

A useful balance to broadly based evaluations is provided by Grosse's ethnographic study of three Tasmanian experiments—a TRAC program, an AVTS pilot and a three-week work placement (Grosse 1993). This study highlighted the conflicting expectations experienced by students and the depth of the cultural differences between schools and workplaces. On the other hand, there were real benefits in developing local networks and in the commitment demonstrated by businesses and union representatives as well as by teachers and school administrators.

Difficulties were experienced in transferring knowledge both ways, between schools and workplaces, but genuine learning occurred:

It was the 'realness' of the experience in work placements that captivated students. The theoretical learning began to make sense when the students were able to apply the theory. (Grosse 1993, p.31)

The 1994 and 1995 TRAC follow-up surveys indicated measurable benefits in access to employment and further study by participants (Sweet 1995) as well as personal development and learning outcomes. Sweet quotes research in the United States to indicate the most successful work-related education schemes are those built up by local initiative and this conclusion is supported by the Australian evidence (ASTF 1996; Schools Council 1994; NCVET 1994).

At the same time, it seems clear that an important role remains to be played at system and even national level by legitimising and resourcing local initiatives, providing backing in accreditation and professional development and generally by increasing coherence in initiatives and enhancing information flows to all parties (Schools Council 1994).

A further role for central policy lies in ensuring that local initiatives retain the concept of equal partnership. While schools have frequently failed to recognise the needs of industry, schemes which are fully 'industry led' tend to produce poor outcomes, as peak industry bodies acknowledged in the case of the British Youth Training initiative (Vickers 1994). Both parties have expertise to contribute and, as the OECD argues, to be educationally successful, linkage must be driven by pedagogical objectives (Conyer 1993).

Learning from work

THERE IS NOW A substantial body of research which supports the value of learning at and from work, not simply for the vocational skills it imparts, but for its contribution to general education. The study of learning in natural settings was a matter of scholarly interest in the 1930s but interest waned until a revival in the 1980s. Increasingly, emphasis has focussed on authentic activity and sited cognition, in which the environment provides the tools needed by the learner (Billett 1992).

Sweet suggests that the research demonstrates that flows exist from problem solving to understanding of basic principles, that learning about abstract thought and symbolic manipulation follows from teaching meaningful practical contents and that work based problem solving involves a combination of social, technological, material and symbolic resources (Sweet 1993).

Much of this research is based on studies of how expert behaviour is developed. These studies show that context-specific knowledge is crucial to the expert's use of skills (Golding et al. 1996; Misko 1995). Experts draw on a variety of cues from their environment and studies of expert-novice differences place great emphasis on domain-specific knowledge of the expert (Billett 1992).

The consensus of US-research on school-based vocational education is that vocational education can enhance academic skills of all students if given clear and sustained attention. Vocational education can also impact on at-risk students, but only as part of a comprehensive array of services. However, in all cases, sustained efforts are required if vocational curricula are used to teach higher-order thinking skills (Copa & Bentley 1992).

What is evident from the literature is that achieving transfer of knowledge and skills from work settings to school and school to workplaces is an extremely complex task. In Australia, policy-makers have relied on the concept of competencies as the basis for their assumption that there is an essential identity between skills learned in one environment and those in another. It has been assumed that vocationally specific education can be used to teach core or generic skills, such as those described in the Mayer report.

This is an imprudent assumption in the face of a substantial body of work describing the complexity of knowledge transfer (Misko 1995). Research on the skills gained through learning vocational competencies by the Flinders Institute for the Study of Teaching on behalf of the South Australian Department for Employment, Training and Further Education emphasises that the way skills are acquired is linked to specific industry contexts and there is no 'royal road' to widespread transference (Hattam and Lawson 1996).

Misko's survey of research points out that transfer cannot be expected to occur spontaneously and that it is essential that explicit provision be made for the teaching of skills transfer (Misko 1995). Clearly this has considerable implications for the types of programs offered in schools and for the resources required to underpin them. It may also help explain continuing difficulties in assessment, accreditation and articulation among sectors, despite considerable improvements in central accreditation machinery and the formal delineation of intersectoral pathways (Schools Council 1994; Curriculum Corporation 1994; Weller 1995).

The difficulties which have arisen in securing the transfer of knowledge and skills from one environment to another may be a cause of the tensions which have emerged between schools' and industry-based assessment systems. Many would argue that it would be as unwise to allow school education to be dominated by industrial assessment standards as it has been by university entrance requirements. Moreover, secondary education systems have in recent years made significant advances in forms of authentic assessment, which can effectively identify competences acquired without distorting broader educational objectives (Afrassa 1995).

Students and participation

It is difficult to find systematic data on which students participate in vocational education and work-based education and on how they are selected. In relation to work placement, it seems that while there are many programs, their impact has been lessened because either only a few students are involved in extended programs, or many students take part in very brief programs (Ainley & Fleming 1996).

More should be known about the experience of students in work experience placements after the publication of a survey of 120 000 students in Years 11 and

12 by Richard Tease in an AN TARAC-funded project (forthcoming 1997). A second AN TARAC-supported project, currently under way by Jennifer Angwin and collaborators, will examine VET provision for disadvantaged groups, including pathways from school to VET.

The Curriculum Corporation described as a major issue the fact that vocational education remains identified with lower-achieving students (Curriculum Corporation 1994) and the Schools Council is concerned that very little progress has been made to diminish the general-versus-vocational education divide (Schools Council 1994).

The Curriculum Corporation makes the point that, unlike the US and some other countries, the argument is seldom presented in Australia that vocational education should be for all students. This seems a curious gap if the argument is accepted that work-based learning is an effective support to a wide range of general and academic skills. It would seem possible to develop a highly demanding work-related curriculum for high-achieving students, both for their own benefit and to avoid marginalising vocational education as a whole.

Some countries have attempted, if not comprehensive vocational education, at least the creation of a high-quality vocational stream. In France, for example, there is a vocational baccalaureat and the availability of 'alternance'—the alternation of extended periods of education and work experience. Apart from the resource intensity of such a program, one drawback is that it has lowered the standing of traditional vocational education subjects (Conyer 1993).

While vocational initiatives suffer from marginalisation, there is, paradoxically, a degree of selectivity in them based on careful targeting of clients. This has been observed in US programs (Bailey 1992) and is illustrated in Sharaschkin's evaluation of an AVTS pilot, where selection processes were used to create a 'high quality pool' (Sharaschkin 1994).

One consequence is that there are few programs for the most disadvantaged students (Curriculum Corporation 1994), although there are isolated examples, such as an AVTS pilot for homeless youth (NCVER 1994). Rural students have access to a narrower range of opportunities although there have been successes in distance/mixed mode delivery in regional areas (Tower 1994).

The Schools Council argues that vocational programs can be utilised to compensate for disadvantage, but does not give details (Schools Council 1994). A NSW review indicated that young women have a low participation in vocational programs, with considerable gender segmentation in modules (NSW TAFE Commission 1996). On the other hand, specific interventions such as 'Tradeswomen on the Move' seem to have produced favourable results and a good fit with work-education for girls (DETAFE 1994).

Research on students at risk of leaving school early shows clearly that dissatisfaction with subject content and with school culture are the main reason for departure, rather than poor achievement. Holden and Dwyer argue that this requires school programs to be more reality-based: vocational programs could serve an important function for these youth (Holden & Dwyer 1992).

It is difficult to find information on school-based vocational education for aboriginal students. Teasdale and Teasdale point out that school, particularly secondary school, has not been a happy or educationally satisfying experience for indigenous Australians (Teasdale & Teasdale 1996) and it appears concentration has been on promoting general education at school and innovative vocational education programs beyond.

In general, vocational education remains marginalised as an 'alternative' curriculum (DETAFE/DECS 1994) while providing few benefits to the severely disadvantaged.

Resources and logistics

There is little systematic evidence on the resource requirements of work-related education, although the comprehensive survey of programs in action completed by the Schools Council in 1994 led it to include in its Final Report a section headed 'The implementation of vocational courses is costly for schools' (Schools Council 1994, x).

Two key elements identified by the council are the employment of program co-ordinators and the availability of appropriate professional development for teachers. Both were claimed to be essential to the practical and educational success of programs. Costs for professional development can range from \$480 to \$3000 per course per teacher (Schools Council 1994, p.69).

Other costs include the development of learning materials and the costs of services provided by TAFE. The latter are increasing as TAFE institutes become more autonomous and more market-based. There is considerable contention over which sector should bear what share of the costs and over access to public funds designated for vocational education. There are costs for schools in equipment, liaison with central authorities, establishing local networks, running information sessions, negotiating with tertiary institutions and additional teaching time (Schools Council 1994).

These comments by the Schools Council at least indicate the need for more systematic studies of resource demands arising from vocational education programs in schools. A significant step in this direction has been taken by the Victorian government in commissioning the Centre for the Economics of Education and Training to examine the costs of dual recognition arrangements in the Victorian Certificate of Education. Results have not been published at the time of writing, but preliminary indications are that costs may be no greater than for 'mainstream' school curricula for some types of vocational education. Essentially, this seems to apply where programs can be delivered in-school.

However, to go beyond dual recognition and to purchase training from external providers or to encourage the widespread provision of real work experience, with a sustained effort to integrate this learning into the wider school curriculum appears likely to be a more resource-intensive process, at least in the establishment stage. Experience in schools suggests the need for dedicated staffing for program co-ordination and industry liaison, at the very least (Schools Council 1994, 1995).

Sufficient experience has now been developed in running work-based schemes for elaborate guidelines to be prepared covering work placements, duties of host employers, students and schools, insurance, legal liability and duty of care, payment of students and adherence to awards and legislation and relations with unions (e.g. DECS 1995). The literature does not indicate major difficulties with these practical issues, but the existence of extensive guidelines is testimony to a lengthy institutional learning experience and the need for experienced co-ordinators.

Perhaps more important than the costs and logistical difficulties are the sometimes profound incompatibility between school and work cultures.

Sometimes this emerges in difficulties in practical matters like timetabling and organisation (NCVER 1994) but also reflects fundamentally different outlooks on society and the position of the individual (Curriculum Corporation 1994; Grosse 1993).

While more systematic research is needed on costing various models of vocational and work-related education in schools, it is essential to bear in mind that the primary resource required is human. The burdens placed on individual employers and teachers and school administrators by work-related education are considerable and these may limit the extent to which initiatives can be applied.

In Britain, for example, research by the Policy Institute indicates that lack of available placements was the key factor in a decline in vocational programs for 16–18 year olds. Between 1989 and 1992, for example, the proportion of 16 year olds receiving formal work-based training fell from 32 per cent to 20 per cent (*The Times*, 25 October 1996). The fundamental resource issue, therefore, is the continued readiness of both employers and teachers to participate in learning partnerships.

Findings and directions for further research

THE RESEARCH EVIDENCE, while incomplete, clearly points to a number of findings.

- ❖ Australian students, employers and parents have chosen to focus on school-based general education as the principal pathway to employment and adult life.
- ❖ Within that context, there is a role for increasing use of vocational and work-related education.
- ❖ Education which includes exposure to real work in real workplaces is highly valued by students and can greatly enhance the acquisition of the skills sought in general education.
- ❖ The work-based education which works best is that which results from genuine partnerships and networking at local level.
- ❖ Ways must be found for system and national support for local initiatives in accreditation and articulation, resourcing, monitoring, information provision and policy coherence without diminishing local enthusiasm and control.
- ❖ Integration of vocational and general education and of institution-based and workplace initiatives remains poor.
- ❖ The transfer of knowledge required by an integration philosophy will not take place spontaneously or because general and specific skills are both described as 'competencies'; sustained effort is required to effect transference.
- ❖ Vocational education remains limited by the conception that it is for lower-achieving students. At the same time, many pilot schemes rely on selectivity to achieve their objectives, while few possibilities of vocational education for disadvantaged or at-risk students have been exploited.
- ❖ Effective vocational education is extremely resource-intensive and requires fundamental changes to school cultures and organisation. The

incompatibility between traditional teaching cultures and those supportive of work-related learning need to be addressed by appropriate professional and organisational development strategies.

- ❖ Professional development requirements represent one of the major costs of work-related education. The resource challenge goes beyond funding: committed personnel and appropriately innovative program designs will also be in short supply.

These findings imply an agenda for further research and development. This agenda would include:

- ❖ ways of promoting work-related education to all ability and social groups and for changing student and community stereotypes of vocational education
- ❖ assessment and accreditation mechanisms which take into account the differential nature of generic and specific competencies and the different cultures of schools and workplaces. Schools should continue to develop authentic assessment without being dominated by industry standards, a dominance no more desirable than that exercised by tertiary entrance
- ❖ continuous monitoring of programs and systematic collection of student participation and selection data
- ❖ more rigorous monitoring of educational and employment outcomes
- ❖ assessing the benefits of more diverse institutional and structural arrangements in schools or in cross-sectoral institutions
- ❖ the most appropriate kinds and methods of professional development for teachers
- ❖ the development of curricula which promote the integration of general and vocational learning
- ❖ greater clarification of the nature and role of competencies and their compatibility with academic and general education objectives
- ❖ the logistics, planning, resourcing and managing of initiatives

Although extensive, this is by no means a complete agenda.

An important issue which emerges from a review of the literature is that its diversity makes the development of generalisations difficult. Much has been learnt in practical way about the conduct, benefits and pitfalls of work-related

education. What is missing from a researcher's perspective is systematic analysis.

While the nature of evaluations so far conducted would not provide a basis for formal meta-evaluation (McGaw 1988), more could be done in the form of narrative integration—that is, by qualitative, descriptive attempts to distil common themes and findings. Moreover, it should now be possible, given the range of initiatives continually appearing, to conduct relatively controlled studies, or at least systematic evaluations based on pre-specified criteria.

At present, what emerges from research is the conclusion that it is possible to deliver substantial educational benefits of a broad and enduring nature from vocational education programs in schools, but that it is difficult to do so. There are indications that some programs are achieving at least part of the benefits the literature promises. There are indications of what constitutes good practice, especially at local level. But relatively little is really known.

Enthusiasm for vocational education needs to be tempered by critical investigations (Poole 1992) and basic concepts like competency need to be explored at a conceptual level (Hager 1995) as well as empirically tested. Above all, there needs to be a greater awareness of what experience of work related education is like for participants—local businesspeople, teachers, unionists and workers, and above all students. Illuminative evaluations, based on ethnographic or other methodologies, can help policy makers appreciate what policy means for those at its endpoints (Grosse 1993) and thus produce policy which works.

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This review of research on vocational education and training is one of a series of reports commissioned to guide the development of future national research and evaluation priorities.

Robin Ryan has reviewed Australian work in secondary schools over the last six years. He draws conclusions relevant to vocational education and training policy and identifies areas for further investigation.

