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Relevance and good practice in VET

Peter Smith

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Accommodating learning styles

Relevance and good practice in VET

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The views and opinions expressed in this document are those of the author/project team and do not necessarily reflect the views of ANTA or NCVER.

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Contents

Acknowledgements	4
Key messages	5
Executive summary	6
Context	9
Research purpose	9
Policy and practice issues	9
Summary of issues identified in the literature	10
Research questions	12
Methodology	13
Research sites	13
Data collection methods and participants	13
Data collection tools and analyses of data	14
Findings	15
The extent to which VET teachers take account of styles	15
Common understandings of styles and resulting teaching practices	18
Utility of knowledge of styles	21
Examples of good practice	25
Strategies employed by VET instructors and learners to develop self-directed learning	26
Enhancing learner motivation and lifelong learning	29
Towards relevant professional development	30
Suggestions for practice	35
Knowing a theory (or two)	35
Identifying style	35
Responding to style	37
Developing self-directed learning among students	39
Enhancing learner motivation and capacity to develop lifelong learning mind-sets	39
Implications for policy and practice	41
References	42
Appendix 1: Data collection instruments	44
Appendix 2: Proposed professional development program	50

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Key messages

- ✧ Vocational education and training (VET) providers now deliver programs in new and more flexible ways using a wide range of media and approaches, and in a variety of locations. The diversity of students also means that its teaching staff need to be able to adapt to different learner groups and individuals.
- ✧ VET teachers are generally alert to the fact that there are group and individual learning style differences among their VET clients. Teachers see the identification of style and their responses to it as part of good professional practice and is required to achieve client satisfaction.
- ✧ Teachers rely strongly on previous experience. They have developed a range of personal methods to identify individual and group learning styles, and a range of techniques to respond to these different styles. Their methods are interactive based on observations of learner reactions to the learning context and media used and then modified as appropriate, rather than on applying particular learning theories.
- ✧ There is need for professional development that more clearly indicates to teachers the capacities for training packages to accommodate learning styles through design, delivery and assessment. Based on this research, professional development in learning styles is likely to be best achieved through practical examples of good practice and practical teaching settings, rather than through espousing particular theories of learning style.
- ✧ Students were limited in their knowledge of their learning style but felt that teachers did take account of their learning characteristics in their teaching. Nevertheless, there is need for the development and implementation of effective learning-to-learn training for students.

Executive summary

This research had the following four inter-related purposes:

- ✧ to identify and clarify the distinctions between learning styles, preferences and strategies of students, and their practical application to vocational education and training (VET) learning environments
- ✧ to identify the extent to which the VET sector takes account of preferred learning styles and the range of teaching strategies already in place throughout the sector, their effectiveness for learners and different learner groups, and their applicability to different instructional methodologies and learning outcomes
- ✧ to develop a set of strategies that instructors can use to develop learners and knowledge/skill acquisition within the training package context
- ✧ to identify a professional development program, or set of programs, that will be valuable in assisting VET instructors to develop client-focused delivery methods.

New teaching technologies in the VET sector have the potential to increase the degree to which the sector can respond to the needs of individual learners, while new ways of thinking about VET delivery have increased the number of ways in which training is delivered. New learning products in vocational education and training, and an increasing demand on the credentials of trainers, have also increased the scope of VET clients and potential clients. These changes in instruction have increased the range of learners that VET services must contend with, while potentially increasing the capacity for the VET sector to respond more differentially to that range of learners. Nonetheless, there is evidence from research in Australia and the United Kingdom that VET instruction may not as yet have fully recognised the need and capacity to adapt to different learner groups and individuals, and that there may still be something of a ‘one size fits all’ view among VET providers and practitioners.

The research undertaken in this project was designed to identify how VET practitioners view style differences between students, and what sort of account they take of those differences in designing and delivering teaching. Part of that broader research question involved an identification of the methods that VET practitioners use to identify learner group and individual styles, and the forms of response that they make to those identified styles in their teaching. The research was also designed to identify forms of professional development that may be most useful to VET practitioners in their attempts to identify and accommodate style.

The research was undertaken in five technical and further education (TAFE) institutes and one professional network of trainers in private and public registered training organisations. Research sites were spread between Victoria, South Australia and Western Australia. Participants in the research were teaching staff, students and management staff. Data collection methods included a questionnaire undertaken by teaching staff, focus groups of teachers, students, and management/support staff, and case studies of exemplary practice. There was some overlap between participants in the questionnaire and focus group components. The questionnaire was largely quantitative and the data analysed quantitatively, while all other research methods were qualitative in nature. Participants were largely self-selected.

Through a literature review the project identified that the concepts of learning styles, learning preferences and learning strategies can be differentially characterised as the following:

- ✧ 'learning style' is the individual learner's distinctive and habitual manner of acquiring knowledge, skills or attitudes through study or experience
- ✧ 'learning preference' is the favouring of one particular teaching mode over another
- ✧ 'learning strategies' are the plans of action that learners adopt in the acquisition of knowledge, skills or attitudes through study or experience
- ✧ styles tend to be more stable within an individual across different learning tasks and contexts; preferences are more variable across different learning tasks and contexts; and strategies vary between learning tasks on a basis how best the learner believes a learning task can be successfully completed.

The following points summarise the major findings of the research:

Teachers:

- ✧ Experienced VET teachers develop an intrinsic understanding and response to student learning styles and preferences.
- ✧ VET teachers generally understand that learning styles, preferences and strategies are largely the same concept, and are expressions of individual differences between students in the way that they like to learn. That understanding is mainly developed through experience and observation of students, rather than an understanding based on theory.
- ✧ There was general recognition that responding to student style formed part of good teaching practice, and was seen as something that a teacher should do as part of providing a professional and quality learning experience for students.
- ✧ The understandings teachers have, based as they are in experience and observation, serve them well and enable them to identify different style characteristics between individuals and between groups, as well as responding to those differences in teaching design and delivery.
- ✧ Teachers have developed a range of personal methods of identifying individual and group style, and a range of techniques that they used to respond to individual and group style differences.
- ✧ Teachers identified learning styles through two domains of student activity: the first is associated with student reaction to different media used to present content such as visual, hands-on, listening, and print-based; and the second domain comprised student reaction to various learning contexts such as group learning, collaborative learning, independent learning, and instructor-led learning. Teachers identified style differences in these domains at a level of analysis with which they could work, and at which they could respond.
- ✧ Teachers identified with, and responded to, student group and individual style in an interactive and ongoing way. They would start a new group with some preconceptions based on previous experience, and then would progressively modify those preconceptions through observation and interaction with the new group. On that basis they would modify teaching, and then use those modifications to make new observations about individuals and the group.

Students:

- ✧ Students in the VET sector commonly expressed the view that their teachers did take account of student learning characteristics in their teaching, and provided experiences that were designed to cater for them as individuals.
- ✧ Students were limited in their understanding of their own style, conceptualising style largely as to whether they liked to sit and listen to 'lectures', or whether they liked to engage in learning that is hands-on.
- ✧ In a context of greater student choice between different media for content presentation, greater choice among different modes of study, and a higher need for self-management in resource-

based and flexible learning contexts, there is need for the development and implementation of effective learning-to-learn training for students.

Organisational:

- ✧ The view was quite commonly expressed that response to learner style was part of the customer service business model of VET providers, and should belong in the same area of organisational strategy as other forms of learner-centred client service.
- ✧ A common concern expressed by teachers was that the main constraint in providing teaching that is responsive to style was the time they had available to achieve this. Similar concern was expressed that in a price-competitive VET market environment, the need to provide training in the cheapest and quickest way possible often outweighed the capacity to provide quality learner-centred teaching.
- ✧ The observation/interaction process and subsequent modification worked most successfully for teachers who had regular contact with the same group of students. The process was progressively more difficult as regular contact decreased. Teachers whose exposure to a group was occasional, block release (when students are away from their workplace for short teaching periods), or through remote teaching delivery methods had much less opportunity to identify and respond to style.
- ✧ Although many experienced teachers believed that training packages gave them considerable opportunity to respond to student style, others felt that training packages were constraining in their capacity to deliver training that was responsive to individual and group style. The majority of teachers felt that training packages were limiting the capacity of teachers to respond to student style when designing and conducting assessment.
- ✧ Teachers felt constrained by time, and the demands and limitations of the training packages in developing students' self-directed learning skills (as opposed to self-paced learning skills) and their learning-to-learn capacity.

Professional development:

- ✧ There was considerable difference across the six research sites in the number of staff who had participated in professional development related to learning styles—some research sites have a high commitment to professional development in that area, while others have relatively low commitment. However, all research sites had already provided some professional development on styles.
- ✧ Most professional development on styles appeared to have been delivered in a theoretical context with a focus on one or two particular theories of learning style. The research indicates that professional development on styles may be most effective when the focus is more on teacher identification and response to style in practical teaching settings, rather than knowledge of theoretical models. However, some knowledge of theoretical models is important to ensure that teacher understanding is not based only on experience. There is also value in focusing the professional development on the issues of style identification through content presentation methods, and through the different learning contexts in which students engage.
- ✧ Professional development that presents potential methods for teaching and assessment within training packages would also be particularly useful in enabling teachers to gain a better understanding of the capacities they have to respond to students within the training package design.
- ✧ Professional development that provides teachers with guidance on how they can use their knowledge of learning styles to support students studying at a distance would be particularly beneficial.
- ✧ A proposed professional development program was an outcome of the research.

Research purpose

The utility of concepts of student 'learning styles' has been a matter of considerable interest in education and training since the 1960s. Since then there have been numerous attempts at the development of theories that can help to explain the different ways people learn, and to connect these different ways to a range of teaching approaches and teaching methods. At the same time, there has been confusion over the various terms that are used to describe 'learning styles': some theorists preferring the term 'learning style', while others prefer terms such as 'learning preferences' or 'learning strategies'.

Experienced teachers are aware that there are individual differences among students in the way those students learn. That awareness is sometimes derived through a formal study of 'learning styles', or through informal reading of the literature available to teachers. For other teachers their awareness and attendant practices have come from their observations of students they teach and their trialling of different ways of engaging students with the learning materials and processes. Teachers have typically developed a range of strategies that they find work for them and that assist them in providing instruction to students in ways that are expected to suit the ways those students learn.

This research had the following four inter-related purposes:

- ✧ to identify and clarify the distinctions between learning styles, preferences and strategies, and their practical application to vocational education and training (VET) learning environments
- ✧ to identify the extent to which the VET sector takes account of preferred learning styles and the range of teaching strategies already in place throughout the sector, their effectiveness for learners and different learner groups, and their applicability to different instructional methodologies and learning outcomes
- ✧ to develop a set of strategies that instructors can use to develop learners and knowledge/skill acquisition within the training package context
- ✧ to identify a professional development program, or set of programs, that will be valuable in assisting VET instructors to develop client-focused delivery methods.

Policy and practice issues

New forms of delivery of education and training, together with a new and increasing range of contexts within which VET students learn, provide considerable challenge to models of teaching delivery that were developed in a context of classroom instruction. Competency based training, together with training packages and flexible forms of training delivery, provide the opportunity for VET instructors to respond to student learning styles and needs on a more individual basis than previous group instructional methods have enabled. Additionally, VET students now learn in a wide variety of contexts, including within classrooms and workshops at registered training organisations, in workplaces, and in locations such as their homes where they access and use learning materials and learning sequences on an independent learning basis. New clients have emerged for the VET sector, as the need for training and for learners to be credentialed under the

Australian Qualifications Framework (AQF) have yielded groups of learners who in previous times would have either received no training at all, or their training had been conducted informally within their place of employment.

These changes have already resulted in a vast range of policy changes within vocational education and training, and there are yet new challenges for registered training organisations in developing their policies and practices related to curriculum design and the delivery methods to be used in meeting the training outcomes required in training packages. Associated with these challenges are the issues of policy and practice surrounding the choices to be made among the range of teaching technologies that are available. At the level of individual instructors in vocational education and training there are similar issues of appropriate curriculum design for defined learning outcomes and different groups of learners; and again for their choice of available and feasible teaching delivery methods that will assist learners in reaching the learning outcomes required of them.

An understanding of student learning styles, preferences and strategies, and some insights into how this knowledge can be used to best leverage effective outcomes for different individual learners, and groups of learners, are issues of policy and practice at the levels of system planning, registered training organisations and individual instructors.

Summary of issues identified in the literature

A number of issues were identified through the extensive literature review of research and theory on learning styles, preferences and strategies.

There are useful distinctions to be made between the terms ‘learning style’, ‘learning preference’ and ‘learning strategies’. Among the various writers, Sadler-Smith (1996) has made this distinction more clearly and succinctly than most. He suggests that:

- ✧ ‘learning style’ is the individual learner’s distinctive and habitual manner of acquiring knowledge, skills or attitudes through study or experience. That description indicates that there is a form of stability in these styles within each of us and that we have a way of going about learning that we tend to use across different situations.
- ✧ ‘learning preference’ is the favouring of one particular teaching mode over another, with the consequence that some people have a preference for learning from doing, while others may have a preference for listening or watching. Although there is some stability of preference within each individual, at the same time our preferences will vary dependent, at least to some extent, on what it is that we are learning and the context within which we are undertaking that learning. Learning preferences are, then, less stable than styles as characteristics of the individual.
- ✧ ‘learning strategies’ are the plans of action we adopt in the acquisition of knowledge, skills or attitudes through study or experience. For example, do we decide to learn something as a whole, or do we break it down into its parts? Do we decide to learn and then rehearse and recall? Do we connect new learning to old learning to make sense of it?

The literature indicates that not only do individuals exhibit different styles, preferences and strategies but that different groups of learners also exhibit some differences. For example, the literature shows that VET learners typically like to learn through hands-on experience rather than through listening or reading (Smith 2000; Warner, Christie & Choy 1998). They also rather like to learn in socially constructed settings where they can discuss the learning as they undertake it; and they like to have guidance from their instructor in what they are to learn and how they might go about it (Boote 1998; Smith 2000). However, there are differences between groups in vocational education and training; for example, apprentices are most typified by that hands-on, guided learning model of instruction, while learners in other programs such as business and health and community services are more tolerant of reading and listening—but still in a context of the broad characteristics that typify VET learners. At the same time, there are differences that are discernible

between students on a basis of gender (Brainard & Ommen 1977; Fox & Roberts 1993), culture (Biggs 1991; Smith, Miller & Crassini 1998; Yuen 1994) and age (Holland 1980; Calder et al. 1995).

The literature also provided evidence that learning styles have a stability within each individual across a number of learning circumstances (Curry 1983; Sadler-Smith 1996). While learning preferences are less stable as characteristic of an individual, there was evidence that when confronted with similar learning tasks and contexts the preferences displayed by the same individual tend to also be similar (Sadler-Smith & Riding 1999).

Within that typical set of characteristics, though, there are large individual differences between learners. We run some risks with typical learner characteristics if we do not also recognise that not all VET learners are the same, and they do not all conform to that typical model. The literature shows wide variations in individual styles, preferences and strategies. For that reason we have to be careful not to stereotype VET learners to the point where we do not recognise and accommodate difference.

The literature is inconclusive on whether or not designing instruction to ‘match’ style is effective for learning. Some of the research reviewed indicates that this matching is effective (Bostrom, Olfman & Sein 1990; Dunn et al. 1995; Dunn 2003), while other research indicates it makes no difference (Ruble & Stout 1993). Two important issues are evident here in the literature. First, the research is pretty well agreed that it is knowledge of their own style and preferences that is the most useful piece of information for learners (McGregor & Quam 1996; Vermunt 1995). Where there is adequate self-knowledge, the learner is more able to choose well between different options for learning materials and instructional methods, and also more able to adopt effective learning strategies that suit them. Second, there is suggestion that where instruction is very closely matched to a complex and detailed profile of style then there may be disappointment at the effectiveness of the matching. However, where the matching is linked to a set of broader learner characteristics there is stronger likelihood of satisfaction with the matching (Smith 2001). In other words, the level of the analysis and the detail of the matching may be important in the expectations that an instructor has of the matching. In turn, a knowledge of learner style and preference can be useful to an instructor in designing and delivering learning, but that utility is further enhanced if the learner also has insight into their own learning characteristics, and has a range of learning resources to choose from in an informed way (ANTA 2002).

The literature also indicates that effective teachers adjust teaching to suit diverse student styles (Darling-Hammond 2000; Sternberg & Zhang 2001). Rosenfeld and Rosenfeld (2003) have argued that teachers who do not acknowledge differences in student style are more likely to attribute student learning difficulties to student weaknesses. Additionally, some research—for example, Banks et al. 2001 and Sleeter and Grant 1988—indicates that one of the most effective ways of assisting teachers to become more sensitive to the styles of others is for them to understand their own.

The literature also draws attention to the fact that styles and preferences can be developed in learners in ways that enable them to more effectively engage with a broader range of learning tasks and contexts (Sadler-Smith & Riding 1999; Vermunt 1995). To closely match instruction to style can in fact limit learner development of style and preferences to the degree that they are not encouraged or ‘stretched’ to engage with otherwise less familiar or less preferred learning materials or instructional experiences (Gregorc 1979; Cleverly 1994). Provision of a range of learning experiences and instructional methods can assist learners to develop styles, preferences and strategies, resulting in a higher degree of comfort with a broader set of learning contexts and challenges. Intelligent and strategic use of learning strategies can assist a learner to compensate for a learning style that is not well suited to the task at hand.

Finally, the vast majority of the learning styles literature and research is framed around the use of learning styles inventories. The research being undertaken in this project departs from that, deriving from a view that very few teachers and trainers identify the styles of their students through

questionnaires. Instead, naturalistic observation of students is the major way in which style is identified by teachers and trainers, and this research focuses on these processes of observation.

Research questions

The more general purposes we had for this research could be cast into a set of quite specific questions:

- ✧ To what extent does the VET sector take account of the preferred learning styles of different groups of learners?
- ✧ Where account is not taken, what information do VET instructors use to develop instructional methods? Where account is taken, what is commonly understood, and what teaching practices have resulted?
- ✧ How useful is knowledge of a selection of styles and preferences theories to VET instructors and planners, and to VET learners? How much use can be made of them, and in what form?
- ✧ What are some of the exemplars of good practice in the use of a knowledge of learning styles/preferences in VET teaching, and how might these exemplars be disseminated and embraced by other VET practitioners? How do these exemplars handle assessment issues as part of consideration for learning style?
- ✧ What strategies can be employed by VET instructors to develop self-management of learning among their clients; and what are the strategies that can be used by learners?
- ✧ Can development of those strategies enhance learner motivation and capacity to develop lifelong learning mind-sets?
- ✧ What professional development is likely to assist VET instructors to use learning styles to develop more client-focused teaching processes; and to develop self-managed learning in those clients?

Methodology

Research sites

The research was conducted in five technical and further education (TAFE) institutes and one network of private and public registered training organisation trainers and assessors. These six sites were located across Victoria, South Australia and Western Australia. Subsequent to a research ethics application being approved by Deakin University, managements at the five TAFE institutes were contacted to request permission to conduct the research in each of the institutes. That permission was obtained in every case, and individual participants were then contacted to secure their involvement. With the training network, individuals were approached in the first instance, since there is no formal organisation of that network.

Research sites were located in metropolitan and regional locations. At each site a staff member was identified as interested in the research and served as a facilitator in each site. Those facilitators, together with the Deakin University research team, formed the Project Reference Group, which met mainly by teleconference.

Data collection methods and participants

The research methodology comprised five major data collection methods:

- ✧ A questionnaire designed to inform the research on how teachers in vocational education and training identify different features of learning styles among their students, how confident they feel in their identifications, and whether they use those identifications in designing and delivering training and assessment. The questionnaire was administered to 160 teachers across the six research sites, with 79 males and 81 female respondents. Eleven respondents answered the questionnaire with certificate I or II students in mind; 59 with certificate III or IV students in mind; and 89 with diploma or advanced diploma. For one respondent the Australian Qualifications Framework level was not clear.
- ✧ Three focus groups were conducted among teachers at each of the sites. One of these focus groups at each site was levelled at people teaching certificate I and II students; one with teachers of certificate III and IV students; and one of teachers of diploma and advanced diploma. Seventeen focus groups were conducted among teachers—involving a total of 88 teachers—and these were fairly equally distributed across the three categories of Australian Qualifications Framework levels used in the research. One focus group was not able to be conducted.
- ✧ Three focus groups were conducted among students at each of the sites. One of these focus groups at each site was levelled at students in certificates I or II; one with students of certificates III and IV; and one of students of diploma and advanced diploma. Fourteen focus groups were conducted among students—involving a total of 91 participants—and again fairly equally distributed across the three Australian Qualifications Framework level categories used in the research. Four planned focus groups could not be conducted because of insufficient numbers available at that level in the institute at the time.

- ✧ Thirteen case studies were conducted of teachers/trainers who expressed particular interest in using learning styles in their teaching, and who were identified as employing some exemplary practices.
- ✧ A focus group of managers, human resource specialists and teachers was conducted at each site to comment on and form some validation of the professional development program suggested from the research. Thirty-four people participated in these focus groups.

All data collection occurred between October 2003 and March 2004.

The research findings have limitations insofar as the participants in the research were self-selected in the questionnaire and focus group components. Accordingly, they are likely to over-represent VET practitioners who have an interest in the learning styles and preferences of their students. There was some overlap between participants in the questionnaire and focus group components. Case study participants were identified as teachers interested in learning styles and were approached for participation on a targeted basis. There was some minor overlap between case study participants and focus group participants.

Data collection tools and analyses of data

Questionnaire

The questionnaire was designed by the research team and discussed and adjusted through the Project Reference Group. It was then piloted on a small number of people to assess intelligibility and answerability. Following the collection of the data, the questionnaire was subjected to a reliability analysis to gauge its effectiveness as a research tool. The reliability analysis yielded a Cronbach Alpha of 0.94. For no item was the Alpha if Item Deleted score higher than the Cronbach, indicating that all items performed satisfactorily in the questionnaire.

Questionnaire data were analysed through the SPSS (Statistical Package for the Social Sciences) statistical package.

Focus group themes

Focus group themes were developed by the research team for teachers/trainers and for students, following the intent of the research questions. These themes were then discussed by the Project Reference Group and adjusted as necessary. Focus groups were tape recorded with the permission of the participants, and focus group facilitators kept notes during the sessions. These data were content analysed to extract meaning from across the groups.

The procedure for student focus groups was identical to that used for teachers/trainers.

Case study themes

Case study themes were also developed by the research team. These themes were discussed with the Project Reference Group, and adjusted through discussion. They were underpinned by some smaller sub-themes as guides to the case study interview. Generally case studies were not taped, but notes were kept by the interviewer, with the case study written up after the interview. The case study was provided to each participant for accuracy checking.

Professional development focus groups

The identified professional development ideas were generated into a short paper with a set of themes for the group meeting. Again these were provided to the project reference group for discussion and adjustment. Data were analysed from notes kept during the group meetings.

All data collection instruments can be viewed in appendix 1.

Findings

The findings from the research are organised here under headings that reflect the seven research questions:

- ✧ To what extent does the VET sector take account of the preferred learning styles of different groups of learners?
- ✧ Where account is not taken, what information do VET instructors use to develop instructional methods? Where account is taken, what is commonly understood, and what teaching practices have resulted?
- ✧ How useful is knowledge of a selection of styles and preferences theories to VET instructors and planners, and to VET learners? How much use can be made of them, and in what form?
- ✧ What are some of the exemplars of good practice in the use of a knowledge of learning styles/preferences in VET teaching, and how might these exemplars be disseminated and embraced by other VET practitioners? How do these exemplars handle assessment issues as part of consideration for learning style?
- ✧ What strategies can be employed by VET instructors to develop self-management of learning among their clients; and what are the strategies that can be used by learners?
- ✧ Can development of those strategies enhance learner motivation and capacity to develop lifelong learning mind-sets?
- ✧ What professional development is likely to assist VET instructors to use learning styles to develop more client-focused teaching processes; and to develop self-managed learning in those clients?

The extent to which VET teachers take account of styles

The data informing this research question were derived from the questionnaires and from the teacher and student focus groups. The self-selected nature of the research participants is likely to have resulted in a set of research participants more aware of styles than is the case generally among teachers across the VET sector. That limitation in the research needs to be borne in mind when interpreting the results from this component of the research.

In general, there is considerable evidence that VET teachers pay attention to the learning styles of groups and of individuals, and most make a habit of assessing those styles through their observations of students as they learn, and as they interact in class sessions. Some of the questions on the questionnaire were focused on gathering that information, and an exploratory factor analysis indicated that these items did, indeed, hold together as a single scale. Average scores for each of those questions were high.

The questionnaire data indicated a strong belief among teachers that learning styles matter and need to be taken into account when designing and delivering instruction to students. There was a slightly lower set of scores related to spending time identifying styles and actually developing teaching to suit. The focus group data indicate that the lower scores here are not due to a lower commitment among teachers to undertake these tasks. Although there are some time and other constraints that make it more difficult to do these things as specific and separate exercises, teachers believe that

they largely achieve the tasks of identifying style and responding to suit through their everyday teaching. In other words, these things are done in the course of their teaching and are not treated as separate and special features of their teaching deliberations. As one teacher participant in a focus group put it:

I use an instinctive identification of how individuals like to learn—based on experience rather than on a theoretical model.

It is also noteworthy that the questionnaire scores for those questions relating to assessment design are lower than other scores on this set of questions. Again, the focus group data indicate that there are perceived and real constraints on teachers in designing style-based assessments, although this was strongly recognised as desirable. There is a comparatively greater variability among teachers in how much they take styles into account in designing assessment. There was indication in the focus group data that this variability related to real and perceived differences between training package assessment guidelines, and a perception that some allowed for style-based design more than others. At the same time, although the assessment question scores were generally lower than scores on other questionnaire items, they still represent an average capacity to design assessment to suit style somewhere between ‘reasonably often’ and ‘quite often’.

Teachers in focus groups were largely of the view that knowledge of learning styles is an important component of effective teaching design and delivery but that this knowledge forms only a part of the array of understandings required. One teacher put this succinctly, in a way that represented a common view, when she said:

Learning styles can be another tool we use to impart knowledge, with a proviso that you shouldn’t be over reliant on them.

There was also a widespread understanding that styles vary between groups of students. Furthermore, these typical styles could be effectively used to deliver instruction in ways that students found most meaningful and could increase student motivation to learn. Comments were made by teachers that indicated that learning through relevant tasks is most interesting to students, and can be an empowering experience for them. The evidence was that the majority of teachers in the focus groups did cater to style at least at the group level. However, this was tempered with a view, as expressed by one participant, that:

Identifying styles can be helpful if you use it to suggest ways for individual learners to consolidate their learning—but you have to be careful not to use it to label people or to put them in boxes.

The distinction between catering for individual style and group style was made on several occasions, with the point being made that teachers generally have insufficient time to cater to individual styles and have to work at group levels instead. Also related to the issue of the level at which learning styles information is taken into account is the fact that the focus group evidence was largely that styles were not taken into account at a level of great detail. But at a higher level of analysis style was largely based on an awareness of visual, auditory and kinaesthetic styles, together with an understanding of student preference towards self-paced and/or self-direction. Considerable comment was made about VET student preference for hands-on learning, converging with other comment about the kinaesthetic learning modality.

Discussions about training packages in the focus groups of teachers drew a wide variety of responses. That wide variety of responses may be at least partially because different participants would have been discussing different training packages, and our research made no attempt to address that variety. These responses varied from a positive statement that:

A training package says what you’re going to do, not how you are going to do it. There is huge scope to use learning styles as a strategy in delivering training packages, especially with adults.

This comment, which was made in one of the focus groups, drew considerable discussion and disagreement, with some participants believing that training packages did not readily allow for the use of style-based teaching approaches. However, the majority of that disagreement, which was evident in other focus groups of teachers, was related to the distinction between the endorsed components of training packages and the support resources. There was considerable agreement that where the pre-packaged learning resources were being used within training package delivery there were considerable limitations on capacity to adapt to style. Two specific comments are worth relating here:

Packaged learning resources available to support training packages can reduce capacity to respond to differences in style
and

The packaging of support resources has made some teachers lazy to cater for individuals.

A similar range of views was evident in discussions about assessment, with some teachers making observations typified by the following comment:

Training packages being competency based allow more flexibility in assessment, and this allows you to adjust both delivery and assessment strategies.

Views that training packages made style-based assessment more difficult were varied in nature, with some teachers suggesting that, because the competencies to be achieved were limited in their scope, the assessment varieties available were also limited. Other views were that the required assessment in training packages gave students little scope to show skills that were related to their style, such as dispositional learning associated with deployment of a competency outcome in the workplace. A further view voiced by a few teachers was that training packages are being delivered by competitor registered training organisations in very short periods of time; thus variations in delivery and assessment to cater for style were severely limited. These limitations are the result of a need to keep training time to a minimum to maintain price competitiveness. Participants were discussing here their experience to date with training packages. The more recent recommendations in the Australian National Training Authority (ANTA 2003a, 2003b) *High level review of training packages* associated with greater package liberalisation were not addressed in the focus groups.

Student focus groups also indicated that learning styles are important to them. In general, students were positive about the way their instructors catered for the way they liked to learn, with most comment relating to their preference to learn by doing, and observing that VET instructors mainly provided for that form of learning. The students also remarked that VET teachers usually provided an opportunity to put learning into practice very soon after a theory component had been taught, or that theory and practice were integrated together in the delivery. It was common among student focus groups to hear that their teachers engaged with them as individuals:

TAFE teachers treat students as people, not subjects.

Finally, evidence of the extent to which the VET sector takes account of preferred learning styles can be adduced from the availability of professional development that is related to learning styles. In all six institutions that formed the sites for the current research, some professional development programs that were related to styles, preferences or strategies had been offered to staff. These programs had taken several different forms, including workshops and forums. Sometimes they focused on a particular theory or instrument, and at other times on more general conceptual understanding of styles. Among the questionnaire respondents 58.8% had engaged in professional development related to learning styles and, of those, 89.4% reported that the professional development had been built around a recognised theory of styles, or a set of recognised theories. Statistical tests calculated on the data from each of the questions in the questionnaire indicate that those teachers who had participated in a professional development program on learning styles were significantly higher in their perception that students learn best when their styles are taken into account and that catering to learning styles matters to their students. Additionally, teachers who had participated in a professional development program felt that they spent more time identifying student styles, and believed they had a stronger understanding of styles.

Brief summary

Awareness of students' learning styles or preferences is common among those who participated in this research, and they have an appreciation that students learn in different ways. Much of what they subsequently do in responding to different learning styles and preferences is intrinsic, rather than being a deliberate and conscious planning process. Nevertheless, some of the more aware VET practitioners, represented by many of those who were interviewed for the case studies, have taken their understanding about how students learn into a higher level of conscious awareness and incorporate that understanding into their teaching and, to a lesser extent, their assessment practices.

Common understandings of styles and resulting teaching practices

Few respondents to either the questionnaire or within the teacher focus groups said they took no account of style. However, there were remarks made, as discussed above, that this was sometimes constrained both by their own time or by the time they had with their students and by the use of pre-packaged learning materials, particularly those in self-paced format. A further constraint noted by several focus group participants is that the industries and employers with whom they work have quite definite ideas about how instruction should be carried out, and are critical when that method is not followed. Most usually those industry and employer-preferred methods are traditional ones, where the instructor is required to treat the class as a fairly homogeneous group of learners, and deliver in a training room at specified times. One other participant remarked that institutional teaching policies also constrained account being taken of learning styles insofar as he was expected to teach within a limited set of paradigms.

In summary, where account is not taken of learning styles, the evidence available indicates that design and delivery are based on experiences that teachers have had and on the requirements of the context for learning. Those contexts include industry requirements, institutional teaching policies, and self-paced instruction.

What was far more evident in the questionnaire responses and the teacher focus groups was that significant account of student learning styles appears to be taken in the design and delivery of instruction, and that account being taken is commonly characteristic of teacher behaviour.

What was understood to be 'style'

Understanding about different levels of styles was considerable among teachers participating in focus groups. Few distinguished between styles and preferences in any formal way and tended to use these terms interchangeably, with the understanding that they described the way that an individual likes to go about learning. There was some distinguishing between learning strategies and styles, with an understanding that strategies represented the activities and processes students used to learn. Although style was commonly conceptualised as the way an individual likes to go about learning, there was a range of expressions of that common understanding, representing different insights into style theory and different professional development experiences with it. Some participants saw style differences between individuals as representing the different ways people decode information to make meaning from it, being a rather cognitive view; while others saw it as a different mix of preferences associated with sensory modalities such as visual, auditory and kinaesthetic. Although a number of participant teachers in focus groups spoke of particular theories and models of styles that they were familiar with, the majority of people identified the styles of students that they taught at a fairly macro-level. That macro-level was characterised by identifying student styles in terms of the sensory modalities mentioned above, together with student preferences for:

- ✧ self-paced learning, self-direction and independent learning
- ✧ reading

- ✧ hands-on experience
- ✧ learning with structure and guidance
- ✧ learning through social interaction with others.

It was evident here that teachers analysed student styles at a level they could observe in the classroom, and that they could actually use in their teaching design and delivery. That very pragmatic approach was evident among most teachers in the focus groups and meant that they could work with styles at a useable level of analysis.

The questionnaire we used in this study also took that macro-level approach to focus on those style characteristics a teacher has the opportunity of observing while interacting with students. The results from the analysis of the components of the questionnaire relating to the identification of student style indicate that teachers rate their capacity to identify, on average, all characteristics of student style covered in the questionnaire at least at the ‘reasonably often’ level, and ranging to just above ‘good’. That overall result indicates a fair degree of confidence in teachers about being able to make those identifications. Closer inspection of the questionnaire results suggests that teachers’ identifications of student style are made through observation of the student as he or she goes about their learning in the teacher’s presence. While that finding is one largely to be expected, it does indicate that teachers are typically evidence-based in making their assessments, and that they do make these assessments as class proceeds, as discussed under research question 1. Additionally, the finding converges with the evidence from focus groups that self-paced learning reduces teacher opportunity to identify and respond to style differences.

We also conducted an exploratory factor analysis on the questionnaire data for just the first 12 questions, all of which relate to style identification. The factor analysis technique provides an understanding of what clusters of style-identifying characteristics teachers see as being related to each other. A coherent pattern to the analysis indicates that teachers hold a collectively coherent set of understandings about style. Our analysis indicated two major factors. The first factor is associated with identifying style through activities that represent methods of content presentation used by the teacher. The second factor is associated with the contexts of learning—in social groups or by themselves, with self-direction or with teacher guidance.

What is particularly important about this finding in the current study is that there is clear indication that teachers have a very coherent set of understandings of style, and they see two major components. The first of these components relates to teachers being able to identify style through the delivery techniques that a teacher might use in a class setting; and the other component relates to the identification of style as degree of preference for independent or dependent learning. The findings of two components attending the identification of style by teachers was also borne out in the case study component of the research, where several participants had made a similar observation. In practice, the first of these two components is operationalised by teachers making direct observations of group and individual reaction to presentation methods used and, from time to time, the trialling by teachers of presentation methods in order to better inform their naturalistic observations and conclusions. The second component, associated with social or more independent contexts for learning, is operationalised by teacher observation of student behaviour. With respect to preferences for social contexts for learning this was more often than not directly observed within classroom settings. Preferences for more independent learning were largely inductive conclusions by teachers where students expressed a wish for self-paced or independent learning materials that they would engage with outside the classroom setting. For example, one case study participant made particular mention of catering to students who preferred to learn through resources that were made available to take away from the classroom or that were available within a learning resource centre. To some degree, these conclusions were sometimes based on what the teacher was not able to directly observe about the student within the classroom but, instead, what they understood to be occurring outside the classroom and away from direct teacher observation.

Resultant teaching practices

The teacher and student focus groups provided a considerable insight into a wide range of teaching practices that result from teacher identification of styles.

In terms of response to style, the evidence indicates that teachers identify aspects of learning styles at individual student level. They use that as part of their development of a picture of group style and, at the same time, they develop that picture of group style from collective characteristics they observe about the group. In the main, teachers design and deliver to cater for group styles, but they respond to individual styles when working with individual students. That distinction is operationalised by teachers developing a range of delivery techniques and media uses that they believe will be well accepted by the group of learners and that forms their 'public delivery' teaching pattern for that group. Within that group context, though, individual students will show signs of difficulty with certain parts of the work, or they will ask questions, or seek discussion with the teacher. At that level the teacher response becomes much more individualised and, at least in part, is framed around the teacher's knowledge of how that individual student learns. Although there was comment that self-paced learning reduces the pressure that teachers have on responding to individual style, there was evidence that it is through this individual level of response that teachers do achieve some capacity to respond to individual student style.

The most commonly adopted way of catering to style was to ensure that teaching delivery included a range of media and techniques of exposition within the parameters of perceived group style and available resources. In that way, students would be exposed to a number of preferred techniques and some that were not so preferred. As one respondent put it:

Plan every part of a course to have something for all styles—use a variety of teaching styles and techniques.

There is evidence in that statement of the 'non-adaptive' approach (Sadler-Smith 1996) being used, whereby a range of delivery techniques is provided so that learners can make some choice between them. While that is more difficult to achieve in a classroom, it was commonly offered by teachers who had moved towards more flexible forms of delivery where choices could be made between parallel forms of delivery. Within classroom settings, there was some evidence of parallel forms of delivery, but, more commonly, variety was provided in a serial way. Classroom teaching was seen by some as potentially being rather rigid and less able to adapt to individual styles, but it was commonly observed that it is wise to:

Plan sessions to be flexible and respond to needs as they arise in the group.

A second method, that was observed in some focus groups of teachers, is to provide for a variety of teaching styles whereby teachers, particularly less experienced ones, teach using their own preferred learning styles. This was sometimes in a context of team teaching in some trade areas but most commonly was operationalised by serial teacher changes. A third method that was observed in some focus groups of teachers is to provide a variety of teachers so that the teaching styles are naturally varied across the collective.

Group activities were seen by many focus group respondents as being an effective way to cater to style differences, since students could join groups that suited their style and, of course, their social relationships within the class. Group work also provided a form of student-centred learning, since groups could, to some extent, develop their own ways of going about learning so that an individual style could be better catered for by the smaller group, rather than being swamped by the whole class. Some teachers also observed that group work is not for every learner and the comment was made:

Where group activities don't work for some individuals, those individuals are provided with alternatives.

Designing teaching to ensure a considerable degree of practical work was a very common way that teachers used to cater to a perceived VET learner preference for hands-on experience. At the same time, there was a good deal of comment that straight theory sessions need to be kept to a minimum and be interspersed with practice. Students also made the same observations when they said such things as:

It's hard to sit in a theory class all day
and

Having some theory then some practice straight after it is the best way I learn.

Indeed, among student focus groups at all Australian Qualifications Framework levels, the comments about the need for hands-on to be maximised and theory sessions to be minimised was the most commonly made observation about how teachers could best cater for student learning style.

A final set of teacher responses to style were concerned with assessment. Assessment variation was widely acknowledged by teachers as an important component of catering to style, but there was also a feeling that variety in assessment is hard to achieve. Some teachers commented that they had developed a number of assessment style variations which enabled them to provide assessment of competencies, where appropriate, through oral or written tests, through practical or written tests, and through a variety of practical assessments. Some had also developed different questioning techniques for different students through observation that sometimes a student would find it hard to engage with an assessment task because of the way the task was worded. Varying the way in which the task requirements are provided to a student can enable them to show that they have the requisite knowledge to achieve the assessment outcome. The point being made here was that assessment difficulties among students were not always because there was insufficient knowledge or skill to meet the requirement, but that the way in which the assessment task is framed can be the barrier. In the same context, there was comment from some teacher participants that the current state of development in online assessment does not provide sufficient scope for that sort of variation. At the same time, there was also acknowledgment that further development of online assessment can be expected to alleviate this barrier at least to some extent.

There was also comment that some employers and industries have particular ideas (usually rather traditional ones) about how assessment should be conducted to yield outcomes that they believe to be valuable.

Brief summary

While teachers might refer to the learning differences between students or between groups of students as styles, preferences or strategies, most did not have a strong theoretical basis for their understanding. Nevertheless, they were able to identify characteristics such as students' preferences for working alone or in groups, the extent of their dependence or independence as learners, or whether they were learners who responded best to listening, watching or doing. Teaching practice incorporated flexibility and responsiveness to individual needs based on the teachers' observations, coupled with intuition honed by experience. There was a tendency for teachers to underestimate students' levels of understanding of their own learning styles and preferences.

Utility of knowledge of styles

Referring briefly to the questionnaire data, there is considerable evidence that teachers perceive that they do take account of style in the design and delivery of their teaching. The questionnaire responses also indicate that, although style is taken into account in designing assessment, teachers perceive themselves to do less of this than in the design of teaching. As discussed above, this difference between teaching design and assessment design in how much styles are taken into account is largely related to a view that there is less scope for it in assessment.

The factor analysis of the questionnaire data was useful in addressing this third research question. Teachers appear to distinguish between two major dimensions in their identification of student styles. The first of these dimensions is related to what teachers observe in their direct interactions with their students, while the second dimension relates largely to those learning behaviours which are not directly observable by the teacher. The directly observable features of style included in that first dimension are those that are related to preferences of instructional presentation and instructional activity, indicating that a knowledge of preferences rather than style is what is most important to them and most useable in the classroom. The less directly observable features of style are those associated with student use of resources that are not necessarily present in the immediate teaching environment, and that are associated with preferred contexts for learning such as self-initiated learning activities and self-direction of learning. That finding indicates that knowledge of style is important in order for teachers to understand and acknowledge the presence of non-observable learning behaviours.

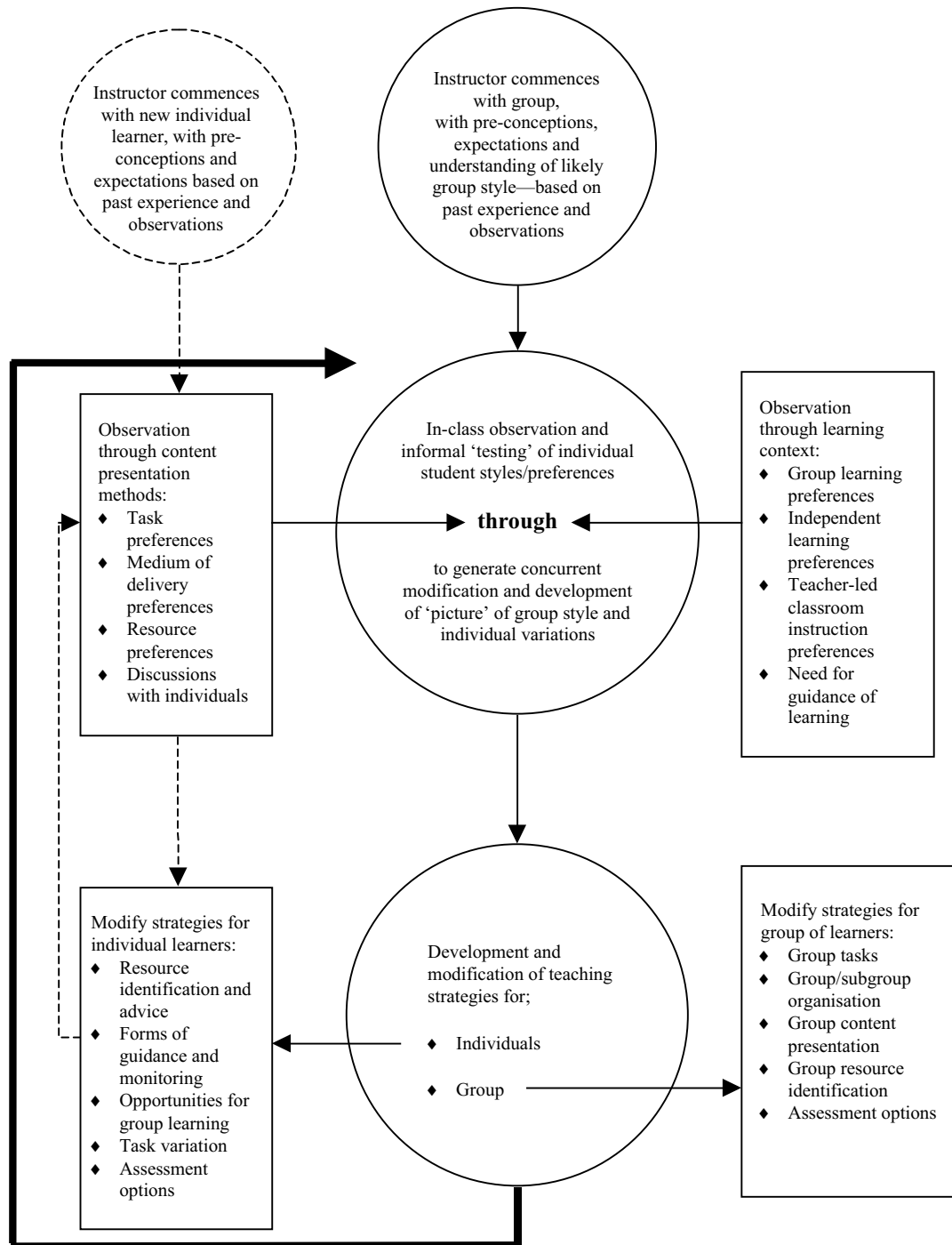
Additionally, as discussed above, the statistical analysis of the questionnaire also indicated that participation in a professional development program had resulted in teachers feeling:

- ✧ more strongly that catering to style matters to their students
- ✧ more confident in their ability to identify typical student learning styles
- ✧ more confident in their own understanding of styles.

Responses of teachers to the questionnaire and within the focus groups indicate that a considerable amount of attention is given to the identification of style and preference, and to catering to those features of individuals and groups. Among teachers there was a frequent view that catering for style/preference is a valuable strategy—a view echoed by students in their focus groups. It was also clear that the identification of style by teachers comes from a knowledge that individuals do vary in style/preference, that there are models of style/ preference that can be usefully applied, but that the application of these needs to be practical and at a level of specificity that can be utilised by the teacher. There was also evidence of a large number of teachers, both in the questionnaire responses and in the focus groups, who understood that individuals vary in style and preference, who did not have a knowledge of theories or models, but who still made common sense and experienced judgements about their students and consequent teaching responses. There was also evidence that the ‘picture’ of style built up by the teacher is an interactive one developed on the basis of observations of individuals and observations of the group. It seems as though these observations are largely of preferences, and are largely associated with the preference dimensions of visual, auditory, reading, hands-on practice, social interaction and need for instructor guidance.

These processes can be summarised and modelled as in figure 1.

Figure 1: Model for a responsive and interactive pedagogy based on learner style/preferences



Note: The components of the model linked by broken lines relate to circumstances where instructors are engaged with individual learners rather than groups.

What seems evident from the research data is that teachers are best served by an understanding of a model of style that captures student learning behaviours that are both evident and not evident in the classroom, but which are readily interpretable along a limited number of dimensions. The dimensions that are most useful within a model of style are those that a teacher can actually make use of in their teaching.

Teacher use of style and preferences, for identification of student characteristics and for adjusting teaching to suit style and preference, has been shown in this research to be at a fairly general level of analysis. Teachers identify styles and preferences at a level of detail that they can effectively use to guide design, delivery and assessment. From that point of view, and without making specific recommendations on any theories of styles and preferences, it is arguable that the form of knowledge about styles that is most likely to be of use to teachers is within theories that are characterised by a low number of measures of teacher-useable style characteristics, and are supported by a test or questionnaire for assessment of style or preference. There are several such theories and tests available in styles (for example, Kolb 1976 and Riding 1991) and several available in preferences (for example, Canfield 1980 and Guglielmino & Guglielmino 1991). It has also been argued (Smith 2001) that working at a level of preferences is more practical than at a level of style, since preferences are more amenable to influence from the environment (Curry 1983; Sadler-Smith 1996), indicating that teachers can have a greater effect with students by working at the preferences level.

With regard to VET learners' use of style and preferences knowledge, there is little reason to think that these learners would be any different from others already researched by other researchers in other contexts. In that previous research, the almost universal finding has been that the most useful knowledge that a learner can have about styles and preferences is to understand their own. The student focus groups in our study indicated that student understanding of their own styles and preferences was at a couple of levels. First, there was an understanding that there were variations between them in terms of the way that they like to learn, and there was also an understanding that teachers were able to cater for these styles to a greater or lesser degree. Students made comments such as:

Self-paced learning doesn't suit everyone
and

Watching demonstrations first and then doing the task suits me, but I know people who like to try the task first and then have a demonstration straight after to see what they did wrong.

Clearly in those two statements there was an understanding about independent learning, and an understanding of the active-experimentation style suggested by Kolb (1976). Students also revealed a strong understanding of their own learning preferences in regard to hands-on practice and visual demonstration as opposed to theory classes. When asked how they liked to learn, typical responses were:

Watching videos/demonstrations

Practical and problem solving

Watching demonstrations, looking at people work and then going away to do the task.

Students had a strong and consistent view across focus groups that they preferred to learn through activity rather than through listening. They were also able to recognise and comment on their teachers' attempts to cater for that general preference:

Teachers adapt to student's preferred learning ways

Teachers tell us their own work experiences and I learn from those.

However, in teacher focus groups it was common for comment to be made that students would not know what their own styles or preferences are, but, at least at the level that students expressed these in focus groups, the evidence in this research is that they do have a fundamental understanding of preferences, at least, and some knowledge of their own. There was also evidence

from students that they are able to select learning experiences on at least a partial basis of known preference and were able to make comments such as:

I like to choose learning where I can do some research by myself and then be a bit creative
or

I need to think about what I have learned after I have done it, so I like to have a bit of a discussion with the teacher or other students.

Brief summary

It is not necessary for VET practitioners to have a detailed theoretical model in order to build an awareness of differences in students' learning styles and preferences. However, based on the discussions with the teachers and students it is possible to suggest a model that would be of general use in building a broader understanding and responsiveness to learner characteristics. Such a model of learning styles would have a limited number of style characteristics. It could be supported by a quiz or questionnaire that would enable the learners and the instructors to build a common understanding of learning styles and preferences along with a common language for discussing these.

Examples of good practice

In this research we extensively interviewed 13 experienced VET teachers who were identified as interested in student learning styles and preferences, and who took account of these in their teaching and, where possible, in their assessment methods. It is not possible within the body of this report to show each of the case studies, but they can be accessed in full from the case studies support document for this project. This section of the report represents some conclusions that can be drawn from the case studies.

The case studies indicated that few teachers who understand and use learning styles have any strong understanding of, or association with, any established theory of style. What they do have is a set of teaching experiences that have developed in them a strong understanding of differences and commonalities among individual students they teach, and the groups that they teach. These differences and commonalities have interested them enough to accept them as one form of the broader sets of individual differences that they confront among their students, and that styles and preferences are a valid and legitimate expression of difference that can be taken into account with some reliability in designing and delivering instruction. The experience base of these teachers has given them confidence that such differences and commonalities can be a useful tool in teaching. It was evident in some of the case studies that although the teacher had adopted an understanding of learning styles that was similar to an established theory of style, the teacher was not aware of the existence of that theory. The most outstanding example of that was the case study teacher who had developed an approach very similar to that of Gardner's Multiple Intelligences theory, although she had not, in fact, heard of Gardner or the theory. What these findings indicate is that even though some very functional and effective approaches are taken to style by teachers in the absence of theoretical understandings, these approaches, nevertheless, are sometimes developed to quite high levels of sophistication.

Similarly, as part of the observation of style difference as a legitimate form of individual differences comes an understanding that students who differ from the teacher's own preferred style are not poor learners, but just different learners. The evidence in the literature—for example, Darling-Hammond (2000) and Sternberg (1997)—shows that effective teachers adjust teaching to meet diversities in style, while teachers who are not sensitive to style differences are more likely to think more favourably of, and overestimate the achievement of, students whose style matches their own. The teachers in our case studies had moved beyond that to an understanding that differences in style are to be expected, and can be at least partially accommodated. In a similar way, Rosenfeld and Rosenfeld (2003) have argued that less effective teachers who do not acknowledge differences in individual learning styles are more likely to believe that student learning difficulties are the result

of student weaknesses such as not being capable or not being motivated. More effective teachers are more likely to adopt interventionist approaches based on a belief that success in learning represents an interaction between learner characteristics, the learning context and teacher behaviour. These were characteristics displayed by our case study teachers.

Case study teachers also reported that attention to style in their teaching had not just been a function of experienced observation of student differences and commonality, but were also a function of the confidence in their teaching that had been developed through experience. They were confident to make an assessment of style, and confident to try (or experiment) with a teaching strategy that their 'educated guess' led them to believe might work. They were also confident to be wrong about these trials, and to try something else instead. That confidence was derived through an established set of techniques they used to make the style identifications necessary, and a repertoire of teaching strategies they could use to respond to style.

There was also evidence that teachers in the case studies extended student style and preference engagement into new learning experiences by leveraging off styles the student already had established. One case study teacher deliberately looked for the things individual students were good at, and then used those good features to build beyond them to develop student comfort with other forms of delivery or resource. Again, although not familiar with style theory, the process used by that teacher has been identified in the literature as one that is powerful to use (for example Riding & Sadler-Smith 1997). Another access and participation teacher had used those observations of strength to develop confidence in the student by developing learning tasks that drew on the already-present strength.

Dissemination of these examples of good practice is important but is always a vexing issue in busy workplaces such as VET environments. What was evident in the case studies, though, was the willingness and enthusiasm of teachers to share their understandings, experiences and methods. Dissemination of those experiences 'in-house' can be enhanced through some regular forum that discusses issues of teaching and learning, including responding to styles. Additionally, an active web site where teachers can contribute their own experiences, read those of others, and develop a form of online discussion about style identification and response may be a valuable addition to the array of VET web sites already available.

Brief summary

Effective teachers understand that success in learning comes from the interaction between learner characteristics, learning context and teacher behaviour. Teachers referred to being able to sense or notice, often from quite subtle signals, when a student needed a different approach in order to learn. Those instructors who work with students for brief and widely dispersed periods needed to have their 'antennae' on high alert most of the time they were in contact with students, whereas those whose contact with students was regular and extended over a longer period could build their understanding more gradually. Reflective practitioners not only took responsibility for facilitating genuine learning in their students, but were also committed to their own learning—both formal and informal. They are self-directed learners themselves who adopted and adapted what they were learning to improve their own teaching practice.

Strategies employed by VET instructors and learners to develop self-directed learning

Although there was some confusion among some participants in teacher focus groups between learning independently through self-paced packages, and self-directed learning, the majority of participants made that discrimination accurately. There was a generally held view that self-pacing is independent learning insofar as it is often undertaken without a teacher present, but it is still

learning within a context of definite learning outcomes to be achieved in a particular way and sequence. Self-directed learning was seen as occurring when the student had some freedom to choose the sequence of learning and the ways in which the learning was to be achieved. One comment that exemplifies the distinction but also raises a concern was:

Self-paced materials can reduce development of self-direction.

There was some comment that self-directed learning is easier to achieve among students where the learning tasks are practical ones. This was because once the student was engaged with the practical task there was greater intuition among learners in how to go about it, and more capacity to monitor their learning through the success or otherwise of their experimentation with the task. Additionally, practical task learning was more individual by nature in that the teacher was not involved with teaching to a group but, rather, taught by providing assistance to individuals as they worked through the tasks. The view was expressed here, as an example:

It's pretty easy to achieve self-direction with practical work, but much more difficult with theory.

A commonly expressed way of developing willingness and confidence with self-directed learning among students was to:

Introduce small self-directed projects to get students started and used to it

and to build upon these starts to develop more ambitious self-directed learning projects. Some teachers had combined these small tasks with learning contracts so that there was agreement with the student about what was to be learned and by when, with some informal review of progress occurring between the teacher and the students. Another reported advantage of small learning projects was that there is opportunity within them for students to negotiate a task that particularly interested them, thereby ensuring that they were intrinsically interested in the learning and its outcomes. That intrinsic motivation was frequently seen as an important component of successful self-directed learning in students.

Monitoring the progress towards the learning goals was seen as important not just in terms of timeliness of achievement, but also because there was concern that self-directed learning among students can lead to them learning the wrong thing. The following concern was expressed by a focus group involved with certificates III and IV:

Don't like totally self-directed approach—OK for people to be given a task to go away and find out about something, but then they need to be able to come back and interact with others about what they've learned.

That importance placed on the role of a group as part of self-directed learning came through in other ways. Some teachers observed that the confidence for individuals to become self-directed and to develop the requisite skills started with group-directed learning projects where students could be supported and helped by each other. Another advantage of group-based projects was that of teacher span of control, where the teacher was better able to monitor the progress and offer help to a number of smaller groups than would be possible with the larger number of individuals.

Support for individuals undertaking self-directed learning projects was seen as essential by teachers in focus groups. There was concern that such learning projects could also be taken as an opportunity to 'leave it all to students', with the result that they had little guidance on what to learn, how to learn it, and how they might be ultimately assessed. Together with that concern was a frequently expressed view that self-directed learning is a necessary skill for students to become competent with since:

We need to be mindful of what happens to students after they leave our course
People need to be self-directed learners to cope with change.

That expressed need for support and development of self-directed learning was underpinned with an understanding that learners differ in their willingness for self-direction as a part of style, and their capacity as part of experience. The point was made often in focus groups that:

give some people the resources and framework, and they power ahead. Others can't be self-directed so easily.

The need to develop self-direction among people not inclined to it was seen by some teachers as a challenge for them to develop in their students, through some of the strategies discussed above. Other teachers tended to view it as a matter of students being motivated and willing to take responsibility for their own learning. This view was combined with the view expressed elsewhere in focus groups that for many students it is important that the teacher makes the requirements very clear, and provides close instruction throughout the course. Where self-directed learning was to be achieved, teachers in focus groups saw it as important to move students beyond that instructor-led model. Learning-to-learn skills were frequently mentioned in focus groups, but always in a context that these are important but lacking in vocational education and training. Some comment was heard that training packages, with the exception of assessment and workplace training, were devoid of any skill development in learning to learn. This was seen by some focus groups as being a major deficiency to the extent that there was some suggestion that these skills should be included in all training packages in recognition of their importance in an ever-changing workplace. Associated with the perceived need to develop learning-to-learn skills was a concern that, without an understanding of the discipline required for self-directed learning and the skills of self-monitoring achievement, the other competing things in students' lives would overcome their capacity to engage with, and achieve through, self-directed learning. As one focus group participant put this:

Learners need to be well motivated—may go away with good intentions, but don't do the work. Pressures of other commitments deflect them.

Another participant echoed this by saying:

Self-directed learning works for motivated people who have clear goals, but not so well for people with other priorities in life.

The issue of motivation was seen as closely associated with a willingness, on the part of students, to engage with self-directed learning. The point was made by several focus groups that many students are only undertaking vocational education and training because they are required to and, hence, they wish to take the easiest path of 'least resistance'. It was observed that students who are only externally motivated wish to be told exactly what to do and when, and to have as little involvement in their studies or self-development as is possible in order to just achieve the required competencies. That observation converges with the previously discussed observation that some teachers felt it important that small projects negotiated with students to engage them with self-directed learning be personally meaningful in order to achieve a level of intrinsic motivation.

Several teachers observed that self-directed learning was not easy for them to either provide to students or develop within them, since the industries served by those teachers were generally unfavourably disposed towards self-directed learning, preferring instead a more controlled and teacher-led context for learning. Again, that observation is convergent with the earlier discussion that some teachers had found the industries they served to be highly traditional in their training process demands and expectations, so that catering to style or preference was also more difficult to achieve.

Other teacher focus groups observed that they frequently had students for very short periods of time with the consequence that the development of self-directed learning among students was not possible. In those contexts, even where students were capable and interested in self-directed learning, the time frame within which training had to be delivered and outcomes achieved was too short for other than a very paced teacher-led approach.

Finally, there were some differences between teacher focus groups at the different Australian Qualifications Framework levels in relation to the development of self-directed learning. First, teachers involved in groups focusing on certificate levels I and II had much less to contribute to the discussions on self-directed learning development than did those at certificate levels III and IV, and levels V and VI. Generally, they saw the development of self-directed learning as less achievable and less important at levels I and II, although there were examples of teachers attempting to develop these skills among students. There was some tension here, too—that is, teachers in the higher Australian Qualifications Framework level focus groups did sometimes comment that where students progressed from the lower to the higher levels, they came to those higher levels with little self-directed learning skill or experience. Thus the work of teachers at the higher Australian Qualifications Framework levels was seen to be made more difficult. Furthermore, partially explaining that difference and its attendant tension, there was comment that students engaged at the higher Australian Qualifications Framework levels were more likely to be expected to be self-directed in their workplaces, since they were typically doing jobs that changed more often and that made constant upskilling demands upon them.

Brief summary

Students who were more self-directed in their learning were generally recognised as being different kinds of learners, or even more highly evolved learners, than those who required greater teacher direction. Self-direction was equated with self-motivation and generally identified with some, though not all, students at higher Australian Qualifications Framework levels.

Self-directed learning was acknowledged not only as a desirable outcome of the education and training process but also as difficult to develop in some students. The distinction between self-directed and self-paced learning was not always understood.

Enhancing learner motivation and lifelong learning

There was a constant theme among teachers in the higher than certificate I and II focus groups that there is a close connection between motivation and self-directed learning willingness. Sometimes that was seen as motivation needing to be present before self-directed learning could be developed, as discussed above. However, there were also views expressed that self-directed learning development enhances motivation. Additionally, there were views expressed that the two worked together in an iterative fashion with the consequence that learning engagement enhanced motivation, which, in turn, served to further enhance a commitment to self-directed learning on the part of students.

An insightful comment made by one focus group was that:

People do self-directed learning all the time in areas of their interest.

The issue here is that motivation to learn leads to self-directed learning, which, in turn, is an attractive and natural way to learn where the learning is being undertaken from intrinsic interest. Some teachers had recognised this by developing techniques that enabled students to identify a learning task that interested them and through which the required learning outcomes could be achieved. That recognition of motivation to learn was seen among those teacher participants in the research as being the key to the development of self-directed learning, although requiring guidance and support from the teacher. This comment involved the distinction noted earlier between students who only wanted to gain the qualification and those who had an interest in the knowledge they were acquiring. Within the parameters available to them, some teachers saw that a challenge for them was to move the required learning closer to student interest through discussion with them, and through observation of interest, style, and learning preferences. The connection noted earlier between motivation and catering to style and preference became a part of the mosaic of strategies some teachers reported using in trying to achieve a higher degree of self-directed learning.

Although there was comment that the competency requirements within the endorsed components of training packages limited teacher capacity to generate learning outcomes that may be closer to individual and group student interest and preference, some teachers perceived that there was capacity for more liberal interpretations. There was also comment that allowing student input into what was to be learned and how provided some learner empowerment and purchase on the learning processes. That was enacted by at least one teacher by providing opportunity for individual students to have input to the group discussion on outcomes and process, and from those individual inputs, a group-agreed approach was developed. While it was unclear within the focus group whether that input was directed at outcomes or process or both, it is likely to have been more associated with the processes of learning because there was close to universal acceptance that competency outcomes of training packages were to be pursued with little or no modification. However, there was evidence that student input was used to influence the forms of assessment used.

The importance of developing self-directed learning skills among students as preparation for lifelong learning was a theme that surfaced from time to time. In a context of increasing media options available to students to access content and increasing choice for students between modes of study that ranged from teacher-led to independent, there is a higher and growing need for students to have the skills required to make effective choice and to self-manage their own learning. Additionally, the need for students to be able to deal with the changes that they would confront in the workplace was voiced by several teacher focus groups, most particularly at levels above certificate level II. Comment was also made that the skills of identifying learning outcomes that are relevant, and knowing how to achieve those outcomes and recognise progress towards achievement, are important skills for VET students to take with them into the workplace. It was also noted that these are the skills both of self-directed learning and of lifelong learning, and that a deficiency in vocational education and training is the absence of any systematic development of those skills.

Some focus groups believed that vocational education and training provided for the development of self-directed learning (and, therefore, lifelong learning) better in the past, but that these provisions had been a casualty of VET marketisation and competition between providers. This competition had brought with it cost cutting, which had reduced institutional capacity to provide for development of those skills, and of cost cutting associated with achieving funding targets set through student contact hours. Finally, because training packages did not typically contain components directed at developing those learning-to-learn skills, neither students nor employers were willing for time or money to be spent on their development.

Brief summary

The mutual relationship between intrinsic motivation and the students' capacity for self-directed learning was generally recognised. Furthermore, there was awareness that motivation could be increased by bringing course delivery more in line with students' interests, learning styles and preferences. Teachers use a range of strategies that, while not necessarily intentionally directed to this end, may have the effect of enhancing learner motivation, capacity for self-directed learning and, hence, development of lifelong learning mind-sets.

Towards relevant professional development

This part of the research was approached by developing a discussion paper in which a proposed form of professional development was detailed, together with a brief rationale for the particular professional development model and its content. The discussion paper was developed from the outcomes of the current research, and from an analysis of the literature relevant to professional

development in learning styles. Outcomes from this research considered most useful in developing the professional development were:

- ✧ successful use of the concepts of style and preference in VET teaching does not depend on any solid understanding of style or preference theory, but rather on a mind-set that such things exist, and that they are a legitimate expression of group and individual differences
- ✧ although professional development should not be framed strongly in a context of any particular theory of styles, a knowledge of at least some style theory would be valuable to teachers in their understanding of student learning differences and their responses to those differences; and to assist students in developing an understanding of their own style
- ✧ generally speaking, there was an understanding that catering to styles and preferences at a group and an individual level enhanced learning experiences for students, represented good professional practice, and had a business advantage in terms of client satisfaction
- ✧ some practitioner participants in the research held the view that training packages provided a great deal of scope for varying teaching design and delivery to accommodate individual and group styles and preferences, while some others felt the training packages were restrictive
- ✧ VET practitioners separate their notions of learning style/preference into those things that are associated with the delivery of content to students (for example, lecture, discussion, visual presentation, and demonstration) and those things that are associated with contexts for learning (for example, group learning, independent learning, teacher-led instruction, and levels of student guidance provided)
- ✧ VET practitioners typically use an ongoing observational and responsive approach to identifying style/preference in learners, and responding to it.

The brief literature review, together with our findings in this project, indicate that an effective professional development program would contain the following components:

- ✧ an orientation to styles and preferences that is largely observational and pragmatic, making the point that style is a legitimate expression of individual differences that has validity
- ✧ an understanding of some style theories selected by individual professional development groups; and an understanding that a knowledge of style theory has practical outcomes for further professional development for informed identification of style among students and strategic response to student style in instructional design and delivery and assessment; as well as providing a vehicle for practical assistance to students in gaining an understanding of their own style
- ✧ some attention to self-analysis
- ✧ an examination of the ways in which style is identified in other individuals and in groups
- ✧ an analysis of the ways a teacher can respond to individual and group style
- ✧ a recognition of the iterative and ever-developing understanding of styles of individuals and groups.

Focus groups of managers, human resources personnel and teachers participated in each of the research sites. The paper was distributed to focus group members some days before the focus group occurred to provide time for reading and reflection on the proposals in the discussion paper. Appendix 2 of this report provides the details of the proposed professional development program as it resulted from the research.

The following discussion of findings from the professional development focus groups is organised around the main themes developed in the discussion paper.

Outcomes of professional development

There was general consensus that the professional development expected outcomes need to include the following components:

- ✧ a working understanding of the concepts of learning styles and preferences and some of the theoretical representations of these
- ✧ an understanding of one's own style and preferences
- ✧ practical experience in identifying the styles and preferences of others
- ✧ a set of strategies that can be used to respond to group and individual style and preferences
- ✧ a personal system for observing style, accommodating style and observing student response to those accommodations within a training package context
- ✧ a styles/preferences-based plan of approach to the instruction of an identified learner group.

Although there was a view expressed that professional development outcomes could be more focused towards different groups of teachers dealing with different VET clients, or for new teachers as opposed to more-experienced ones, these views were normally tempered with the notion that these issues may not affect the outcomes as much perhaps as the structure and implementation of the professional development. There was also some comment that new teachers may have some different needs from those who are experienced.

While no specific comments were made on the possible changes to training packages that may result from the *High level review* (ANTA 2003a, 2003b), the researchers suggest that the professional development outcomes will need to reflect these potential changes as appropriate.

Structure

Discussions of professional development program structure indicated needs for observation of self and others, for active involvement and for self-analysis as well as practice in identifying the styles of others. Components of the program identified and discussed across the focus groups yielded the following set of ideas:

- ✧ there needs to be background resource material made available at a level and in a size that would attract VET practitioners to use it
- ✧ opportunity for a self-analysis of participants' own style
- ✧ opportunity to identify style in others through observational techniques
- ✧ a focus on VET practitioners to identify and discuss the ways in which they can respond to style differences
- ✧ a planning activity to allow participants to develop a set of feasible strategies to accommodate style in teaching, and to frame teaching responses around styles typical among the clients they service
- ✧ opportunity to implement the plan with students and to observe its effectiveness and make adjustment.

Focus and relevance

The most commonly expressed view for developing the focus and relevance of the proposed professional development in a registered training organisation context was for there to be a clear connection made with issues of client service and satisfaction to professional practice improvement and to organisational objectives. There was also opportunity for a professional development program to provide a 'refresher' for teachers who had been in service for some time, and valuable skills for newcomers. Focus group participants also contributed the view that professional development would serve to heighten practitioner sensitivity to similarity and difference.

Furthermore, their view was that professional development would enable participants to understand when similarity among learners is useful for design and delivery, and where difference is important in dealing with different groups and with individual learners.

Any proposed program would need to be easily seen as connecting to everyday practice, and grounded in the issues of VET teaching.

Feasibility of implementation

The feasibility of implementation discussions yielded two major forms of response. First, there was a set of responses associated with management issues such as time availability and competing events, including other professional development imperatives and expectations. There was a view expressed occasionally that VET professional development had become associated with management and system expectations rather than with issues of good teaching practices. One group connected these issues together by suggesting that in a context of continuous improvement, professional development with learning styles could be framed around quality assurance expectations and performance goals. This view resonates with the comments made above on focus and relevance.

The second set of responses was associated with institutional culture and some lamentation that there are teachers who would be loathe to change current practice unless a broader institutional culture change could be achieved. That culture change was associated with the notion of self-identified and self-managed continuous professional development and improvement, rather than a culture of management-driven professional development requirements. This set of responses contained a paradox, though. Coming through in the focus groups was sometimes a view that management needed to change and allow more liberalisation of professional development choices, together with greater recognition of professional development achievement. At other times there was a view coming through that staff needed to change in order that management would no longer have to drive professional development through directives and performance plans.

There was discussion in each of the focus groups that newcomer teachers would be likely to be interested in a professional development program that helped them in their teaching, while more-experienced teachers may feel little need to become involved in a program. However, the view was just as strongly expressed that more-experienced teachers are likely to be in as much need of a professional development program on styles as may the newcomers. A common suggestion here was that the more experienced could be usefully engaged with the program by being able to mentor newcomers, or to provide considerable leadership in the activities associated with the program. Inclusion of some elements of the program in the Certificate IV in Assessment and Workplace Training was a further suggestion made.

Who should conduct professional development sessions?

Focus groups believed that the program could be conducted by in-house staff, but that these people would need to be identified as the program trainers and provided with some professional development themselves on the program implementation and conduct. It was felt that relying on volunteers to be the trainers would not yield much interest owing to competing pressures, and that the resultant professional development experience and outcomes would be compromised. In-house staff who were identified as the professional development trainers would need to have that effort counted as part of regular workload and be recognised for it.

There was not a dominant view that an outside expert on learning styles would be needed to conduct the program. Apart from issues of expense associated with an outside expert, the program has been designed to take place over time, and in the context of everyday teacher work. It would be difficult to achieve the ongoing relationship between the professional development program and ongoing everyday work if an outside expert were to be used.

Does catering to learning styles have a place in VET providers?

Focus groups agreed universally that catering to learning styles, in a context of client focus and servicing, has an important role to play in achieving the strategic directions of registered training organisations. Since the VET sector attracts and caters for a wide range of clients such as disadvantaged people, disabled people, industry training, and sub-degree level students who wish to proceed to university, the range of styles to be expected, accommodated, and adequately serviced through teaching is broad. To service these clients effectively the need for knowledge of, and adaptation to, different styles is an important strategic issue for VET organisations and personnel.

Association with other professional development initiatives

There was a wide range of responses to the discussion question of what other professional development initiatives would be best associated with learning styles professional development. The most common threads running through the discussion of how best to associate learning styles professional development with other initiatives were, first, to associate it with other professional development on teaching practice and teaching excellence and, second, to associate it with professional development that linked to performance management plans for individuals or for registered training organisations. The focus groups in one state, for example, drew attention to a statewide professional development initiative on teaching and assessment that would form an ideal umbrella for learning styles professional development. In another state, provider-based focus groups saw that the development and use of an understanding of learning styles should be associated with other professional development that is focused on the registered training organisation business objectives—for example, organisational development, quality assurance, and customer service.

Suggestions for practice

Knowing a theory (or two)

It has been said before that ‘there is nothing as practical as a good theory’. It is a theoretical understanding of styles and preferences that enables more systematic observation of students as well as more methodical ‘experimentation’ with things that might work, and evaluation of their success or otherwise. The forthcoming publication, *Getting to Grips with Learning Styles*, (Smith & Dalton, NCVER) discusses some useful theories. Our suggestion for practice here is that teachers and trainers choose one or two of these theories that make personal sense to them and that they feel comfortable working with. There are various sources that can be useful here, and below we list the major theorists who have developed their theory to a self-assessment inventory. There are also many useful web sites, but these are prone to change from time to time. Our suggestions here are to:

- ✧ either gain access to one of the works referenced below, or to do a web search using the author’s name as the search word—interesting web sites will result
- ✧ do a web search using the search words ‘learning styles’, ‘learning preferences’, or ‘learning strategies’ and, again, some useful web sites will result.

The list of theorists who have published a self-assessment instrument are:

- Canfield, AA 1988, *Canfield learning styles inventory*, Western Psychological Services, Los Angeles.
Entwistle, NJ 1994, *The revised approaches to studying inventory*, David Fulton, London.
Guglielmino, LM & Guglielmino, PJ 1991, *The learning preference assessment: trainer guide*, Organisation Design and Development, Pennsylvania.
Honey, P & Mumford, A 1992, *The manual of learning styles*, Peter Honey, Maidenhead.
Kolb, DA 1976, *Learning styles inventory: Technical manual*, McBer and Company, Boston.
Reichmann, SW & Grasha, AF 1974, ‘A rational approach to developing and assessing construct validity of a study learning styles scale inventory’, *Journal of Psychology*, 87, pp.213–223.
Renzulli, JS & Smith, LH 1978, *The learning styles inventory: A measure of student preference for instructional techniques*, Creative Learning Press, Mansfield Center, Connecticut.
Riding, RJ 1991, *Cognitive styles analysis*, Learning and Training Technology, Birmingham.
Witkin, HA, Ottman, PK, Raskin, E & Karp, SA 1971, *A manual for the embedded figures test*, Consulting Psychologists Press, Palo Alto, California.

Identifying style

The research has indicated that teacher identification of style among students has two major components to it. First, identifications are made through observation of students as they work with the content presentation methods that the teacher uses in class or, where regular class attendance is not a characteristic of the training program, by observing students in the limited time a teacher has with them and by observing through interactions that may be by telephone or by electronic communication methods. These identifications through content presentation, as represented in the responsive and interactive pedagogy model developed in figure 1 of this report, included observing task preferences, preferences for medium of delivery, learning resources, and discussion.

Second, teachers identified style through the contexts within which students liked to work—for example, independently, in groups, collaboratively in pairs, and through structure and guidance

from the teacher. The model in figure 1 collected these context identifications as group/independent learning, teacher-led instruction, and the need for guidance and structure.

Styles can be identified through ‘naturalistic’ observation—that is, just watching and observing students as they work in class or with learning materials or different contexts of learning, as a matter of course. Style can also be identified, as shown in the focus groups and case studies in this research, by interventionist methods where the teacher deliberately tries out a teaching presentation method to gauge how well an individual or a group relates to that. Interventions may also take the form of trying different learning contexts—such as group work, self-paced, and collaborative—and observing how well individuals and groups relate to those different contexts.

Informally analysing the reaction of individuals and groups from those naturalistic or interventionist techniques, in turn, helps to build that picture of style.

Some examples of how these naturalistic and interventionist observations may be made in classroom or more flexible learning environments follow:

- ✧ Task preferences:
 - ◆ Observe whether the student enjoys learning tasks that involve hands-on demonstrations or practice, or whether the preference is for listening, reading or discussing.
 - ◆ Set some tasks that are highly structured so that the student only needs to follow a procedure, as well as setting some tasks that require problem solving or imagination, or researching out further information in order to achieve the task.
 - ◆ Set tasks that can be solved by the student working alone, or where the task needs to be achieved through group cooperation.
 - ◆ Notice individual responses when a new topic is started. When you start by painting the ‘big picture’, who is attentive and who is not? Which ones are keen to just get started?
 - ◆ What do individual questions suggest about how the student is trying to understand? Are they trying to get a sense of where the new information fits, or are they comfortable with a logical, step-by-step progression through the material?
- ✧ Medium of delivery (visual/auditory/kinaesthetic) preferences:
 - ◆ Is there an apparent preference for visual materials such as video or pictures?
 - ◆ Is there preference for listening to the teacher or for other students to make presentations?
 - ◆ Is there a preference for online learning sequences?
 - ◆ Does the student like to learn through action, by doing things that are hands-on, or that require acting out?
- ✧ Resource preferences:
 - ◆ Does the student seek out visually presented resources by asking for them?
 - ◆ Does the student seek printed materials?
 - ◆ Does the student prefer practical exercises and demonstrations?
 - ◆ Does the student like learning through technological means such as computer-based resources?
 - ◆ Does the student like to go to a resource bank and seek their own resources for learning?
- ✧ Discussion with individuals:
 - ◆ Listen in discussion to the students’ language (for example, ‘can you show’, ‘I can’t picture it’, ‘I need a diagram, or a picture’, ‘Can I have a go?’, and ‘Just let me do it’).
 - ◆ Notice how students react when you are talking to them. Do they seem to be attending to what you say, or are there signs of inattentiveness or lack of understanding?
 - ◆ Talk to individuals about how they respond to their manuals or on-line resources. Do they look for the illustrations and diagrams? Do they want the teacher to tell them? Do they want to start practical work, without opening the book?
- ✧ Group learner/individual learner:
 - ◆ Set a group activity and ask students to organise themselves to achieve the outcomes of the activity, and then observe how they go about organising themselves, distributing jobs, and reaching towards a conclusion.

- ◆ Simply ask students whether they prefer to work by themselves or in a group.
 - ◆ Consider to what extent a student appears to need to work with someone and needs to discuss what they are doing.
- ✧ Teacher-led/independent learner:
- ◆ Notice the rate of progress when left to work on a problem, project or assignment.
 - ◆ Notice the quality of work completed in a set period of time.
 - ◆ Check the body language such as puzzled looks, inactivity, distractability, and sense of discomfort with, as opposed to engaging well with, the self-paced materials.
 - ◆ Does the student seem to need the teacher to provide direction and structure fairly frequently, or does the student appear to like working independently?
 - ◆ Is the student inquisitive, and does the student generate questions that require answers, or that he or she will research out themselves? Or does the student just accept and follow the program of instruction as it is laid out by the instructor?
- ✧ Need for guidance:
- ◆ Does the student frequently ask for direction, or for advice on learning resources available?
 - ◆ Does the student ask for directions on how to learn using the materials provided?
 - ◆ Does the student generally just get on with the learning tasks largely independently?

Responding to style

The research has shown that teachers are sensitive to a need to respond to individual and group learning styles in order to provide a more learner-centred and satisfying learning experience. It has also been shown that teachers have a reasonable level of confidence in being able to respond, apart from some constraints that were felt through organisational issues such as time availability or, in the case of some teachers, a feeling that training packages may provide some limitations in response. The research has also shown that teachers use response to style sometimes as an interventionist technique to informally ‘test’ student reaction in order to provide further identification data on student style. Capacity to respond is also clearly related to the teaching environment, with, again, opportunity becoming more limited as the teaching becomes more based around pre-packaged resources that are used by the student independently of the teacher.

Modification of teaching strategies for responding to individual learners can include the following:

- ✧ Resource identification and advice—providing a range of resources that are useful in meeting learning outcome requirements but that are presented in different ways, using different media. These may involve print, visual resources or computer delivered learning materials. Some students may respond to auditory resources.
- ✧ Guidance and monitoring of students—this can be varied from close guidance where that is necessary, to a form of guidance that allows the student space to generate his or her own questions and to seek out the means through which the learning outcomes can be achieved.
- ✧ Group and individual learning—providing opportunity for students to choose between working on their own or in a group will be helpful for those who have a strong preference for one or the other. However, the ‘choice’ may need to be modified in the interests of developing students’ abilities to work effectively in the other context.
- ✧ Variation in tasks—if a range of tasks is offered, students will generally choose the ones best suited to their learning style or preference. However, as in the point above, at times the teacher may need to be more directive, in the interests of broadening the students’ ways of learning and responding. Task variation may involve independent research, working in a group to solve a problem, hands-on application or reading, reflectioning, web searching and so on in order to achieve the outcome.

- ✧ Different forms of assessment—when under pressure, such as during assessment, students will usually perform better if able to work within their natural preferred style. For example, students with a strong preference for hands-on learning will often be at a disadvantage if expected to write or explain rather than demonstrate what they know.

Modification of strategies to suit group characteristics can include the following:

- ✧ Develop tasks that groups can engage in collaboratively—for example, cooperative product development, discussion, and collaborative problem-solving learning tasks—which allow group members to move from roles in which they feel comfortable to more challenging ones.
- ✧ Organise groups and subgroups differently so that students can have some freedom to form their own learning group on a basis of common interests and common tasks that they would like to pursue, and some commonality in the forms of learning that individuals within the group prefer.
- ✧ Vary the way in which content and learning tasks are presented to the group, based on the ‘picture’ developed of group preferences. Those forms of presentation may involve use of different resources and resource types, or may involve different ways of organising the class to deliver content.

There are some other, more general, suggestions for responding to individual or group style, including:

- ✧ being aware that some aspects of learning styles are intrinsic to the individual and may not change very much, whereas others can be modified by the way in which the learning environment is organised
- ✧ identifying which aspects of style may be relevant to the overall goals of the course and the students’ subsequent employability—for example, preferences for working alone or in a group may need to be modified or developed depending on the type of work that the student is undertaking in the learning sequence, and the form of employment that the student is eventually likely to engage in
- ✧ teacher sharing of their own style with the individual or the group and discussing with students ways in which that has an impact on their learning—perhaps compared to other instructors
- ✧ drawing on the resources within the class to help out—for example, when a student is having difficulty understanding something, there may be someone in the group who is able to contribute very effectively through common experience or a style that is similar to that of the student having difficulty
- ✧ using a variety of approaches in presenting content so that a range of learning styles or preferences is being catered for within the group—for example, by incorporating time for reflection and reinforcement into every learning session to accommodate those who need time to process new information and incorporate it into their existing knowledge bank by relating it to already-mastered learning
- ✧ being aware that the differences between students may be a matter of the order in which they process new information—for example, some students may need to hear an explanation, before they can make sense of a diagram, and then they will be prepared to try, or others students may actually need to do the hands-on first, before the explanation or the diagram will make much sense to them.
- ✧ being prepared to take a longer term view in relation to developing students learning styles, rather than expecting this to occur quickly—for example, using currently exhibited styles to develop new ones in a student has been shown in the research to be an effective developmental method.

Distance education or off-campus students are likely to incorporate the same range of learning style and learning preferences, apart from a possibly higher level of self-directed learning, as students in

the classroom; however, their learning options are generally far more limited. Acknowledging style differences and potential incompatibilities with the pre-set materials and resources available to them may be helpful in encouraging those students to persist with their studies. Teachers can help students understand why they may be finding distance learning difficult by helping them to understand their learning styles through strategies such as:

- ✧ having the students fill in a simple questionnaire to establish some common understanding about their learning between themselves and the teacher/distance tutor
- ✧ being prepared to negotiate different approaches to achieving the learning outcomes from those provided in the print-based or on-line materials and resources available to the student
- ✧ encouraging self-directed learning skills by asking students to propose alternative forms of assessment, based on the common understanding they have with their teacher in regard to their learning styles and preferences.

Developing self-directed learning among students

The development of self-directedness in student learning has been shown in the research to be increasingly important in contemporary VET learning environments, as well as being important in engaging successfully in modern and rapidly changing work environments. The current research has further shown that there is broad recognition among VET teachers of the need for self-directed learning among students but that students are generally not well equipped for it. The research also indicated that at lower Australian Qualifications Framework levels more attention may need to be paid to the development of self-directed learning so that engagement with higher levels is more successful.

Suggestions for VET teachers developing self-directed learning among students include:

- ✧ recognising the need to build a platform for self-directed learning: teachers at different Australian Qualifications Framework levels or year levels within a course could profitably plan for the gradual development of self-directed learning skills in students across the entire duration of a course
- ✧ emphasising the need for discussion of learning styles and the value of becoming a self-directed learner as aspects of the program to receive deliberate focus
- ✧ allowing for the uneven development of self-directed learning within a group by gradually introducing more individualised, or small, group projects and assignments with decreasing levels of teacher direction
- ✧ recognising the signs when students want to pursue their own interests within a topic or course and allowing space for that to occur
- ✧ encouraging and facilitating honest self-assessment by students of their self-directed learning capacities and their success in managing and monitoring their own learning
- ✧ allowing time, within the planned schedule, for students' reflection and exploration of new ideas and areas of interest.

Enhancing learner motivation and capacity to develop lifelong learning mind-sets

The mutual relationship between intrinsic motivation and the students' capacity for self-directed learning has been recognised. Furthermore, there was awareness that motivation could be increased by bringing course delivery more in line with students' interests, learning styles and preferences. Teachers use a range of strategies which, while not necessarily intentionally directed to this end,

may have the effect of enhancing learner motivation, capacity for self-directed learning and, hence, development of lifelong learning mind-sets. These strategies include the following:

- ✧ Teachers can work with students in order to identify what motivates them and use this to help students set learning goals. This could involve a short quiz or questionnaire, a semi-formal interview, or might be more easily discovered through informal conversation.
- ✧ Teachers can enable students to participate in decisions about course delivery and assessment. This might involve a flexible response with different strategies available for different learners within the group or might be better handled by having the group reach consensus about an approach that suits the whole class.
- ✧ Teachers can encourage students to engage in ongoing self-evaluation—perhaps by providing checklists that incorporate the learning goals or outcomes for each aspect or unit in the course. These could include suggestions for additional reading or practice for those whose levels of motivation/self-direction will be responsive to the opportunity to go further.
- ✧ Teachers can use their own current workplace experience to increase the relevance of course content, and the levels of student engagement with it, by making clear connections between what is being learned and how it will be applicable to the workplace. This may involve workplace visits and other forms of workplace experience for students.
- ✧ Teachers can acknowledge students' life stages and adjust delivery strategies accordingly. For example, the literature and the research in this project indicate that students with greater maturity will often have more intrinsic motivation, be clearer about their goals and, hence, be more self-directed. However, some students who have been away from study for some time, or who left school early, or who had negative learning experiences at school, may initially lack self-direction and be resistant to teachers efforts to develop it.

Implications for policy and practice

An understanding of learning styles and responsive teaching strategies has the following potential implications for policy and practice:

- ✧ Understanding learners and their styles and preferences enables delivery of a more closely learner-centred experience by teaching staff so that the forms of delivery used are those most likely to suit learners. In a VET environment there are wide differences in clients, and developing teaching methodologies that are suited to these clients is likely to lead to more effective learning, to greater satisfaction among learners, and stronger motivations to persist.
- ✧ More strongly informed choice can be made in the selection of the design features for VET programs, where that selection is based, at least to some degree, on learner styles and preferences. Apart from the potential to develop resources that are more satisfactory to learners, expenditure decisions and developmental projects can also be better based in data on styles and preferences among users.
- ✧ A knowledge of current group and individual styles among learners in vocational education and training also provides a basis to identify deficiencies among learners. Contemporary VET learners have considerable choice among the media they use to access content, and considerable choice in the ways that they wish to learn, ranging from closely guided teacher instruction to much more independent and resource-based learning that is geographically and temporally displaced from the teacher. A knowledge of style by learners themselves will assist in making informed choice on resources to use and modes of learning with which to engage, and provide for greater self-management of learning. Similarly, a knowledge of style among teachers is a basis for better informing choice about the resources to select and suggest to students in their differing circumstances.
- ✧ While a more learner-centred approach to training provision based on learner (or consumer) knowledge can be expected to have positive pedagogical outcomes, there is also place for such a strategy set to be used as part of registered training organisation marketing in a competitive environment.
- ✧ Professional development related to learner styles and preferences of teaching staff and other design staff within a registered training organisation is a necessary precursor to effective deployment of that knowledge in a learning environment. An understanding of how staff already conceptualise and use learning style understandings within their teaching and design of teaching will enable the development of professional development experiences that acknowledge current understandings and builds upon them to greater effect.
- ✧ Within the training package paradigm there are considerable opportunities for designers and teachers to develop learning experiences that are responsive to learner needs and characteristics. Understanding how to activate those opportunities within training packages will provide for a richer engagement of the learner and the registered training organisation with the package.

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Appendix 1:

Data collection instruments

Questionnaire – Learning styles

The questions asked of VET teachers and trainers in the questionnaire component of the research appear below. In answering the questionnaire, respondents were asked to think about a particular class that they teach. Therefore, respondents also provided their name and age, and the Australian Qualifications Framework level they had in mind when they answered the questionnaire. All questions apart from the last three were answered on a 5 point Likert scale where 1 = Hardly ever; 2 = Now and again; 3 = Reasonably often; 4 = Quite often; 5 = Nearly always.

- ✧ *I can identify which of my students like to learn from visual sources such as videos and pictures*
- ✧ *I can identify which of my students like to learn from me giving them lectures in class*
- ✧ *I can identify which of my students like to learn from demonstrations of skills that I provide or organise someone else to provide*
- ✧ *I can identify which of my students like to learn from doing the actual hands-on task they are learning about*
- ✧ *I can identify which of my students like to learn from reading learning materials that I prepare*
- ✧ *I can identify which of my students like to learn from reading learning materials supplied by publishers*
- ✧ *I can identify which of my students like to learn through discussion with me*
- ✧ *I can identify which of my students like to learn through discussion with each other*
- ✧ *I can identify which of my students like to learn by themselves*
- ✧ *I can identify which of my students like to learn in a group setting*
- ✧ *I can identify which of my students like to learn with me giving them close guidance*
- ✧ *I can identify which of my students are good at being self-directed learners*
- ✧ *My students learn best when I design my teaching materials to suit their learning styles*
- ✧ *My students learn best when I design my teaching delivery to suit their learning styles*
- ✧ *It matters to my students whether or not I try to cater to their learning styles*
- ✧ *I believe in developing my teaching to suit the learning styles I find most typical of my students*
- ✧ *I spend time trying to identify the learning styles of my students*
- ✧ *I develop my teaching to suit my students' typical learning styles*
- ✧ *I can identify some typical learning styles among my students*
- ✧ *My understanding of learning styles is*
- ✧ *When I design assessment for my groups of students, I take their typical learning styles into account*
- ✧ *I take learning styles into account when I design individualised assessment for my students*

Questions requiring yes/no answer or open response

- ❖ Have you ever participated in a Professional Development Program about learning styles? Yes/No
- ❖ If you answered 'Yes' to the previous question, can you please tell us what learning styles theory (or theories) were discussed in the Professional Development Program?
- ❖ Tell us briefly how that Professional Development Program has assisted you in your teaching

Focus group questions

Questions for focus group discussion

- ❖ Let's just explore for a while what we all understand to be student learning styles, and whether or not we think they are important to us as instructors.
- ❖ Are the notions of learning styles important to students too, do you think?
- ❖ Can we talk a bit now about how you take styles into account when you are planning and delivering your teaching? How do you identify the styles of individuals and groups?
- ❖ Do groups have typical styles in your opinion? Do you use those typical features in your teaching? What typical group styles do you see in the students you teach?
- ❖ What do you do to accommodate the features of learning style that you see among your students?
- ❖ What sort of scope do you see for using the notions of learning styles within the requirements of training packages?
- ❖ Would it be useful to have more information available to you on learning styles? What sort of information would be useful? And where would you best be able to access the information?
- ❖ Do you see the development of self-directed learning among your students as something worth doing? How do you go about doing that with your students? Does what you are doing work?
- ❖ What professional development about learning styles have you been involved in? What was the focus of that professional development? How has it been useful to you in your teaching?

Student focus group questions

Questions for student focus group discussion

- ❖ Do you have an idea about how you best like to learn?
- ❖ Can you each talk briefly about how you like to learn?
- ❖ How do you like to learn new skills and processes that you actually have to carry out and do?
- ❖ How do you like learning new facts and ideas in your course?
- ❖ How do you like to learn how to behave properly in the workplace?
- ❖ In most of your classes in TAFE, do you find that what you're asked to learn suits the way you like to learn?
- ❖ Can you give some examples of things you have been asked to do that really suit the way you like to learn?
- ❖ Can you give some examples of things you have been asked to do that you found really didn't suit your way of learning at all?

Case study themes

Level of analysis

Here the overall focus of the theme is to get an insight into the level at which the instructor identifies learning style characteristics of students. Is this observed at a fair level of detail, or at a reasonably general level.

- ✧ Think of a couple of students in your classes this year and describe their learning styles in general terms.
- ✧ Now thinking of the same students, describe their learning styles in quite detailed terms.
- ✧ How do you make those identifications of student styles?
- ✧ Which of those descriptions is closest to what you use in your approach to teaching those two students?
- ✧ Which of these two descriptions do you find most useful for teaching?
- ✧ What sort of teaching decisions do you make on the basis of those descriptions?
- ✧ Are there any occasions when you would use the description that you have said is the least useful in your teaching?

VET learning styles and preferences

Here the overall focus of the theme is to develop some insight into what the teacher sees as being some typical characteristics of the students he/she teaches, and how that information is used in developing teaching sequences. A later theme investigates the differences that he/she sees in the groups of students they teach, and how those differences are taken into account in making teaching decisions—some discussion of that might be unavoidable in this theme, but the bulk of that discussion has been left until later.

- ✧ Do you think there are some features of your students learning styles that are quite common among the individuals in the groups you see?
- ✧ What do you see as some of those common features?
- ✧ How common are those features? Do you see them in nearly every student? A lot of students? Or even just a small but identifiable minority of students?
- ✧ What do you do with those features when you make decisions about planning or delivering instruction?
- ✧ Do you take account of those features in identifying learning resources that you think might be useful to students?
- ✧ Have you found any particular theorist or writer to be the most useful to you when you are thinking about common learning styles and features and how you might use them?

Stability and context

This theme is designed to identify how stable, and/or how contextual the teacher sees learning styles to be, and how those views are used in planning and delivering teaching.

- ✧ We've identified a few learning style features that are common among your students. Do you see those features as being quite stable, perhaps like a part of the person's personality? Or do you see those features as pretty contextual, so that if the student was put into a different situation, those features may not be so evident?
- ✧ How do you believe the learning context or learning tasks might affect the learning styles and behaviours that you observe?
- ✧ When you plan or deliver your teaching, do you vary context and tasks with learning differences in mind? If you do that, how do you go about it, and what do you do?
- ✧ Where you think that a particular learning style or learning behaviour is just a part of that student's personality, do you use that information to help the student? If you do, how do you do that?

Variability and stereotyping

The theme here is to gauge how the teacher might balance the identification of some usable and 'common' characteristics among his/her students against an understanding that these students are still individuals with individual characteristics. The theme will also explore how the teacher adopts, or manages not to adopt, a stereotype of students based on observed 'common' characteristics.

- ✧ We talked a little while ago about some of the learning characteristics of your students that are common enough for you to use to help in planning and delivering your teaching. Setting those similarities aside for a moment, I wonder if you could talk a bit about how the students differ from each other as well.
- ✧ In planning your teaching and working in the classroom, it must be a difficult balancing act for you to use the similarities between students that you identify and yet, at the same time, keep remembering that these are all different people. How do you do that? What sorts of characteristics do you see as important to treat as similar enough across the students, and what sorts do you tend to treat as differences?
- ✧ Is some of your teaching preparation and delivery aimed to take account of similarity, while other things are planned for individual differences? If they are, can you tell me how you distinguish those, and how you use them for more effective teaching?
- ✧ If we were to talk about a 'typical' student in one of your classes, what would that typical student be like? How 'typical' is that person? Is that 'typicalness' useful to you in your teaching? Does that notion of 'typicalness' sometimes get in the way of your effective practice?

Utility for teaching and learning

The theme here is to identify whether or not the teacher sees a value in students or learners having some understanding of the notion of styles, and having some idea of their own style. The theme also includes discussing how those understandings might be useful, and whether or not the teacher makes deliberate or tacit use of the knowledge.

- ✧ What sort of value do you see in making your assessment of the individual and group learning styles of students that you teach?
- ✧ How do you make use of that assessment you have made?
- ✧ In what ways do you think making your assessment helps you?
- ✧ In what ways do you think it helps your students?
- ✧ Do you make any attempt to get students to understand their own learning styles?

- ✧ If you do, how do you go about creating that awareness?
- ✧ How do you help students to use that information about themselves?
- ✧ Where they do use it, does it seem to you to help them?
- ✧ How do you observe it helps them?

Development of styles

The theme here is to ascertain if the teacher helps students to develop their learning styles and learning strategies so that students broaden these and broaden their capability to engage in a wider range of learning contexts.

- ✧ Do you find that sometimes a student's learning style makes it difficult for him or her to engage with learning sequences that are outside the preferred style?
- ✧ What does the student do in these cases? What do you observe about them?
- ✧ Do you do anything to help the student broaden the learning styles and strategies that they use?
- ✧ What do you do to help here?
- ✧ Do you think it works?
- ✧ What, typically among your students, are the adjustments to style that you find yourself making?

Assessment practices

The theme here is to identify what, if anything, the teacher does to provide a range of alternative assessment tasks to students so they can choose one that suits them most.

- ✧ Do you have opportunity to provide students with alternative assessment tasks so that they can choose the one that they believe best suits their way of learning?
- ✧ What sorts of things do you do in providing those alternatives?
- ✧ On what information basis about your students do you design and provide the alternative tasks?
- ✧ Do you believe students choose among the alternatives fairly wisely and well?
- ✧ Do you help students to choose and, if so, how do you do that?
- ✧ What are some examples of these different assessment tasks?
- ✧ How do you make use of assessment to assist and advise/guide the learner about their learning?

Professional development experiences

The theme here is to explore:

- ✧ professional development experiences the teacher has engaged in
- ✧ the learning styles theories that they are familiar with
- ✧ what use these theories have been in practice and how
- ✧ whether they work in the framework of a favourite theory (if so what?) or do they adopt a quite eclectic approach that is their own?

Professional development focus group questions

Objectives of the focus group session

A. To assess and comment on the professional development program proposed in the discussion paper, in terms of outcomes, structure, relevance, and feasibility. Specifically:

- ✧ Are the outcomes of the proposed professional development program about right? How might they be improved?
- ✧ Is the structure proposed likely to be one in which VET practitioners will engage? Does the structure provide for the development of sufficient understanding? Is too much expected of participants? Or too little? How might the structure be improved?
- ✧ Is the focus of the professional development program and its outcomes sufficiently relevant to VET practitioners?
- ✧ Is the professional development program capable of being feasibly implemented in registered training organisations? What would be barriers to implementation? How might any perceived barriers be removed?
- ✧ Who should conduct the professional development sessions? Should it be a sharing experience among colleagues with no learning styles specialist present, but just facilitated by a member of registered training organisation staff? Should it be a learning styles ‘expert’ who conducts the sessions?

B. To provide comment on how best to position the proposed professional development program within the wider strategic mission of the registered training organisation:

- ✧ Does catering to student learning styles have a place within the organisational strategic commitment to client-centred learning? If so, how does it fit? What other client characteristics (besides learning styles) are also focused upon in your organisational set of client centred learning strategies?
- ✧ With what other current professional development initiatives within your organisation would professional development on learning styles be best associated?

Appendix 2: Proposed professional development program

A professional development program in learning styles and teaching strategies relevant to VET practitioners

Scoping the professional development program

On the basis of the external literature analysis and the results from this project, we developed the following scope for the proposed professional development program:

- ✧ an orientation to styles and preferences that is largely observational and pragmatic—style theory would not form a large part of the professional development, apart from making the point that style is a legitimate expression of individual differences that has validity
- ✧ some attention to self-analysis
- ✧ an examination of the ways in which style can be identified in other individuals and in groups
- ✧ an analysis of the ways a teacher can respond to individual and group style
- ✧ a recognition of the ongoing and ever-developing understanding of styles of individuals and groups.

The professional development program proposal resulting from the research

Outcomes to be achieved

The outcomes to be achieved were:

- ✧ a working understanding of the concepts of learning styles and preferences and some of the theoretical representations of these
- ✧ an understanding of one's own style and preferences
- ✧ practical experience in identifying the styles and preferences of others
- ✧ a set of strategies that can be used to respond to group and individual style and preferences
- ✧ a personal system for observing style, accommodating style and observing student response to those accommodations within a training package context
- ✧ a styles/preferences-based plan of approach to the instruction of an identified learner group.

Components of the proposed professional development program

a. Professional development resource material

It is suggested that the publication, *Getting to Grips with Learning Styles* (Smith & Dalton forthcoming, NCVET) be used as the basis for the professional development program, and be made available to participants.

b. Self-analysis of style

It is suggested that in this exercise teachers who know each other would work in pairs.

A simple to use learning styles four-quadrant model very relevant to vocational education and training is available at the Torrens Valley Institute of TAFE web site. That web site explains the model and also has a small test that can be undertaken online by professional development participants. The web site address is <http://www.tvtafe.sa.edu.au/linkup/learning_styles_result.cfm>. Using that web site as an introduction to teacher self-analysis of style may be a very useful exercise within this professional development program.

It is also suggested that the Kolb style theory and the Smith preferences model may be other useful bases for analysis, since both these models have simplicity, and validity through practice and research. Both models are explained in *Getting to Grips with Learning Styles* (Smith & Dalton forthcoming, NCVER), and are shown briefly as exhibits 1 and 2 at the end of this discussion paper.

However, the teacher pairs should be encouraged to use any other style or preferences model that they find useful and comfortable to work with. For example:

- ✧ Work in pairs to identify own style and that of the other member of the pair. In this exercise each member of the pair would map his/her style on to the Kolb and the Smith quadrants; and then map the other member's style into the same set of quadrants. Pair members would then discuss those analyses, the basis on which they were made, and how the self-analysis might vary from the analysis completed by the other.
- ✧ Pair members would then identify ways in which each pair member likes to learn.
- ✧ Pair members would then identify together the teaching strategies that suit each member of the pair.

c. Style identification in others

Groups of four to six teachers work together to identify the strategies they each use to make observations of style of students in groups and as individuals in terms of their:

- ✧ preferences for different sorts of tasks
- ✧ preferences for different forms of teaching medium
- ✧ resource preferences
- ✧ behaviour during discussions
- ✧ group learning preferences
- ✧ independent learning preferences
- ✧ teacher-led classroom instruction preferences
- ✧ preference for teacher guidance of learning.

Questions for further discussion here relate to the effectiveness of each of these forms of observation or 'data gathering' on students; and what may be some new ways of making these sorts of observations.

There may be value in teachers working within their own program groups for this exercise, or there may be value in mixed program groups to hear of different approaches that may be used in different programs. This is suggested as a pair of options to be decided on within each context.

d. Responding to styles and preferences

Here it is suggested that teachers work in focus groups within their program area to complete the following tasks:

- ✧ identifying collective knowledge about typical learner group styles and commonly observed individual variations

- ✧ sharing the ways in which members develop teaching strategies to suit group style, and response to individual styles
- ✧ sharing ways in which members help students to understand their own styles and preferences
- ✧ identifying the reasons for catering to learner style in designing and delivering teaching.

e. Taking style into account in planning teaching

Working within the program group context, each individual teacher chooses a group he or she has taught as the focus for the first part of this exercise. Together with a mentor assigned to the teacher, the exercise requires the individual to develop a plan for:

- ✧ a set of observation techniques that can be used to identify student group and individual styles and preferences through observation of students as they work with content presentation; and through the observation of preferred learning contexts
- ✧ a brief analysis of group style and the individual variations that were present in the group under focus
- ✧ a set of teaching strategies designed, with training package requirements in mind, to cater to typical group styles and individual differences within those styles
- ✧ a set of strategies that can be used to further develop student learning styles and preferences to enable students to engage in a broader set of learning or workplace experiences than current style would suggest.

The second part of the exercise involves individual teachers bringing their plan to the wider group for presentation and discussion with a view to:

- ✧ understanding and challenging each other's plan
- ✧ sharing experiences across groups to identify different ways in which individual teachers make observations about style, develop teaching strategies to suit, and challenge students to expand their style/preference repertoire.

At the conclusion of the group exercise individual teachers modify their own plan to include new ideas developed from the group session.

f. Action learning and implementation

In this final phase the teacher takes the plan generated at e. above into the classroom for implementation. As the teaching occurs over a period of time, the teacher would note in a journal observations about:

- ✧ student response to the learning style-based teaching delivery
- ✧ types of observations made by the teacher in order to modify the plan
- ✧ detail of the modifications made to content presentation and to learning contexts
- ✧ use of feedback from observations of students that led to further modification.

Finally, a last program-based focus group to identify and share experiences from the implementation, specifically about:

- ✧ student group and individual style/preferences characteristics
- ✧ useful observational and trialing techniques used to 'test' the original plan
- ✧ the sort of data used to modify the plan
- ✧ the modifications and their effectiveness.

Exhibit 1: Kolb's theory of learning styles

Kolb (1976) suggested that individuals learn and solve problems by progressing through a four-stage cycle: *Concrete Experience (CE)*, followed by *Reflective Observation (RO)*; which leads to the formation of *Abstract Concepts (AC)*; which results in the testing of hypotheses through *Active Experimentation (AE)*. Kolb viewed CE and AC as being two ends of a single continuum, and AE and RO as two ends of a second continuum. These two continua result in four quadrants, and learning style is described as the place an individual holds in that plane (see figure 2). Kolb named the four learning styles the *accommodator*, the *assimilator*, the *diverger*, and the *converger*. Accommodators, for example, Kolb argued, learn by concrete experience and active experimentation, relying on intuition and trial and error methods of problem solving. Kolb also argued that a person may prefer one style in one situation, and another style in another situation, meaning that the position a person occupies in the two dimensional plane can vary with the learning task. However, Kolb also argued that in the same learning context the learning style adopted on each occasion is likely to be the same.

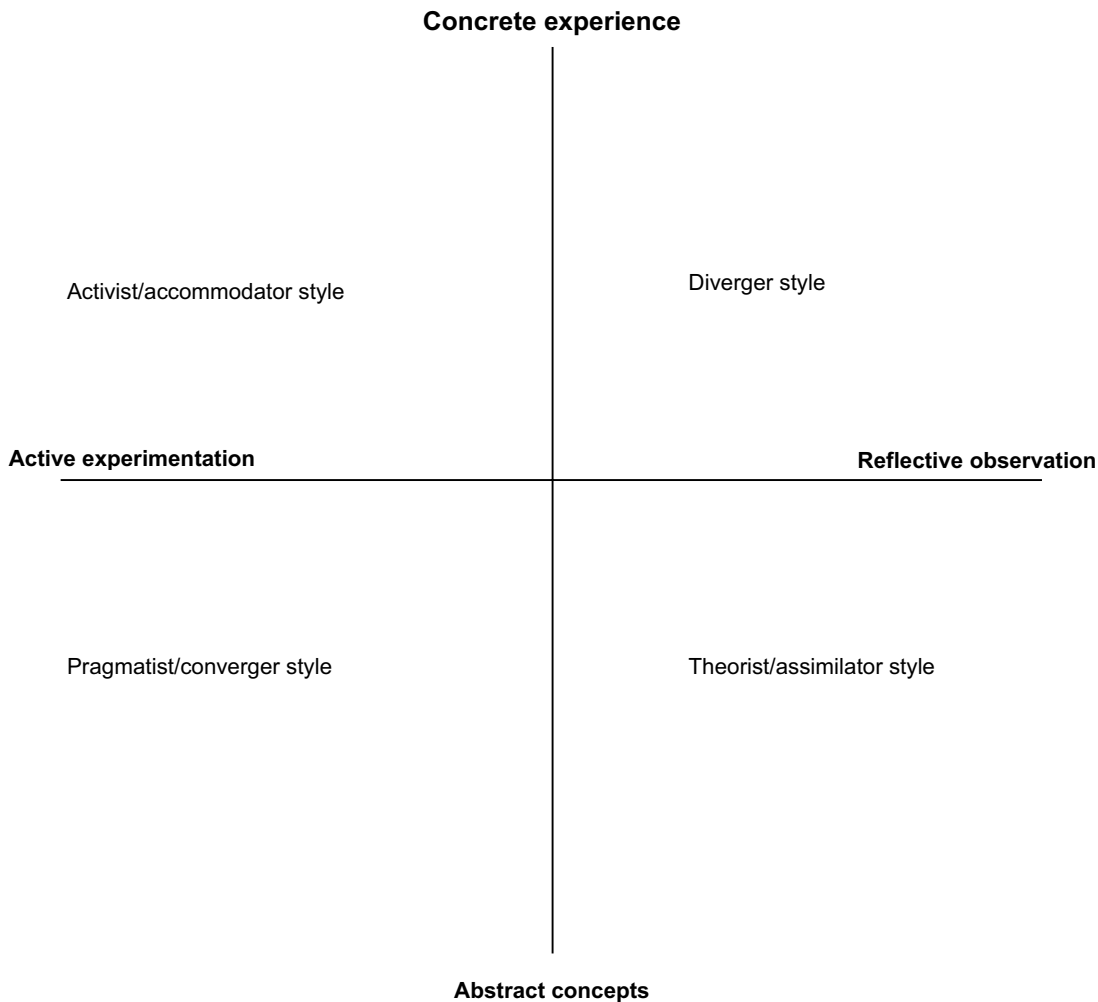
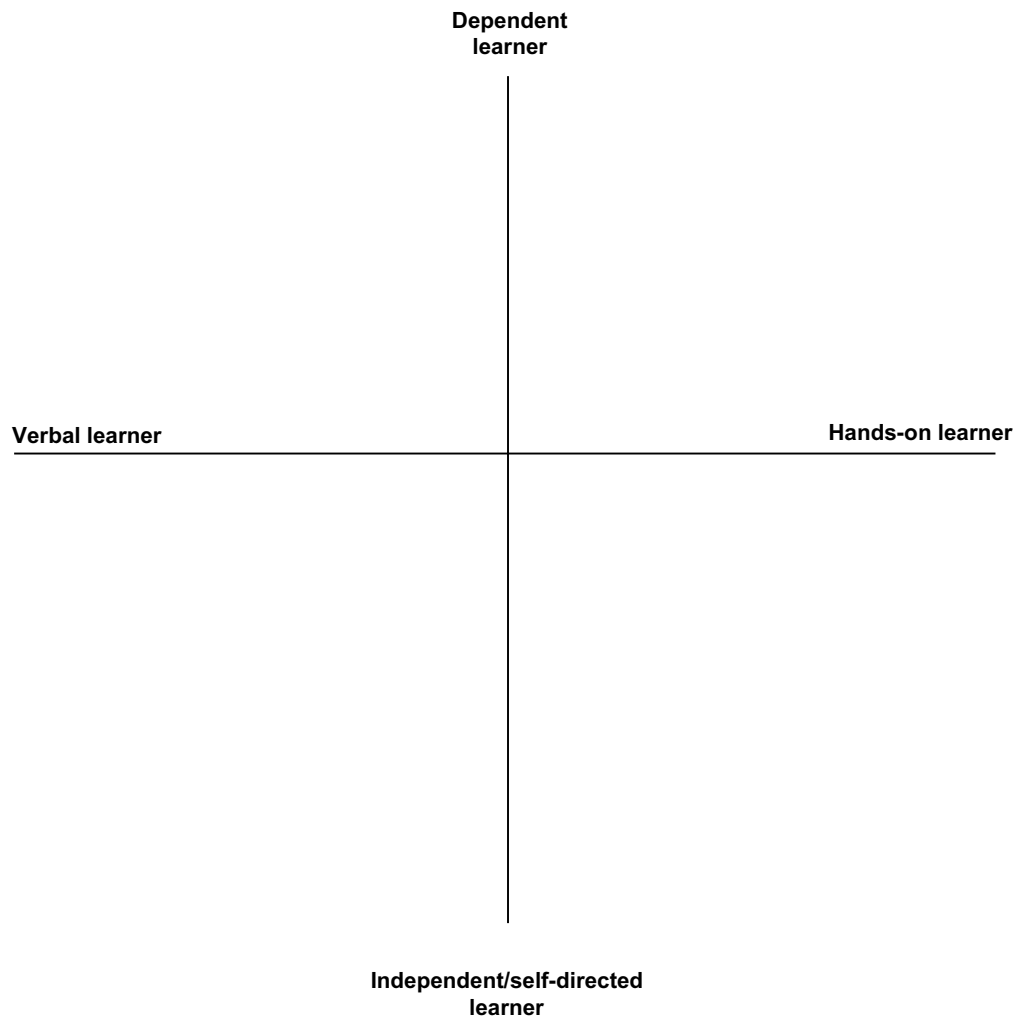


Exhibit 2: Smith's model of learning preferences

Smith's (2000) model was based on VET learners, and showed that learners varied in terms of how much they preferred learning through verbal means (for example, text, listening), or from hands-on practice and demonstration. They also vary in terms of how much they prefer to be self-directed and independent as learners, as opposed to dependent upon the instructor for teaching and for guidance. In Smith's model, learners can be placed into one of the four quadrants below on a basis of how they typically prefer to learn in VET settings.



This research was designed to identify how vocational education and training (VET) practitioners viewed learning style differences between students and how they took account of those differences in designing and delivering teaching. It involved surveys, focus groups and case studies in five TAFE institutes and one professional network of public and private trainers. The research found that teachers have developed a range of personal methods of identifying individual and group learning styles and a range of techniques to respond to them. Their methods are interactive and informed by observations of learners' reactions rather than by applications of particular learning theories.

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