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Flexible delivery of training

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REVIEW OF RESEARCH

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Executive summary

THIS PAPER REVIEWS research on flexible delivery of training in the period since 1990 with a view to identifying the main conclusions that can be drawn, the adequacy of research, and the gaps that need to be addressed. The review has regard to the changing policy context over this period.

The main conclusions drawn

❖ The potential and value of flexible delivery strategies in a wide range of institutional, industry, and community contexts has been well documented in research since 1990. However, the extent of use of the models and strategies reported in pilot studies is more problematic.

❖ The value of flexible delivery strategies in facilitating access to VET by disadvantaged groups is a central conclusion from research studies.

❖ The research evidence points to more innovation occurring in off-campus contexts than on VET campuses where a range of barriers identified in the research has impeded innovation and change.

- The recent report of the ANTA National Flexible Delivery Taskforce has confirmed these barriers which include inappropriate resource allocation models and processes, information deficiencies, deficiencies in learner support services, work practices, as well as attitudinal barriers.

❖ The centrality of effective staff and management development strategies for bringing about the necessary cultural change in training providers and in industry.

The principal gaps in research

❖ There has been a relative neglect of learning aspects of flexible delivery including the application of adult learning principles and the analysis of the learning benefits and outcomes of alternative delivery strategies.

- In the context of growing economic and social imperatives for life-long learning in a wide range of contexts (including learning organisations), this is a major deficiency in the research base.

- This deficiency includes cultural influences on learning strategies with the growing internationalisation of VET.

❖ There have been few longitudinal studies of the change process.

- This is a key requirement in view of the critical importance of effective management of the change process.

- Longitudinal studies are needed which monitor the outcomes of strategies to address the barriers to flexible delivery identified in the research.

❖ Ongoing statistical monitoring of delivery mode and productivity outcomes.

- While the national AVETMIS standard provides for reporting on delivery mode, data collection problems in some States up to now have not enabled this source to be used for ongoing analysis of delivery mode on a national basis.

Other deficiencies

❖ Research has been impeded by a lack of clarity in the concepts used throughout this period with terms such as flexible delivery, open learning, and flexible learning used interchangeably.

❖ This has impeded a necessary analysis of the educational and economic/efficiency aspects of these forms of education and training provision and is a factor in staff and student attitudes to these approaches.

Emerging issues

❖ Flexible delivery appears to be entering a new more systemic phase of development.

❖ National policy towards flexible delivery is now being focussed on a more strategic basis by ANTA within a five-year medium-term strategy.

- This strategy throws up a broad spectrum of further research issues mainly relating to managing change.

❖ The emerging new strategic phase of implementation is likely to highlight tensions between economic/efficiency objectives in VET provision (relating to such national objectives as the efficient operation of training markets) and educational objectives relating to effective life-long learning and the rounded development of people.

- These issues need to be examined in the context of strategies for managing change.

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Context

FLEXIBLE DELIVERY OF training has been one of the main policy thrusts associated with training reform in Australia throughout the 1990s. This has led to significant funding of research on flexible delivery by government agencies directed, in the main, towards identifying models and strategies for effective implementation of flexible delivery.

In this context of evolving training reform, this paper reviews research on flexible delivery of training in the period since 1990 with a view to identifying the main conclusions that can be drawn from this body of research, the adequacy of research, and gaps that exist.

Policy framework

The overall orientation of research on flexible delivery throughout this period has been conditioned by the evolving policy framework for flexible delivery in VET established by national and State agencies to give effect to the view that flexible delivery is a necessary component of training reform.

In the first half of the decade the pioneering work of the Flexible Delivery Working Party established by the national Vocational Education Employment and Training Committee (VEETAC) in 1991 set general directions for flexible delivery. These were enunciated in the 1992 report *Flexible delivery in TAFE: A national framework for implementation.*

From the middle of the decade, with the abolition of the Flexible Delivery Working Party, ANTA has sought to promote a more strategic approach to flexible delivery linked to the main policy thrusts of training reform. This strategic orientation is reflected in the 1996 final report of the ANTA National Flexible Delivery Taskforce which recommended a five-year medium-term strategy for action. Related research has explored flexible delivery in the context of moves towards a client-focussed, demand-driven VET system with user choice a central feature (Coopers & Lybrand 1996).

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Evolving and shifting concept

The concept of flexible delivery has been defined throughout the period under review in ways that reflect a number of the learner-centred attributes of an open learning philosophy (Johnson 1990). This is evident in the definition of flexible delivery adopted by the Flexible Delivery Working Party in its 1992 National Framework.

While the ANTA 1996 National Flexible Delivery Taskforce carried over much of this client-focussed approach in its definition of principles for flexible delivery (ANTA 1996, pp. 33–36), the Taskforce also defined the concept in terms of user choice, client-provider relationships and the operation of effective training markets.

This re-focussing of the concept reflects the shift from a supply-side orientation evident in the 1992 National Framework with its provider focus to a demand-side, industry-led view of VET. A consequence is that there has been a certain lack of clarity in the use of terms throughout the period that is reflected in the literature.

For much of the period, the terms flexible delivery and open learning have been used as though they were synonymous (see, for example, Kearns & Johnson 1993). While the term flexible learning has gained currency (and is common overseas), this is less reflected in policy statements and in research. The dynamic context of change and policy shifts has posed issues for research in responding to emerging and shifting requirements.

The developments discussed above reflect tensions between educational objectives reflected in open learning and the economic/efficiency objectives driving the philosophy of competitive training markets. Up to now, research has not yet focussed on balancing and reconciling these differing yet complementary perspectives in a context of growing imperatives for life-long learning. There are key research issues relating to objectives and performance measures which relate to tensions between the educational, moral, and social obligations of the sector and pragmatism in furthering economic/efficiency goals.

Orientation of research

Much of the research undertaken throughout the 1990s has focussed on the interests of the sponsoring government agencies. There has tended to be an orientation towards pilot projects, often case studies, of the 'what works' character. In the initial phase up to 1996, this research was oriented towards producing practical guidelines for flexible delivery.

The recent action by ANTA to promote flexible delivery can be seen as denoting a more strategic phase of implementation, although it is arguable whether research has yet caught up with the more holistic requirements of such an integrated approach. Issues involved in the systemic implementation of flexible delivery are discussed in some studies (FDWP 1992; Smith et al. 1996; Spark et al. 1995; ANTA 1996). Comment on some of the present gaps and needs follows.

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Methods and strategies

SINCE 1990, THERE has been considerable experiment in developing and adapting flexible delivery methods and strategies to the needs of various client groups, in particular in off-campus situations. While a wide range of models has emerged, the key themes in this period relate to:

❖ growing sophistication in the use of distance education strategies for various client groups including the use of mixed-mode and multi-mode models

❖ the increased importance of modern learning technologies

❖ attempts to find models for effective learner support in various flexible delivery contexts

These themes have converged in the increased use of learning technologies in distance education accompanied by a search for effective approaches to learner support.

Developments during this period, such as the establishment of the Open Learning Technology Corporation, have fostered inquiry into the role, costs, and benefits of learning technologies. While there has been a growing diversification in VET delivery methods, this trend co-exists with the continued dominance of face-to-face teaching (see Smith et al. 1996 for the Queensland situation).

Spark et al. examined the implications of the new converging and inter-connected technological systems which were making possible an expanded curriculum, greater access to information and new forms of communication (Spark et al. 1995). While the implications of these trends for education and training were seen as major and radical, this study also concluded from a survey undertaken that providers were not currently heavy or innovative users of existing technologies (Spark et al. 1995, p. 65). On the other hand, an evaluation by McLoughlin of the technologies and services of the Western Australian TAFE Media Network found that the use by TAFE of advanced technologies for teaching/learning and administration was effective and wide

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ranging, with both students and staff indicating satisfaction (McLoughlin 1996).

The survey of Victorian institutions showed a widespread use of conventional technologies such as audio and video, but often not to their full potential. CBT and CML, teleconferencing, video and audio were the most widely used technologies with significant variations in use between industry sectors (Spark et al., pp. 16–17). Similarly, Smith et al. concluded that pedagogy in Queensland institutions is highly varied with a wide range of approaches (Smith et al. 1996, p. 48).

The broader social, economic and educational implications of the new information technologies have attracted considerable attention in Europe and elsewhere, including work undertaken by the European Commission on implications of the Information Society (European Commission 1996). A recent EC study stressed the significance of the learning aspects of an 'information society' in fostering congruence between the technological, economic, and social dimensions.

A study by Mitchell and Bluer in Victoria directed at new learning technologies developed a planning model for innovation in this area. This study, which followed up on the work of Spark et al, concluded that there was not a strong emphasis on learning as the chief criteria for using technology in Australian studies (Mitchell & Bluer 1997). This was reflected in the fact that these consultants found it difficult to find eight illuminating case studies.

The developments in Victoria cited above illustrate the progress towards a more strategic phase in using modern learning technologies focussed on addressing the barriers to the use of technologies identified in the Victorian studies and other studies.

The value of these technologies in addressing particular needs emerges from a number of studies. Anderson and Nicholson concluded, from a study of NESB distance learning students, that there was a high potential for enhancing delivery and content using new technology to support distance learners (Anderson, Nicholson & Bailey 1995). Case studies of particular groups demonstrate this potential (Kearns, Murphy & Villiers 1996; Kearns & Johnson 1993; Cheshire 1994).

Developments in traditional distance education methods include the use of various multi-media combinations (McLoughlin 1996; Kearns & Johnson 1993; Kearns 1996; Dobbs 1996). The value of linking satellite delivery to traditional print-based methods has been shown in these studies. The increasing use and significance of multi-media approaches, including the role of Internet, is a key conclusion (Whittingham 1994).

A further major advance in flexibility in education and training provision has been the growing popularity of mixed-mode approaches both in VET and higher education (Lawson 1997; Taylor & White 1991; Taylor et al. 1993). These studies show that mixed-mode offers more choice to students, is popular with students and is cost-effective (Taylor et al. 1993).

There is currently exploration, both in Australia and overseas, of the potential of Internet for delivery of training. This illustrates the shifting frontier of innovation that has characterised the role and uses of learning technologies throughout this decade (Millar 1995).

While there has been a number of pilot studies, Internet has not yet been widely applied in training delivery, and a broad spectrum of issues for research remain. Assessments such as that by Millar point to the potential value of Internet for VET provision (see also Rutherford 1996; Shore 1996; Wright 1996). The potential of Internet for the internationalisation of VET is a significant area for enquiry. Issues to be examined include the design of materials, security, enrolment questions and records keeping.

Access and learner support

A broad spectrum of issues has been identified throughout this period in providing learner support to students in off-campus situations. The very success of access strategies has highlighted the need to provide support to students distant from providers (FDWP 1992; National Flexible Delivery Taskforce 1997; Carter 1993).

A variety of approaches to providing learner support has been adopted. These include learning support centres in various guises (open learning access centres, open learning centres, Oz access centres, flexi-learn centres). While case studies of the role of such centres have generally been positive, the ANTA Flexible Delivery Task Force concluded that limited access to quality learning

support remained a major barrier to flexible delivery (NFDT 1997, p. 20, p. 53). This is in a context where Anderson, Nicholson and Bailey have identified a high potential for modern learning technologies in providing learner support (Anderson, Nicholson & Bailey 1995, p. 65). A study by Carter found that students often did not take advantage of the available OTEN counselling service for distance education learners (Carter 1997, p. 20). A combination of study and home factors often led to withdrawal from distance education programs (James 1995).

Learning effectiveness

A relatively neglected aspect of research on flexible delivery has been the merits of various flexible delivery methods and traditional methods of VET provision in terms of learning outcomes. In the context of the growing pressures for life-long learning which were emphasised in the 1996 report to Unesco of the International Commission on Education for the 21st Century (Delors et al. 1996) and the report of the 1996 meeting of OECD Education Ministers (OECD 1996), this is a significant area of neglect.

Misko undertook a review of research on learning styles in 1994 and concluded that there was a strong need to conduct more learning style research (Misko 1994). A particular need was seen as research which synthesised and integrated the various learning styles as a basis for practical applications in delivery strategies. The complexity of customising training to individual learning styles was noted by Misko. Mitchell and Bluer also found inadequate research on learning outcomes of the use of modern technologies (Mitchell & Bluer 1997).

A particular area of neglect in VET research with the trend towards internationalisation of education and training has been the influence of cultural factors on learning styles and delivery strategies in various cultural contexts. Again, the principal need is for research which synthesises and relates to VET contexts findings from various disciplines such as psychology, sociology and socio-linguistics. Dissemination of research findings in formats such as resource guides remains a need. Ways in which VET provision needs to be acculturalised for flexible delivery in various international contexts, in Australia and overseas, is a significant emerging need for research.

Research in America, England and Germany has paid more attention to integrating the findings of cognitive science on adult learning with strategies

for skill formation (see for example Hannun 1990; Thomas 1995; Federal Institute for Vocational Training 1991). This interest has led to methods such as the German LEITTEXTE system which emphasises the self-reliant learner. In America, Hannum is typical in emphasising the need to integrate the use of modern learning technologies with knowledge of adult learning principles (Hannun 1990).

The neglect of learning aspects of flexible delivery is recognised by the ANTA 1996 Task Force in its report:

> *Education and training providers have not fully developed teaching and learning strategies and structures which fully utilise new approaches.* (ANTA 1996, p. 37)

One of the key gaps in research lies in integrating findings from cognitive science on adult learning with alternative flexible delivery strategies and outcomes to provide a basis for more integrated, holistic reform.

Responding to special needs in access

A central feature of the role of flexible delivery strategies since 1990 has been their value in addressing special needs for access to VET. The disadvantaged groups addressed by such strategies have included people in remote locations, people with disabilities and literacy needs, Aboriginal people, and some groups of women. While a wide range of pilot studies have demonstrated strategies that work, the extent to which such strategies have been generally applied and mainstreamed is less well documented in research.

The growing sophistication of distance education methods with multi-media approaches and the harnessing of technologies such as satellite delivery have facilitated access for people in remote locations (Kearns & Johnson 1993; Drummond 1993; Seemann 1996). In some cases, pilot projects have addressed special needs in remote locations; as, for example, with Aboriginal people and literacy needs (Seemann, Drummond) and have experimented with new technologies such as the Internet. The needs of geographically dispersed industries, such as the wine industry, have been addressed by multi-media strategies (Kearns, Murphy & Villiers 1996).

The potential of flexible delivery and open learning methods to facilitate access for people with disabilities was evaluated in a study by Kearns and Johnson (Kearns & Johnson 1993). This study concluded that these methods had

substantial potential to improve access for people with disabilities. A range of issues and barriers were also identified.

Adaptive technology surveys undertaken by the Open Training and Education Network (OTEN) in respect of people with a physical disability showed how technologies were being adapted to cater for various forms of disability (OTEN 1995). A follow survey in 1996 examined adaptive technologies for people with intellectual, neurological or specific learning disabilities (OTEN 1996). While case studies such as those by Kearns and Johnson demonstrate the potential of these technologies to facilitate access by people with disabilities, the extent of use of these methods is less well documented. A study by Radcliffe highlighted that TAFE teachers were poorly prepared to deal with handicapped students in their classes (Radcliffe 1989). Methods such as FlexiModel have been used to provide greater flexibility in adapting to the needs of students with disabilities (Boote 1996). While the considerable value of flexible delivery methods for students with disabilities has been established, the extent of use needs on-going monitoring.

Meeting language and literacy needs is a further area where there has been considerable experiment in adopting flexible delivery methods, in particular for workplace delivery under programs such as WELL (Workplace English Language and Literacy program). The major potential of flexible delivery strategies using new technologies to provide for NESB students in remote locations was reported by Anderson et al. in 1995. Strategic planning in this area recognises the value of flexible delivery strategies. The DEET strategic plan includes an annotated bibliography (DEET 1995).

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Providing for the needs of Aboriginal people through flexible delivery methods is another field where there has been significant innovation, in particular in adapting distance education methods for Aboriginal communities in remote locations. A study by Brennan in both urban and remote communities developed a best practice model based on flexible delivery methods (Brennan 1996).

An interesting feature of some research in this area has been the concern to adapt delivery strategies to the cultural values of Aboriginal peoples so that there has been a focus on the influence of culture on learning styles (Seemann 1996). Some AVTS pilot projects involving Aboriginal people have also

examined the influence of culture on learning styles and preferences (Kearns, Murphy & Villiers 1996).

A further area where flexible delivery strategies have facilitated access has been for certain groups of women. A study by Kearns and Cotterill of access by women in operative-level jobs in six industries showed how flexible delivery strategies linked to concepts of a high performance workplace were facilitating access, in particular in the trade exposed manufacturing sectors studied (Kearns & Cotterill 1996).

Less use of such methods was found in the service sectors studied. A study of open learning for women in small business is still in an early stage of development. The available research suggests substantial value in flexible delivery methods meeting the distinctive needs of women, in particular those with family responsibilities.

Overall, the role and value of flexible delivery methods in facilitating access has been well documented in research. Less is known about the extent of use of such strategies.

Flexible delivery in industry

THE GROWING INTEREST in flexible delivery in enterprises within industry over the period under review is reflected in a range of projects testing approaches to workplace provision of training, often under partnership arrangements.

A study on the benefits to industry of the adoption of flexible delivery methods was undertaken by Kearns and Johnson for the Flexible Delivery Working Party in 1992 (Kearns & Johnson 1993). This study pointed to a range of benefits and models but also reported significant barriers. These included attitudinal barriers (in both training providers and enterprises), insufficient awareness of benefits, insufficient development of key brokerage roles, segmented development of learning materials, barriers in the small business sector, and cost factors. At the same time, case studies in the report documented a range of innovation in delivery strategies, mainly in larger firms.

Subsequent studies have documented emerging good practice in a range of industries. Key developments have included the development of industry/ education partnership strategies and the use of flexible delivery strategies to address the training needs of firms in remote locations. Provision of training in small firms has remained a problem despite some interesting innovations.

Examples of flexible delivery methods to service industry in remote locations include the Pilbara Video Conference Project (Davy 1990). This adopted interactive electronic technologies and projects which adapted satellite delivery in Queensland to staff training for hospitality staff in remote island locations and to local government staff across Queensland (Kearns & Johnson 1993). These were seen as effective uses of flexible delivery methods.

Industry/education partnerships development has been a natural consequence of flexible delivery strategies to provide workplace training.

Such partnership development was given a stimulus by the pilot phase of development of the Australian Vocational Training System (AVTS) in 1993–

1994. Case studies undertaken by Kearns, Murphy and Villiers in 1995 showed a range of partnership models across Australia, many which used flexible delivery strategies. In a few cases, such as a Victorian wine industry project, flexible delivery methods had been applied to a network of small firms (Kearns, Murphy & Villiers 1996).

While a significant number of cases exist where flexible delivery methods have been applied in medium-sized and small firms, provision in small firms has remained a problem area and strategies identified in research such as networking strategies appear to have been applied less than might have been expected (ANTA 1996, pp. 34–36). However, a study by Henneker is exploring on-line access for SME networks of firms while a study of open learning for women in small business by Hope is in an early stage of development.

The distinctive requirements of various industry sectors for flexible delivery have been studied. A study by Parker and Williams (1996) in the recreation and retail industries recommended a strategic framework of practice for industry-led flexible delivery of training. Study of the use of flexible delivery by the NSW State Rail Authority, for handsignallers and worksite supervisors combining satellite delivery and self-paced learning, showed this method to be highly cost effective in reducing training time from six months to eighty days (Fullarton 1996).

The application of action learning methods has pointed to the value of team methods in fostering ownership and commitment in the provision of training off-campus to industry (NSDC 1996).

The application of flexible delivery strategies in industry training has been limited by general attitudes to work-based training in industry. A study by Misko showed that formal work-based training was not widespread in the majority of Australian companies. This is particularly the case in small firms where the emphasis is on informal on-the-job practical training (Misko 1996). The Misko study also reported the cost-effectiveness of work-based learning, while also lamenting the dearth of studies which address the costs and benefits of work-based training.

The change in focus

Staff development needs

A PERSISTENT THEME in the literature is that adopting a client focus rather than a system focus represents a major culture change for TAFE and other providers. Consequently, staff development to support flexible delivery has been regarded as a key strategy to bring about the necessary cultural change in VET. This was regarded as a central goal of the 1992 National Framework for Implementation in TAFE with staff development seen as the necessary strategy to bring about attitudinal change in VET teachers and to foster necessary knowledge and skills.

This objective has been supported by the work of the National Staff Development Committee (NSDC), and its predecessor body, with its orientation towards promoting a learning paradigm for staff development (Kearns & Schofield 1997). This approach led to the promotion by the Committee of learning strategies such as action learning (NSDC 1996) and team approaches to management development which are well suited to flexible delivery strategies.

A number of projects have shown the value of action learning models for staff development in fostering understanding of flexible delivery among staff (NSDC 1996) and this approach was re-affirmed in the 1996 report of the ANTA National Flexible Delivery Taskforce. A Western Australian study by the Department of Training showed that open learning modules could be effective in orientating new staff to flexible delivery, while for more experienced staff a co-ordinated strategy was crucial (Department of Training 1995).

A study by Taylor and White of multi-media and mixed-mode teaching and learning in higher education showed the clear preference of staff for traditional face-to-face teaching while students also preferred a face-to-face mode while favouring a mixed mode (Taylor & White 1991, p. 36). However, some studies have shown substantial staff satisfaction with flexible delivery methods when soundly applied (Lawson 1997; Baron 1995; Smith et al. 1996).

The conservatism of many staff in terms of their perception of their role is documented in overseas studies as well as in Australia (Thomas 1995).

A study by Smith et al. of flexible delivery in Queensland TAFE showed a widespread concern among staff that the push for flexible delivery was an economic rationalist technique rather than a pedagogical strategy (Smith et al. 1996, p. 92). This perception generated some fear and frustration among staff. This study concluded that two cultures of pedagogy existed side by side: one of industry and commerce and one of teaching and learning (Smith et al. p. 6). There was a need to create processes that enabled the two cultures to coincide more fully.

While a range of effective staff development models have been identified, further research is needed on the use and outcomes of staff development strategies directed at cultural change and attitudinal shifts in the broader context of overall change strategies. Few institutional longitudinal studies exist along the lines of the Tea Tree Gully study (Baron et al. 1995). There would be considerable value in a comparative study of a range of institutional case studies across Australia directed at analysis of the outcomes of strategies for cultural change in VET towards more flexible, client-focussed systems which integrated the two cultures of pedagogy identified by Smith.

Barriers and issues

Barriers to the more widespread adoption of flexible delivery have been identified in various studies (Kearns & Johnson 1993; Widdowson et al. 1992; FDWP 1992; Smith et al. 1996; ANTA 1996). The ANTA National Flexible Delivery Taskforce in its 1996 report emphasised the absence of a shared national focus, inappropriate resource allocation models, information deficiencies, inadequate learner support, work practices as barriers, and problems in customising. Smith et al. in their study of Queensland TAFE identified a range of administrative and organisational barriers which led to considerable frustration among staff. In addition to these barriers, Kearns and Johnson emphasised attitudinal and cultural barriers including traditional views of the teaching role (Kearns & Johnson 1993, p. 24). A key research task now is to monitor at all levels the impact of strategies that address these barriers.

Industrial relations issues relating to teaching awards and industrial and work practices were identified in the report of the ANTA Taskforce as barriers impeding flexibility in the work of VET. ANTA recognised its limited influence in this area where State agencies have a key role. Issues relating to work practices need to be examined in the context of strategies for managing change.

Other factors which impede more flexible approaches include rigid organisational structures which modulate against flexible approaches and course and program design methods (including assessment strategies) which are not responsive to flexible delivery.

While good practice principles have been identified (Palmieri, Blanksby & Hammond 1995), there has been little research to date on quality assurance outcomes in the emerging client-focussed demand-driven VET system. Smith et al. summarise the quality issues in the emerging context of VET (Smith et al. 1996, pp. 50–58).

Student attitudes to flexible delivery also require further study in the context of growing imperatives for life-long learning. Baron, Thiele and Hintz concluded from their evaluation of the Tea Tree Gully college that further research could examine more closely factors of age, gender, and motivation among students in relation to flexible delivery (Baron et al. 1995). On the other hand, Kearns and Cotterill found that women in operative-level jobs responded positively to open learning methods, in particular in the manufacturing sectors studied, when these were aligned with empowerment strategies in work organisation and management. Smith et al. found that staff were, on the whole, supportive of flexible delivery.

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Managing change
Research on the implementation of flexible delivery since 1990 has shown that managing change is complex and difficult so that progress towards a widespread systemic implementation of flexible delivery has been slower than would have been expected in 1992.

Smith et al. point to some of the reasons:

> *Such a shift to new modes of teaching and learning is complex and changes are required at all levels of the TAFE organisation* (Smith et al. 1996, p. 10).

The study by Smith et al. of flexible delivery in Queensland TAFE showed considerable uncertainty and frustration among staff in the change process (Smith et al. pp. 53–55). Mitchell and Bluer in their study of new learning technologies emphasised issues arising from the pace of change and resulting complexity (Mitchell & Bluer 1997).

Other barriers discussed above continue to impede a wider use of flexible delivery. There is a need for on-going research monitoring of the outcomes of change strategies at all levels. Such monitoring should include the impact of the new training package approach. There have been few longitudinal studies to date of the change process so that there are grounds for regarding this as a research priority. The planning model developed by Mitchell and Bluer for new learning technologies requires evaluation and testing in operation.

Cost and benefits

THE AVAILABLE RESEARCH suggests the general cost-effectiveness of flexible delivery methods when these are examined over an appropriate period of time. However, the diversity of flexible delivery methods means that cost/benefit aspects need to be examined in relation to specific methods.

A study by Lawson of mixed-mode delivery of an advanced certificate in urban horticulture found evidence of significant benefits for students and staff. These included high levels of student satisfaction, as well as more efficient use of college facilities, although comparisons of traditional and flexible methods remained difficult (Lawson 1992). However, studies of mixed-mode provision in higher education show that mixed-mode is more cost-effective than traditional face-to-face teaching, or at least competitive. Student attitudes have generally been positive to the benefits of flexible delivery. A study by OTEN found that students enrolled with OTEN because of the flexibility offered (OTEN 1995, p. 29). Torrens Valley Institute of TAFE also found student satisfaction with flexible delivery while the study of costs found that productivity compared favourably with the average productivity of South Australian TAFE (Baron et al. 1995). However, Mitchell and Bluer concluded that there were very few detailed research studies giving accurate costs for production and distribution of multi-media materials.

A significant area requiring further development relates to the role of performance and productivity measures in monitoring the outcomes of alternative delivery strategies. While the AVETMISS standard includes information on delivery mode, data collection systems in some States are not yet able to provide the required data. When all States are able to report to the AVETMISS standard, more sophisticated analysis will be able to be undertaken in this area.

The general requirements identified by Guthrie in his 1988 and 1991 studies of performance indicators remain valid at all levels (Guthrie 1998, 1991). A balanced set of performance indicators could contribute much in furthering the

reconciliation of economic/efficiency, educational, social and moral aspects of alternative delivery strategies in the work of VET.

There is a continuing need for cost/benefit studies in respect of specific flexible delivery methods, in particular in respect of innovative strategies for workplace provision of training.

Directions for further research

THE EXISTING BODY of research documents discrete methods and strategies for flexible delivery that are effective in a range of particular contexts. However, flexible delivery now appears to be entering a further stage of development with the ANTA five-year medium-term strategy which has a more strategic orientation towards integrating flexible delivery with the other principal thrusts of training reform. It is also likely that this new phase will be featured by more extensive and innovative use of new learning technologies.

This new phase, with a move to a more systemic implementation of flexible delivery, throws up a broad spectrum of research issues. These relate, in particular, to managing change so as to achieve the objectives of flexible delivery, and of training reform more generally, in an emerging context of rapid change requiring life-long learning in work and in society. This will need a more strategic and integrated approach to research, in which the current gaps in learning aspects of flexible delivery should be addressed.

If reform is envisaged as an organic, developmental process (Committee on the Federal Role in Education Research 1992, p. 15), the research role in this process of learning is critical. Such a research program should support a more holistic approach to the provision of VET, in diverse contexts of life-long learning, in which there is congruence between technology, economic requirements for skill, and the human face of learning. Relating flexible delivery to the fostering of a learning culture in VET should be a central focus of research in the emerging conditions of the 21st century.

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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.

Peter Kearns has reviewed flexible delivery in training and vocational education in Australasia and overseas. He draws conclusions relevant to vocational education and training policy and identifies areas for further investigation.