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## **Chapter 10: Supporting learning in initial vocational education**

### **Introduction**

One of the central concerns of vocational education and training (VET) professionals in Europe in the 1990s has been how to support those undertaking VET programmes, such that not only can they perform more effectively in their jobs as they exist today, but also so that they are better equipped to handle changes in what they will be required to do in future. So following on from the previous chapter which investigated new roles for in-company VET professionals, this chapter will focus upon the changing ideas about the most effective ways VET professionals can facilitate learning if they are primarily involved in the processes of initial skill development. The chapter will provide an overview of evidence about how individuals learn in vocational education; outline some of the critical learning processes required to underpin effective learning programmes; and consider what makes for powerful learning environments within which effective learning can take place.

### **Significance of individual learning strategies**

In curricular documentation most VET programmes have traditionally paid at least lip-service to the need to take account of individual differences in approaches to learning. However, such commitments require added significance now, since if individuals are to take greater responsibility for their continuing learning and development in future, then they need to be far more aware of their own individual goals and learning strategies within initial VET. VET professionals in turn need to acknowledge not only the significance of individuals' goals and learning strategies, but also recognise how these arise from individuals' implicit theories of learning. The most effective learning strategies will therefore be those which take account of personal goals and learning strategies and where learners are supported to regard learning as being under their control and intrinsically rewarding. Hence an important goal for VET programmes should be to facilitate learners' development of learning skills and strategies. Hence educational institutions need to provide opportunities for learners to develop such skills and strategies.

This links strongly to the idea that how individuals learn will be affected by a combination of their thinking patterns and their basic motivational or affective states (Claxton, 1984; Kolb, 1984). How well individuals learn and adapt will therefore be strongly influenced by the implicit theories they hold about how they learn (Chi-yue et al, 1994). From this viewpoint it can be predicted that individuals of the same ability would differ in their rate of learning or acquisition of skills if their implicit theories or beliefs differ significantly. Any differences are most likely to be observed when the learner faces challenges and obstacles in her or his learning. Learning will be most effective when adaptiveness is at its greatest. Dweck (1990)

has identified two patterns of response to challenges and obstacles in the pursuit of intellectual goals. The *mastery-oriented pattern* reflects the individual's implicit theory that their intellectual attributes are malleable and subject to instrumental control by the individual. This pattern is characterised by the seeking and enjoyment of challenge and by the generation of effective problem-solving strategies and persistence in the face of obstacles.

The *helpless response pattern* reflects the individual's implicit theory that their intellectual attributes are fixed, unpredictable and not under the control of the individual. This pattern is characterised by avoiding challenges, self-denigrating thoughts, negative affect, lack of persistence and deterioration of performance following failure. Self-judgements of ability, particularly in the face of difficulty, are often an inaccurate, and much lower, reflection of actual abilities. Individuals displaying these patterns who are of the same ability and skill level at the outset of learning a new skill diverge in their achievement when faced with impending or actual failure and this appears directly related to the nature of their implicit theories of intelligence. Licht & Dweck (1984) conclude that 'personality variables such as beliefs can predict level of problem solving strategies and academic achievement better than measures of intellectual ability.' (\*\* give page number \*\*)

These views have an affinity to the implicit theories of deep, surface and achieving approaches to learning that have been identified by Biggs (1987, 1991). The *deep approach* is based on intrinsic motivation, and learning is represented by the individual as mastery and understanding. This implicit theory is likely to extend the learner beyond the boundaries of the prescribed learning. The *achieving approach* is based on a particular form of extrinsic motivation - ego enhancement through achievement. This implicit theory is likely to lead the learner to pay careful attention to the prescribed requirements of the learning task and to meet high standards of performance. The *surface approach* is the implicit theory of a learner that doing sufficient work to avoid failure should be balanced against working too hard, and here the motivation to learn is extrinsically orientated.

The similar but different implicit theories from these widely cited research results can be placed into two broad categories: the learner viewing learning as self-regulatory and intrinsically rewarding or, conversely, viewing learning as externally controlled and extrinsically rewarding. Research indicates that implicit theories focusing on self-regulation and intrinsic reward predict better learning performances than those focusing on external control and extrinsic reward. There is evidence that learners can improve their performance by modifying their theories when they are helped to become conscious of the implicit views they hold (Brown, 1994; Lepper *et al*, 1973).

The implications of this for (the education of) VET professionals are that they should pay greater attention to how learners, especially young adults, learn. VET professionals should be concerned about individuals' feelings and beliefs about learning, and will need to make efforts to help learners become conscious of their own implicit theories about learning. Individual control of learning and the intrinsic values of the learning being undertaken should be promoted (Long, 1990; Hammond and Collins, 1991; Schmidt-Hackenberg, 1992; Onstenk, 1995), and tutors should be supportive when the learner faces difficulties and challenges in learning. Conversely, the learner should not be distanced from control of the learning process and should not be encouraged to focus on extrinsic rewards. In order for individuals to become effective lifelong learners a vital prerequisite is that they become conscious of their own

implicit theories of learning. As learners and tutors become aware of the significance of learners' individual learning strategies, then attention shifts to the practical task of helping learners learn how to learn.

### **Learning to learn**

While being an effective learner is required to a greater or lesser extent within VET, the reservation being because some learners may still be using a superficial learning strategy in unreformed VET programmes, it is now increasingly required within work itself. The pace of change in many aspects of work and the work environment puts a premium upon the ability to learn. Learning to learn is seen as fundamental if workers are to be able to adjust to changes in organisational structures, technological innovation and almost constant change to work processes (Dutch Ministry of Education and Science, 1993), and meet the requirements for self-learning at work (Infelise, 1994). One key attribute, associated with initial skills development, that needs to be developed is the ability 'to pick up the threads' in future when skills need updating (Brown et al, 1991). That is, young people need to be confident about their ability to learn in future.

There is almost universal recognition then of the value of learners learning how to learn (Novak and Gowin, 1984; Smith et al, 1990), and this can give a basis for continuing learning in the workplace. As a consequence getting learners to learn how to learn is often given as an aim in programmes of initial vocational education and training. However, this does not ensure the issue will be addressed in practice (Evans et al, 1987). This is because of the historic problem associated with many education and training programmes of the tendency to focus those tasks that are easier to teach and/or assess (Sockett, 1980). Conversely, the development of more general skills, including learning to learn, which underpin much activity in education, training and employment, can be seen as the responsibility of everyone, and hence in practice the responsibility of no-one in particular.

'Learning to learn' can be linked to the inculcation of habits such as systematic observation, analysis and a questioning attitude (Annett and Sparrow, 1985). This is important especially if learners are to take advantage of opportunities for learning outside formal education and training settings. This links to the need not only to embed the development of learning strategies within an occupational context (Soden, 1993), but that the application of learning strategies should also be contextualised: "instruction should demonstrate what strategies can be used, how they can be applied, and when and why they are helpful" (Paris, 1988, p 314). The ability and willingness to learn are fundamental to the development of a broad occupational competence, which includes a future-orientation as well as a concern for current performance. This means that it is essential that programmes to develop such competence address the need, if appropriate, to remediate the learning to learn skills of learners.

For a learning programme to be effective, individuals on the programme have to be or become effective learners. This may seem obvious, but many education and training programmes do not address this issue. Those involved in delivering an education and training programme may feel that learners already possess effective learning strategies, or even if they are aware of deficiencies they may feel that the development of learners in this direction is not their responsibility: 'somebody else should already have done this'. However, this misses the point: that, without remediation and development of effective approaches to learning in those without

them, these individuals are unlikely to be successful on their current programme. VET professionals will need to be able to support learners in developing their thinking and problem-solving skills from whatever base the learners are currently at: indeed supporting the development of learners' thinking skills in work-related contexts is one of the critical teaching and learning processes in VET.

### **Development of transferable skills**

It may be useful to make a distinction between key skills or transferable skills (knowledge and skills which can be applied in a variety of contexts) and skills which enable transfer, which focus upon the ability to apply those skills in new contexts (Levy, 1987). The former will be considered first. The value of the development of key skills is now widely acknowledged, and an essential task of vocational education and training is to incorporate these broad skills into learning programmes, particularly those aimed at significant numbers of 16-19 year olds (Brown et al, 1991). Besides paying attention to the principle of key skills development, it is necessary that this is supported in practice with a core entitlement covering the range and quality of learning opportunities available for individuals to develop their key skills (FEU, 1989). The increasing pressure on many workers to be able to adapt quickly, perform a wide range of tasks and work in integrated environments mean that not only might a greater range of technical skills be required, but also that greater demands are made upon the use of key skills (Dankbaar, 1995).

Also it may be that general skills are much more likely than specific skills to transfer (Fortheringhame, 1984). Nijhof and Remmers consider that basic (key) skills should be regarded as those "cognitive, communicative and group process skills which have transfer value" (quoted in Dutch Ministry of Education and Science, 1993, p. 35). Most employers are aware that recruits with highly developed core skills (transferable skills and the ability to transfer them) will find it relatively easy to pick up any shortfall in occupationally-specific skills, particularly once they are immersed in an occupational context (BT, 1993). They are equally aware though that if the reverse applies, that individuals have the necessary occupationally-specific skills but lack some key core skills, then remediation will be much more difficult (Jallade, 1989).

The emphasis upon the importance of key (or core) skills development is not an argument for the decontextualised teaching and learning of these skills (Barrow, 1991), nor for neglect of occupationally specific skills. The key point is that both more specific occupational skills and general key skills can be developed **at the same time**. Indeed integrating the two can be a powerful learning tool (Brown, 1988). The assessment of key skills in practice though is sometimes problematic (Wolf, 1991) and key skills specifications may not get to grips with promoting the ability to transfer (Blagg et al, 1993). Hence attention may need to be directed more towards the process skills which underpin the ability to transfer. It is therefore important to get both learners and those supporting learners thinking and reflecting upon the key skills development of learners. The line of this argument is that if there are key skills, which underpin effective performance at work, then a crucial aid to the development of these skills is that learners become aware of their significance and how they are being used (Levy, 1987).

Because many jobs are becoming more complex through task integration, increasing demands are being made upon learners to extend their knowledge base (through greater breadth rather than greater depth) (Dutch Ministry of Education and Science 1993). This in turn puts a

premium upon the ability to transfer knowledge and skills to different situations (not least so as to reduce the learning time). Research highlights the importance of learners developing schema (Hesketh et al 1989), networks (Simons 1990), or maps (Soden 1993), so as to be able to organise what they have learned, with the increased possibility that they could then apply this elsewhere.

Transfer tends to be highly specific and it needs to be **guided**: it rarely occurs spontaneously. However, Perkins and Salomon (1989), in their review of research on transfer, argue transfer is possible, depending upon how knowledge and skills have been learned and how the individual deals with that knowledge in different contexts: "general skills and bits of knowledge taught within a specific context can become transferable" (Perkins and Salomon 1989, p. 22). Hence two conditions are generally required for transfer to take place: context-specific knowledge and general skills have to be brought together and the approach to learning needs actively to seek ways to encourage transfer.

If one intention of a learning programme is to help learners develop the ability to transfer skills, knowledge and understanding, then learning contexts are required which draw attention to the significance of skill transfer. For example, this could involve actively helping people to look for opportunities to transfer skills, knowledge and experience and giving them exposure to a **range** of contexts, such that they have opportunities to practise making successful transfers (Blagg et al 1992). Pea (1987) argues that it is necessary to promote a transfer culture, and this should include organising an affective climate directed at transfer. Hence attempts should be made to make transfer strongly linked to learner motivation and commitment. The whole thrust of this approach then is that learners in particular, but also tutors, are encouraged to analyse contexts for the possibility of skill transfer. The requirement that learners integrate a broad range of experiences, besides having the capacity to develop the ability to transfer, can itself also help in the development of learners' critical thinking and conceptual skills (Winter et al 1981). This does though depend upon learners being given opportunities for reflection so as to broaden the generality of skills and knowledge learned (Simons 1990).

### **Development of thinking skills**

Over the past twenty years there has been a world-wide growth of interest in teaching thinking skills (for reviews of the American scene see: Glaser, 1984; Baron & Sternberg, 1987; Resnick & Klopfer, 1989; and for the European scene: Coles & Robinson, 1989; McGuinness & Nisbet, 1991). The main focus of this interest has been on how individuals may develop their thinking skills so that these can be applied in varying contexts. The interest in thinking skills covers all levels through to high level problem solving skills development. For example, the US Committee on Science, Engineering and Public Policy (1984) drew attention to the increasing need for students to learn the thinking skills to manage information, formulate effective probing questions, solve problems and so on. In Germany too, Achtenhagen (1994) argues that vocational education has to pay attention to the mid-term and long-term development of higher order abilities, such as problem solving.

Blagg et al (1993) conclude from a fairly comprehensive review of the evidence that enhancing thinking skills can have positive transfer effects. One highly influential text (Collins et al 1989) has put forward the notion of a cognitive apprenticeship, where explicit attention is given to the development of cognitive skills. Emphasis is given to modelling approaches to thinking when

tackling problems within a domain, through demonstrations, coupled with coaching, offering hints and regular feedback when learners tackle problems themselves. Collins et al (1989) also highlight the importance of learners making their thinking processes explicit, including through the use of articulation, whereby learners articulate the knowledge, reasoning or problem solving processes they are using. The sharing of ideas about thinking processes can be a valuable means of learning for learner and coach (Brown et al 1994). However, such sharing can also be valuable in group settings, where learners can access (develop, organise and become aware of) their own and others' knowledge and approaches to problems (Prawat 1989).

Soden (1993) argues that there is particular value in teaching and making explicit the thinking that occurs in solving problems in occupational contexts, as "good problem solvers have internal representations of fundamental principles relevant to their occupational area and these representations are connected to each other and to broader relevant knowledge in ways which facilitate application to problems" (Soden 1993, p 12). Rissland (1985) believes it is therefore essential for tutors to create a framework that can help learners organise their learning in the domain in which they are working. Learners need to develop schemas to organise what they are learning, particularly if training is exploration-based, not least in order to be able to transfer what they have learned (Hesketh et al 1989). One important aim then for developing expertise should be to get learners to build integrated knowledge representations (Landa 1984). Teaching should then "have a dual focus - the development of the thinking skills as well as the achievement of the targeted competence" (Soden 1993, p 3).

Kommers et al (1991) and Soden (1993) signal the usefulness of getting students to engage in concept mapping. This is compatible with earlier research (Schmeck 1988) showing that those with a deep learning style were likely to organise ideas into networks, which linked concepts. Simons (1990) too points out that the likelihood of future transfer is greatly enhanced if learners have a representation in their minds of how concepts and ideas fit together in a relational network.

Soden (1993) was involved in a project to get tutors to teach thinking skills to groups of learners taking vocational modules in Scottish programmes of initial vocational education and training. The work demonstrated the potential of the approach and that learners' problem solving performance could be enhanced. However, there are a number of issues, which would be likely to act as barriers to greater take-up and usage of the approach:

- current assessment processes (and administrative requirements) favouring assessment of particular outcomes (or elements) may be a disincentive for learners to attempt to **integrate** all the underlying knowledge
- the approach would be very much more effective if taught across a whole programme rather than just parts of it
- perceptions of colleagues and senior staff that they [tutors] were "wasting time when they were helping learners to practise thinking skills rather than 'practical' skills, [even though] this perception was not supported by the project data" (Soden 1993, p 43)
- the method works best when extensive use is made of small group discussions and individual tutor-learner dialogues: it could be jeopardised if a tutor has to work with increasingly large groups
- whether the development of problem solving skills is valued.

Learners, therefore, need not just to learn efficient mental processes, but also need to learn when and how to use them in practice. There is, therefore, an emerging consensus on the value of teaching thinking skills to aid problem solving performance in particular contexts (Glaser and Bassok, 1989). This teaching though should be embedded: that is, directly linked to solving problems that occur in a particular occupational context. Learners should also be encouraged to articulate their thinking processes and be given opportunities to practise using and reflecting upon the relational networks they are developing.

### **Teamwork and collaborative learning**

The devolution of supervisory responsibilities to teams of operators changes not only the skills required of operators but also the way in which they are required to work together (Rothwell, 1993; Dankbaar, 1995). Similarly changing skill mixes and the development of multi-skilled or interdisciplinary teams may require skilled workers to work more intensively with others (Jallade, 1989; BT, 1993). Hence being able to operate as a member of a team is becoming increasingly important at work, and the ability to work in teams is consistently rated as a most valuable attribute (Bradshaw, 1985), particularly by employers (BT, 1993). Infelise (1994) highlights how large companies in France, Germany, Britain and Italy make use of group-based project work, action learning and learning while working in organised work-based learning programmes, and how teams have become a focus of support for learning (Infelise 1994; Dankbaar 1995).

There is a strong need for VET to produce individuals capable of working in teams. However, allied to this is a complementary argument, of value in its own right, that collaborative learning is a vital component in the development of effective learners within VET. The support of others can frequently be decisive in the learning of individuals, so particular attention should be paid to making use of opportunities for collaborative learning (California Community Colleges Project Team, 1989). Hayes (1989) documents how in Germany Volkswagen have sought to make extensive use of group project work in the initial education and training of their apprentices. Knasel and Meed (1994) suggest the value of supportive teams in their support and encouragement of learners relates to the ways:

- they provide opportunities for people to share their skills and experience.;
- they provide a forum for exchanging information and generating ideas;
- within a supportive team people can more readily give each other advice, guidance and feedback in an unthreatening manner;
- above all a team - with its defined membership, shared sense of purpose, consciousness of being a group and interdependence - can offer the kind of enjoyable, rewarding environment in which learning is more likely to happen" (p 45).

The extent to which this is feasible though depends upon a readiness to set up activities for learners to learn and work, **as a group**. Clearly, the interpersonal characteristics of the learning context are an aspect which are directly experienced by the individual learner. Learning in the presence of other learners is an important component of an individual learner's success in learning to learn. In fact, 'social interaction and joint work is the starting point of learning' (Engeström, 1994, p. 37). Those with a special responsibility for mediating in the learning process, such as the teacher/tutor/coach, will facilitate learning to learn where they themselves engage in this activity, facing problems and adapting to these in the practical

context. 'Engaging in higher order thinking with others seems likely to teach students that they have the ability, the permission, and even the obligation to engage in critical analysis' (Resnick, 1987a, p. 41). The 'cognitive apprenticeship' view of teaching and learning embeds the acquisition of knowledge and skills in the social and functional context of their use. Learning to learn will be most successful when there are the conditions of collaborative teamwork within a supportive framework. Within this social setting the learner receives experience in the form of modelling, feedback and encouragement from others to reflect.

Encouragement of co-operative learning can therefore be seen as an important strategy for tutors to adopt (van Ments, 1990), and it is important that learners should learn to value collaborative learning and working relationships and recognise the value of the experience of others. Resnick (1987b) argues that group settings enable learners to talk about their thinking processes in a socially acceptable way, and elevates thinking to an observable status (Glaser 1991). Sanches (1992) endorses this by showing that group-based problem solving can help learners develop reflective thinking skills and their capacity for self-regulation, as well as increasing the likelihood that they will transfer what they have learned. Mandl and colleagues (1994) similarly show how the use of 'thinking aloud' protocols to explain actions in group-based simulations give a basis for collective review and identification of successes and failures in their utilisation of knowledge.

The value of group projects in developing the skills of working with others has been demonstrated in a number of contexts (FEU, 1985; Boud et al, 1991), but the problem is that time for group reflection may be seen as 'soft' and be sacrificed or severely curtailed in response to more pressing demands. Soden (1993) highlights that the most effective way of "remediating thinking errors is to discuss them with someone else" (p 18). Miyake (1986) also showed that during collaborative problem solving individuals were more likely to monitor their own thinking processes. Working with others within learning programmes is particularly important for those who may be working largely on their own at work or in work placements. Opportunities for working with others should be built into all learning programmes but, where relatively little working and learning with others occurs at work, it may be that the use of action plans and learning contracts can give particular emphasis to supporting opportunities for working with others in other contexts.

A further advantage of collaborative learning is that it might enable those with limited views of their own likely achievement to tackle more ambitious activities and set more challenging goals than they are likely to do if working on their own (Bandura, 1986). Vygotsky (1978) signals the advantage of collaborative learning for the way those working with more capable peers eventually internalise approaches to problem-solving, which were initially beyond them when working on their own. The social context created by a co-operative approach can also enhance the motivation and commitment of the learners (Slavin, 1983). Blagg et al (1994) see guided groupwork as invaluable not only to develop teamwork skills, but also as: "an important means of extending learning and understanding. Effective groups providing a 'cognitive scaffold' for others to climb and build on. Ideas, tactics and solutions, evolve in an iterative way enabling individuals to see possibilities which would otherwise have been unavailable to them" (p 9).

## **Design of powerful teaching and learning environments**



One key message for those charged with designing effective learning programmes within VET is that they need to put learning at the heart of the process. A focus upon learning immediately draws attention to the need to ensure learners possess or develop effective learning strategies. In particular, it will be important to ensure learners are given opportunities to improve learning to learn skills and that a sufficient range and quality of learning opportunities are available for individuals to develop their key skills. Further, if one intention of a learning programme is to help learners develop the ability to transfer skills, knowledge and understanding, then learning contexts are required which draw attention to the significance of skill transfer.

Processes of review and critical reflection are pivotal for the development of learners. Organised reflection on what has been learned and what needs to be learned in future can act as a bridge between working and learning, or as a support to learning while working. Such reflective processes can also link into the development of more elaborated thinking processes, as occupational expertise develops. More generally, learners should be encouraged to make their thinking approaches explicit, through discussion with tutors, coaches or peers, of their approach to problems in their occupational area and of the networks or schemas they are developing to understand concepts and relationships in their area as a whole. By the same token it could be useful for tutors to teach thinking skills and strategies as an aid to problem-solving in occupational contexts.

The development of learner independence too is an important goal as learners take increasing responsibility for their own continuing learning in occupational settings. Similarly being able to learn and work in teams has become more significant and learning programmes should provide opportunities to develop these skills. It might be thought that the attention upon the process skills underpinning the ability to be effective in different contexts might result in the development of a substantive occupational knowledge base being downplayed. However, this is not the case. Rather the development of process skills ideally should be embedded in appropriate occupational contexts. Further, the development of a substantive knowledge base is important because it is central to the development of domain-specific expertise and because it forms a platform for continuing learning in the future. Indeed it should be remembered that the ability to master a substantive knowledge base is itself a process skill, which can be valuable in a variety of learning and working contexts.

Overall then, there are a number of factors that those designing learning programmes in VET need to consider. In this context programme designers may wish to check how well their efforts match up against the adaptation of De Corte's powerful teaching and learning environment given below. De Corte (1990, pp. 12-13) describes a framework for the design and elaboration of 'powerful teaching-learning environments' based on recent research findings that reflect an integration of knowledge from a number of different theoretical fields. The two basic ideas underlying this model are: the view of learning as a constructive process, and the idea of cognitive apprenticeship as an effective and appropriate method for learning and teaching. Many of the theoretical views and much of the research evidence cited in this chapter also underpin De Corte's arguments for the construction of 'powerful teaching-learning environment'. For example, the value of teaching thinking skills and strategies and the importance of social and contextual variables in this process are emphasised.

However, De Corte acknowledges that the model does not take adequate account of motivational and personality factors, although he acknowledges the importance of enhancing

intrinsic motivation for learning in considering the nature of a favourable social context for learning. For example, the reference to reflection and articulation does not take adequate account of the importance of individual learner's implicit theories of learning and the benefit to the learner of becoming more aware of the theories they hold about learning. So through the application of such additional insight it is possible to move closer towards the specification of a powerful teaching and learning environment which allows a fuller integration of our current theoretical understanding of how individuals learn. This is outlined in the following figure:

**A powerful teaching and learning environment occurs where :**

- it is based on the provision of direct experience rather than indirect experience and use of representational systems
- it is based on learning through action in the contexts in which the learning is to be applied
- learning takes place in the presence of experts practising in the contexts in which the learning is to be applied
- experiences challenge the learner
- individuals become conscious of their implicit theories about learning
- individuals view learning as under their control and as intrinsically rewarding
- learners become conscious of their thinking and learning strategies
- there are the conditions of collaborative teamwork which provide experience for the learner in the form of modelling, feedback and encouragement to reflect
- facilitators of learning such as tutor or coach themselves engage in learning to learn, facing problems, adapting to these in the practical context and reflecting on problem formulation and problem solving strategies
- learners gain conscious cognition of unconscious learning through strategies such as meditation, spontaneity, reflection, intuition, imagination and fantasy (Murphy, 1975)

Adapted from De Corte (1990)

The above should not be regarded as a mandatory template to be followed in the construction of a single ideal learning environment, not least because as Nieuwenhuis (1991) points out there is no single 'best' context for VET, precisely because effective VET can make use of a variety of contexts. For example, the extent to which workplaces are able to offer 'strong learning environments', where learners are able to apply their developing skills, knowledge and understanding (Onstenk, 1994), will be a profound influence on how the rest of a VET programme is constructed. However, it does provide a framework against which it is possible to judge, in broad terms, whether appropriate attention is being paid to how individuals learn in vocational education; whether sufficient support is being given to the development of critical

learning processes required to underpin effective learning programmes; and whether sufficient consideration is being given to what makes for powerful learning environments within which effective learning can take place.

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