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Getting to grips with learning styles

Peter Smith
Jennifer Dalton
Deakin University

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The *Getting to grips with* ... series has been written for the general reader who wants to understand important trends in vocational education and training.

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Introduction

This booklet has been written to give practising teachers and trainers in vocational education and training (VET) some information about learning styles. We also hope it will show you ways to put this knowledge to use. We have deliberately kept this booklet as free from references as possible to make it more easily read. Sometimes, though, we do need to cite a reference to avoid plagiarising somebody's ideas.

The booklet is laid out in several short sections that we believe will be of interest to busy and inquisitive practitioners who have limited time to spend reading all the material that professionals need to these days. For that reason the volume of text is as short as possible.

What's it all about?

Knowledge of learning styles has become more important as our clients in VET change and expand, and as the options we have for delivering VET to learners also expand with new technologies and contexts of delivery. When most vocational education and training was classroom delivered we were still confronted by learners with a vast diversity in learning styles. However, because we had a limited set of delivery processes that were fairly well understood by instructors and learners alike, we paid less attention to these diversities in learning style. New developments in VET have changed this.

Diverse learning styles for diverse customers

An analogy might be useful here.

> A car manufacturer, for example, may produce a particular model that comes in a basic form. That basic form is then customised for different clients, to make it attractive in marketing terms to diverse groups such as women, young people, people who value trendiness, people who value a sporting image, people who live in inner city environments, and people who buy on the basis of price. By diversifying the base model, the manufacturer hopes to appeal to a wider set of niches within the market and, hence, satisfy a more diverse group of customers and generate a larger total of sales. Similarly with the design and delivery of vocational education and training, we have to take the base model and vary the instructional design and the delivery to suit different clients.

An understanding of the learning styles present among our clients is useful here. But to get this into perspective, learning styles are only one component of what characterises an individual learner or group of learners. Other things in their lives, such as competing demands, their sense of economic well-being, their aspirations and motivations, are all examples of other characteristics that may be more important to any individual than consideration of learning style.

What are learning styles?

Most simply conceived, learning style is the typical way an individual likes to go about learning. Although there are characteristics of learning style that are quite stable in an individual across different learning tasks and contexts, there can still be variation in the same learner.

Everyone is different—and one person can have several different learning styles

Take Peter, for example, one of the authors of this booklet. He prefers different learning styles depending on the situation and skill he is learning. He says:

> I like to learn about historical events by listening to someone speak, by watching a documentary presentation or a docu-drama, and I also like to learn through reading and discussing with others. Most of these ways of learning history are, as you can see, rather passive and are represented in verbal or visual ways. But I don't want to learn how to cast a fishing rod in those ways. Then I want someone to demonstrate and tell me (visual and verbal again) but, more importantly, then I want to try it for myself and have someone tell me where I have gone right or wrong. So I want to be hands-on with some verbal critique and discussion. You can see I am quite verbal in my learning style, but I also like a social context as well. Peter Smith

But not everybody is like Peter. Some people like to learn history by watching dramatisations of historical events as television or film. For them the visual is very important. Other people like to simply get out there with the fishing rod and do it by themselves, with hands-on and practice only, so that cast after cast they improve their technique. The verbalisation of it, and the social component, are not things that they like.

Learning styles, preferences and strategies

Now, the whole notion of 'learning styles' is a little confused and needs a bit of unpacking. Commonly there is a distinction made between 'learning style', 'learning preference', and 'learning strategies', and we need to talk about those.

We rather like the way that a British writer (Sadler-Smith 1996, p.186) made the distinctions, which are described below.

Learning style

Learning style is a distinctive and habitual manner of acquiring knowledge, skills or attitudes through study or experience.

This indicates that the style is reasonably static and is the typical way an individual learner approaches learning. In the example above, Peter's style is characterised by being verbal, visual and social.

Learning preference

Learning preference is the favouring of one particular mode of teaching over another.

These preferences can vary within the same learner depending on the task and context. So again in our example, you can see Peter's preference for the way he learns was different between history and fishing rod casting.

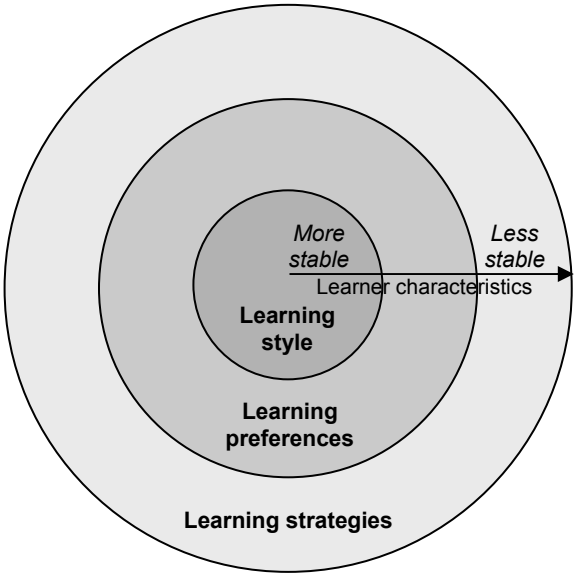
Learning strategies

Learning strategies represent the plan of action adopted in the acquisition of knowledge, skills or attitudes through study or experience.

This is the way we decide to go about a learning task, such that in Peter's fishing example he decided on the course of action which included demonstration and discussion, but then some practice. These represented his strategies, and you can see how they rather suited his habitual style and preference in learning that skill.

Sadler-Smith and an earlier writer (Curry 1983) developed the notion of an onion ring model to represent these ideas. The adapted onion ring model is shown in figure 1.

Figure 1: Three layer 'onion ring' model of learning style



Source: Adapted from Curry (1983)

The idea here is that as we move from the centre of the onion to the more outer layers, we are moving from the more stable learner characteristics to the less stable ones. What that means is that as we move outwards there is more environmental influence on our characteristics for learning. Going back to Peter's example of the fishing rod again, you can see that the learning task and environment had more influence over his strategies than over his preferences, and that his style remained pretty similar.

What does this mean for teachers?

What this means for teachers is that we can have a greater influence over strategies and preferences than over style, and we can even help people to develop their preferences and strategies through exposing them to different tasks, learning contexts, resources and experiences. We can even teach people to make effective use of different learning resources and delivery contexts; and through study skills and learning skills programs we can teach them different strategies. It's not that we can have no influence over style, but it is a bit more resistant to change.

Can we be too customer orientated?

There is a useful side issue to discuss here. If you think about it for a moment, you can see that a heavily skewed learning style or preference can actually be a disadvantage.

Someone who mainly likes to learn visually, for example, is rather limited in their ability to engage with other learning resources and contexts that may, for example, rely on verbal methods such as listening or reading. As responsible professional instructors, that can mean that if we are too diligent in designing our instruction to suit that skewed learning style and preference set, we never provide the learner with an opportunity to develop their preferences and, over time, their style. If we *do* allow learners to develop their preferences and style by exposing them to different styles, they will be able to engage in a wider set of learning experiences.

Major theoretical ideas

In this section we are just going to touch base with a few of the major theories.

About learning styles

Field dependence/independence

It was probably Witkin and his colleagues in the 1940s who started all this off (Witkin 1950; Witkin et al. 1954). They developed a theory of perception called 'field dependence/independence'. They had noticed that some people easily saw a figure that was embedded in a background display, while other people found it hard to see that figure. Field independent people were easily able to see the figure because they were not confused by what surrounded it.

Witkin and his colleagues later extended the idea to learning styles, with some people being able to analyse and learn things in isolation from other surrounding issues, while others needed to learn on a more holistic basis which included the surrounding matters as well.

Serialists/holists

In a similar way, another theorist (Gordon Pask 1976) suggested that some people learn by taking individual items in turn, learning each of them, and then putting them together to form the whole; while others liked to learn the whole right from the start. Pask characterised this division in terms of 'serialists' and 'holists'. A recent and very readable application of these ideas to online learning environments can be found in Hills (2003).

Deep/surface processors

In the 1970s an influential set of ideas were generated by Marton and Säljö (1976) when they suggested that some people are more typically 'deep processors', while others are 'surface processors'. They also suggested that although peoples' style can be characterised in these ways, they nevertheless do vary their approach in different learning situations. Deep processors generally look for meaning, are keen to understand underlying concepts and theories, and they like to connect their new concepts to other things they already know and understand. Surface processors are more likely to be satisfied with knowing the facts or techniques without necessarily developing an understanding. These are not value judgements, even though it sounds superior to be a deep processor than a surface one.

An example might be useful here.

> Many people are quite content and very competent in driving their cars with a knowledge that they need to depress the clutch to change gear, and to depress the accelerator to speed up—but they have no interest in knowing why these things have to be done, and knowing why doesn't necessarily make them a more competent driver.

The four-stage cycle

Another commonly used theory of learning style that VET practitioners will most likely have heard about and used is that of Kolb (1976). He suggested that individuals learn and solve problems by progressing through a four-stage cycle:

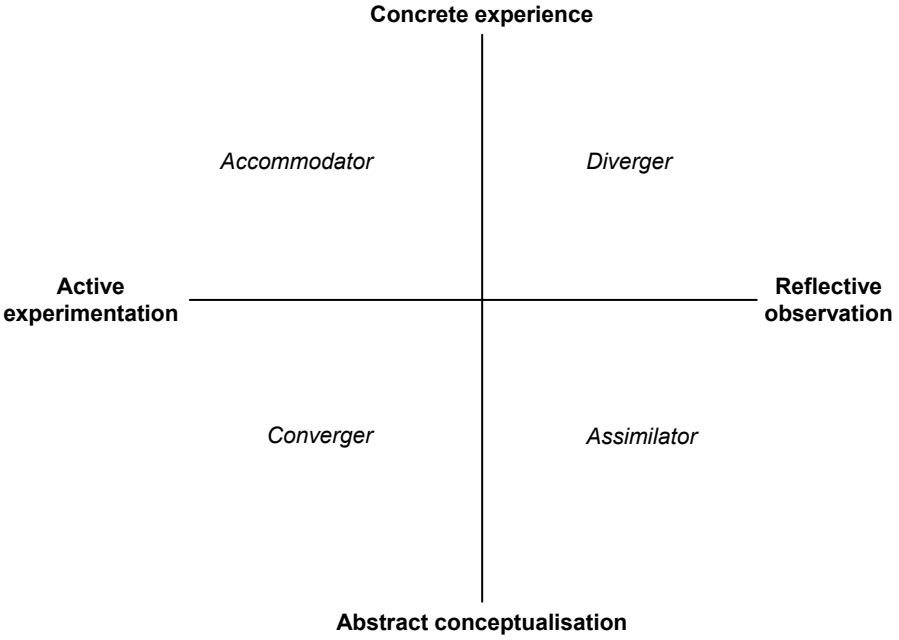
1. *Concrete experience (CE)*
2. *Reflective observation (RO)*
3. *Abstract concepts (AC)*
4. *Active experimentation (AE)*

Kolb viewed *concrete experience* and *abstract concepts* as being two ends of a single continuum, and *active experimentation* and *reflective observation* 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.

Figure 2: Two dimensional representation of Kolb's (1976) learning styles theory



4MAT system

At this point we should also mention McCarthy's (1979) development of the 4MAT system of matching teaching to learning styles, which was based on Kolb's theory, but also represented an attempt to integrate Kolb's ideas with the left brain-right brain theories that were popular in the 1970s and early 1980s.

The 4MAT system has been popular among teachers in schools and in technical and further education (TAFE). It provides insights into effective ways of delivering instruction that takes account of student characteristics, based on individual differences in the ways learners perceive information and process it. A useful website, which also provides access to resources for teachers, is <http://www.aboutlearning.com/what_is_4mat.htm>.

Multiple intelligences

Finally in theories of style it is worth mentioning Howard Gardner's (1993, 1999) theory of multiple intelligences, which is widely used by teachers, particularly in the school sectors. Gardner proposed that there are eight intelligences:

- ✧ Linguistic intelligence
- ✧ Logical-mathematical intelligence
- ✧ Spatial intelligence
- ✧ Musical intelligence
- ✧ Bodily-kinaesthetic intelligence
- ✧ Intrapersonal intelligence
- ✧ Interpersonal intelligence
- ✧ Naturalistic intelligence

The essence of Gardner's theory is that individuals possess these intelligences in different quantities, such that their learning style is expressed as their combination of the intelligences, with their interests and talents being strongly related to the pattern in which they hold the intelligences.

About learning preferences

Canfield Learning Styles Inventory (CLSI)

Going on to learning preferences, the Canfield Learning Styles Inventory (Canfield 1980) provides 16 learning preference subscale scores in three major categories:

- ✧ Conditions of learning, where eight scales describe student preferences for the learning environment
- ✧ Content, where students express relative preferences for working with numeric, qualitative, inanimate, and people-related content
- ✧ Mode, where students express their preferences for different delivery media.

Within each of these major categories Canfield developed a set of more finely defined preferences, which are shown in table 1. The inventory provides a measure on each of these preferences, which creates a preferences profile for any individual learner.

Remember earlier we said there was confusion about the notion of learning styles? Well, note here that Canfield called his inventory a 'learning *styles* inventory', but it actually measures preferences.

Table 1: Categories and descriptions of Canfield's Learning Styles Inventory

I Conditions	**The first eight scores reflect common concerns for the dynamics of the situation in which learning occurs. They cover eight score areas**
Peer	Working in student teams; good relations with other students; having student friends; etc.
Organisation	Course work logically and clearly organise; meaningful assignments and sequence of activities
Goal setting	Setting one's own objectives; using feedback to modify goals or procedures; making one's own decisions on objectives
Competition	Desiring comparison with others; needing to know how one is going in relation to others
Instructor	Knowing the instructor personally; having a mutual understanding; liking one another
Detail	Specific information on assignments; requirements; rules etc.
Independence	Working alone and independently; determining one's own study plan; doing things for oneself
Authority	Desiring classroom discipline and maintenance of order; having informed and knowledgeable instructors
II Content	**Major areas of interest**
Numeric	Working with numbers and logic; computing; solving mathematical problems etc.
Qualitative	Working with words or language; writing; editing; talking
Inanimate	Working with things; building; repairing; designing; operating
People	Working with people; interviewing; counselling; selling; helping
III Mode	**General modality through which learning is preferred**
Listening	Hearing information; lectures; tapes; speeches etc.
Reading	Examining the written word; reading texts, pamphlets etc.
Iconic	Viewing illustrations; movies; videos; slides; pictures; graphs etc.
Direct experience	Handling or performing; shop; laboratory; field trips; practical exercises etc.

Source: Canfield (1980, pp.5–7; 1988 p.2) subscales

About learning strategies

Moving now to learning strategies. Most writers identify three major domains of learning strategy:

- ✧ *Metacognitive* strategies, defined as higher order executive skills involving planning, monitoring or evaluating the success of a learning activity
- ✧ *Cognitive* strategies which are used to operate directly on information presented, and to organise and process it to effect learning
- ✧ *Social/affective* strategies that represent interactions with others

Again, within these domains there are finer distinctions made, and table 2 shows a comprehensive set of these generated by Smith (2003) on the basis of the work of Billett (1996) and Marland, Patching and Putt (1992). People opt to use these strategies in different combinations, and individuals invoke some of them commonly while others they make less use of. As we said earlier, the strategies selected for use are likely to be influenced by the learning task and context; and we can help learners to develop these strategies to become more adept as learners across a wider variety of settings.

The set of strategies shown in table 2 is rather too comprehensive to get around in one reading—they are there so you can see concrete examples and explanations of learning strategies.

Table 2: Learning strategies and brief definition

Strategy	Definition
	Metacognitive
Analysis	Reduces, breaks down whole (e.g. problem or task) into parts
Strategy planning	Plans ways for processing or handling textual material during training sessions
*Cognitive monitoring**	Thinks about, reflects on, evaluates or directs own thinking
Selection	Identifies key material, gist material, or that which is relevant to assessment
Evaluation	Makes judgements about the value of textual materials, activities, in-text questions, own position or point of view
	Cognitive
Recalling	Brings back into working memory an idea, opinion or fact previously stored in long-term memory
Confirming	Judges that ideas in text support own beliefs, practices, tactics
Generating	Formulates own questions, examples, ideas, problems; interpolates; goes beyond the data
Diagnosis	Identifies strengths and weaknesses in ideas, strategies, points of view
Deliberation	Engages in thinking about a topic, segment
Translation	Expresses segments of text in own words
Categorising	Sorts items, ideas, skills into different classes or groups
Imaging	Creates a mental image of an idea in text to gain a fuller understanding of it
Application	Considers the use of an idea or tactic in a different context
Linking	Associates or brings together two or more ideas, topics, contexts, headings, personal experiences, materials, tasks
Rehearsal	Repeats ideas, facts etc. two or more times to facilitate recall
Anticipation	Predicts or states expectations that a problem, question, textual feature etc. will be encountered; looks forward to new material; wonders about the possibility of an event or occurrence in text; looks at relevance of material content
Comparing	Identifies similarities or differences between two statements, concepts, models, situations, ideas, theories, points of view etc.
Trialling	Trials in real workplace of knowledge gained from learning program
Experimentation	Tries out an idea on equipment or process to test own understanding
Problem solving	Finds a solution to a problem requiring relevant workplace knowledge
Practice	Engages in practising the tasks being learned
	Social/affective
Worker observation	Unstructured observation of a fellow worker carrying out the task as part of everyday work
Demonstration	Structured observation of the process being demonstrated by a fellow worker
Peer discussion	Discussion with fellow worker to assist in knowledge development
Supervisor discussion	Discussion with trainer or supervisor to assist in knowledge development
Scheduled class	Attendance at a formal training program to assist in knowledge development

Note: * named 'metacognitive' by Marland, Patching & Putt (1992).

Source: From Smith (2003, p.383); derived from Marland, Patching & Putt (1992); and Billett (1996)

Characteristics of VET learners in Australia

There has been a deal of research in Australian VET on learning styles, strategies and preferences. The research indicates that, typically, VET learners are inclined to be:

- more visual than verbal, in that they like to watch and see rather than read and listen
- hands-on learners who prefer to learn by doing and by practising
- characterised by socially contextualised learning where they like to learn in groups with other learners
- not self-directed learners, but like to have instructor guidance and a clear understanding of what is required of them.

This set of characteristics indicates some matters of style as well as some of preference. Two large studies are worth mentioning here.

One, conducted in Queensland by Warner, Christie and Choy (1998), showed that VET learners are not keen on textual presentations with material that has to be read, and that they are not independent learners.

A second large study in Victoria by Smith (2000), confirmed those earlier Queensland findings. Smith's study indicated that VET learner preferences could be described on two dimensions as shown in figure 3, with VET learners typically falling in that upper right quadrant (that is, dependant/non-verbal).

Other Australian VET research that has observed similar characteristics and considerations has been conducted by Brennan (2003) in an online learning context. That research recognised the importance of social contexts for learning among VET students, and the need to develop among VET learners a lower reliance on texts, and greater self-direction.

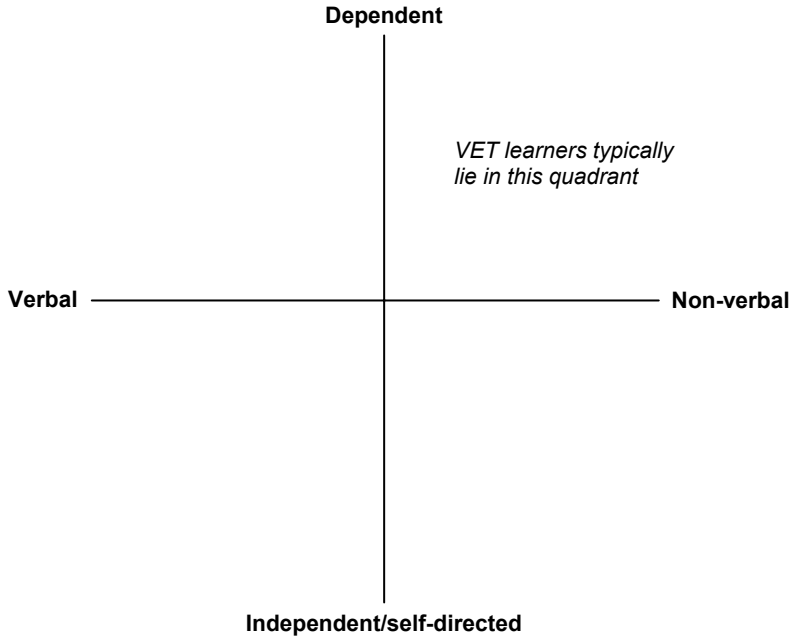
Having said that, it is really important here that we don't simply create new stereotypes of VET students. Individual VET students can be placed in every quadrant of figure 3—they are by no means a homogeneous group, and wide variations in individual differences are clear. But the largest single group of VET students fell in that particular quadrant.

However, differences were shown between the genders, with female students, for example, being more verbal than males and, interestingly, also more likely to be self-directed. There were also program differences with, as may be expected, students in areas such as health and community studies and business being more verbal and less hands-on; while apprentices were more hands-on (or non-verbal).

Some Australian research on learning strategies has shown that VET students are not typically characterised by well-developed metacognitive strategies (i.e. the strategies which help a learner to effectively plan, monitor and evaluate their own learning). That goes together with the lower degree of self-directedness, and means that VET students typically benefit from instructor guidance.

Some other research with apprentices' learning strategies indicates, similarly, that they have well developed strategies for learning in structured settings where it is clear what they are to learn and how, but not well developed strategies for learning in low structured environments. In thinking about all this, remember again we must be careful of stereotyping to the extent we think all VET learners are the same in the way they deploy their learning strategies.

Figure 3: Two dimensional representation of factors describing VET learner preferences



Source: From Smith (2001, p.612)

How can we use knowledge of learning styles?

First, there is research that shows that matching teaching methods to student learning style is effective in terms of enhancing learning and its outcomes. But, confusingly, there is research that shows that such matching makes no difference. How do we make sense of this?

Now let's talk about who has the knowledge of style and preferences. The research almost universally shows (without being confusing this time) that where the learner has a fair understanding of his or her own style, they learn more effectively. Learners who know their own style and/or preferences will make informed choices about what to engage with in learning, and which learning experiences and resources are likely to be attractive and useful, and which are not. Informed learners make good choices.

The situation is much more confusing when it is the instructor knowledge of the styles and preferences of learners that is being considered. Sometimes that seems effective, and sometimes it doesn't. We suggest here that this may be due to an instructor becoming too ambitious and, perhaps, too detailed in their response to learner styles.

How to effectively respond to learner styles

If we take the 16 dimensions of the Canfield Learning Styles Inventory, as they are shown in table 1, an instructor might obtain a profile for an individual learner. Using the profile the instructor then tries their best to match instruction to the learner's profile. There are a myriad of practical issues here that are quite obvious, and we suggest that only disappointment will result.

However, if the instructor takes the more simple two-dimensional approach that suggests VET learners can be described on a verbal/non-verbal dimension, and a dependent/self-directed dimension, and works at that level only, then success is much more likely.

Rather than trying to come to grips with the complexity of 16 dimensions, working with two is much simpler and much more likely to succeed. Knowing that a learner is more non-verbal than verbal, and dependent rather than self-directed, means the instructor will make more use of demonstration and guided hands-on practice, and not burden the learner with a lot of independent reading.

We suggest here that analysing styles and preferences at a broader level is more practical and more effective. This practicality and effectiveness is enhanced even further when you are delivering instruction to a group, where it is close to impossible to cater to complex different styles and preferences that exist across the set of learners.

Adaptive/non-adaptive approach

The same Sadler-Smith study mentioned earlier developed a practical set of ideas about how to deal with this. He suggested that we can distinguish between what he called 'adaptive approaches' and 'non-adaptive approaches'.

An adaptive approach would present information to learners in a way adapted to that person's style, but he recognised the difficulties in doing that.

His non-adaptive approach suggested that the instructor would generate a number of approaches based around the typical styles in the group, and that learners would make effective choices about which of these they might engage with and how.

It may sound difficult and daunting to generate multiple approaches, but the fact of the matter is that good instructors already do much of that, delivering learning sequences in different ways as part of their natural style of teaching.

What Sadler-Smith has done is to suggest that these different approaches may be just a little more systematic and geared towards the learner group, and then some freedom of choice provided for learners to be able to exercise intelligent choice.

How do we determine learning styles and preferences?

The issue of how an instructor finds out about the learning styles and preferences of students, or how a learner discovers this about his or herself is worth spending a bit of time on.

Some research done in the VET sector in the 1980s indicated that teachers were not too bad at assessing this about students just from classroom interaction; and later research has indicated that this is indeed so. This all happens by the sorts of cues that teachers pick up about their students as

they go about the daily business of teaching, and as they interact—an impression is formed and, apparently, not a bad one at that.

What about when there is limited interaction between teacher and learner?

It becomes much more difficult when the time the teacher has with the learner is limited, as is more common now in vocational education and training; or when the learner is remote from the teacher and there may be little interaction at all. There are tests of learning styles and preferences which may be useful in these cases. We will discuss these a bit later.

Different ideas and definitions of styles and preferences, together with the knowledge that the teacher has of the group characteristics, are normally derived over time and with experience. Discussion with other teachers helps. In these ways at least an impression of collective style or preference can be gained such that the approaches taken under the non-adaptive model can sit around a generalised understanding.

Surveys and evaluations are not uncommon in vocational education and training and important information on learner likes and dislikes can be gained from those as well. In short, there are a number of ways in which this sort of information can be gained at least about learner groups and, by converging that information, a helpful picture emerges.

How do learners come to understand their own learning style?

For learners, understanding of style and preference will sometimes have resulted from their own reflection about their learning; and at other times it will have come through piecing together their good learning experiences with their bad ones. Instructors can assist students by sharing observations and suggestions with the learner, and by challenging them to think about their likes and dislikes in learning.

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 learning styles and preferences that enables more systematic observation of students, more methodical 'experimentation' with things that might work, and evaluation of their success or otherwise. Our suggestion for practice here is that teachers and trainers choose one or two theories that make personal sense to them, and that they feel comfortable working with. There are also many useful websites, 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 an internet search using the author's name as the search word—interesting websites will result, and/or
- ✧ do an internet search using the search words 'learning styles', 'learning preferences', or 'learning strategies' and, again, a number of useful websites will result.

The list of theorists who have published a self-assessment instrument are given to you at the end of this booklet.

Identifying learning style

Research with VET teachers (Smith & Dalton 2005) 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. Where regular class attendance isn't a characteristic of the training program, identifications are also made 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, as represented in the responsive and interactive teaching and learning model developed in figure 1 of this booklet, included observing task preferences, and preferences for medium of delivery, learning resources, and discussion.

Second, teachers identified learning style through the contexts within which students liked to work, such as independently, in groups, collaboratively in pairs, through structure and guidance from the teacher, and so on. The model in figure 1 collected these context identifications as group/ independent learning, teacher-led instruction, and the need for guidance and structure.

Learning 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. Learning style can also be identified by interventionist methods where the teacher deliberately tries out a teaching presentation method to gauge how well an individual or group relates to that. Interventions may also take the form of trying different learning contexts, such as group work, self-paced, collaborative etc., 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 are described below.

Task preferences

- ✧ Observe whether the student enjoys learning tasks that involve hands-on demonstrations or practice, or is the preference 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 some tasks that require problem-solving, imagination or research in order to achieve the task.
- ✧ Set tasks that can be solved by the student working alone, and some 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 isn't? Which students 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 other students make presentations?
- ✧ Is there a preference for online learning?
- ✧ Does the student like to learn through action; by doing things that are hands-on, or require acting out?

Resource preferences

- ✧ Does the student seek out visually presented resources?
- ✧ 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 to the students' language (e.g. 'can you show', 'I can't picture it', 'I need a diagram or a picture', 'can I have a go?', '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 and online 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.
- ✧ Ask students whether they prefer to work by themselves or in a group.
- ✧ Observe to what extent does a student appear to need to work with someone and discuss what they are doing.

Teacher led/independent learner

- ✧ Observe rate of progress when left to work on a problem, project or assignment.
- ✧ Notice quality of work completed in a set period of time.
- ✧ Observe body language, such as puzzled looks, inactivity, distraction, sense of discomfort, 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 do they generate questions they either want answered, or that they will research 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?

Learning style tests

There are a number of tests available and a few well-known tests are listed at the end of this booklet for you. Normally our opportunity as instructors is pretty limited in using these, but individual learners may have some interest in them. Tests vary in length, in their psychometric value, in the level of language they use, and in price and accessibility.

At this level of analysis of learning styles and preferences, almost any test will provide information that is a useful guide, such that the important considerations are likely to be the suitability of the language level used in the test, its apparent relevance to you, its price and its availability. We also suggest you use one that you are comfortable with, that you understand, and that works for you and for your students.

There are many other tests available besides those listed in this booklet. If you put search words like 'learning styles' and 'learning preferences' into your internet search engine, you will come up with a wide array of useful websites, some of which make tests available free of charge.

Although we don't wish to make any recommendations on particular tests or websites, other than the general guidance provided in the previous paragraph, there is a short test available on the Torrens Valley Institute of TAFE website (see the last page for the internet address) that you will find useful to look at and, like Kolb and Smith, it works on a simple two dimensions-four quadrant model. The Torrens Valley test indicates an individual's relative strengths as an adventurous, social, practical or conceptual learner.

Responding to learning style

The Smith and Dalton (2005) 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 sometimes use response to learning style as a technique to informally 'test' student reaction; in order to provide further information on the student's approach to learning. 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.

Ways to modify teaching strategies in response to individual learners

- Resource identification and advice
  Provide 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
  Vary this from close guidance where that is necessary, to a form of guidance that allows the student space to generate their own questions and to seek out the means through which the learning outcomes can be achieved.
- Group and individual learning
  Provide opportunity for students to choose between working on their own or in a group, to help 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 those 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, reflection, internet searching etc. 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, a student 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.

Ways to modify teaching strategies to suit group characteristics

- ✧ Develop tasks that groups can engage in collaboratively (such as cooperative product development, discussion, collaborative problem-solving) and which allow group members to move from roles in which they feel comfortable to more challenging tasks.
- ✧ 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. Groups can also be arranged so that there is 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.

General suggestions for responding to individual or group style

- ✧ Be 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.
- ✧ Identify 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.
- ✧ As the teacher, share your own style with the individual or the group and discuss with students ways in which that impacts on their learning, perhaps compared to other instructors.
- ✧ Draw on the resources within the class to help out. 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.
- ✧ Use a variety of approaches in presenting content so that a range of learning styles or preferences is being catered for within the group. Incorporate 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.
- ✧ Be aware that the differences between students may be a matter of the order in which they process new information. For example, some may need to hear an explanation before they can make sense of a diagram, and then they will be prepared to try. Other students may actually need to do the hands on first before the explanation or the diagram will make much sense to them.
- ✧ Be prepared to take a longer-term view in relation to developing students' learning styles, rather than expecting this to occur quickly. Using currently exhibited styles to develop new styles in a student has been shown in the research to be an effective developmental method.

Responding to learning style with distance education or off-campus students

Apart from a possibly higher degree of self-direction, distance education or off-campus students are likely to incorporate the same range of learning styles and learning preferences as students in the classroom. However, their learning options are generally far more limited and sometimes their preferred training approaches are just not readily available. Acknowledging style differences and potential incompatibilities between their learning style and those of 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 student 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 online materials and resources available to the student
- enhancing self-directed learning skills by encouraging 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 (SDL) among students

Self-directed learning occurs when the student has some freedom to choose the sequence of learning and the ways in which the learning will take place. This form of learning has been shown to be increasingly important in contemporary VET learning environments. It is also important in helping people to be successful 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 Qualification Framework (AQF) levels there may be a need for more attention to be paid to the development of self-directed learning so that engagement with higher Australian Qualification Framework levels is more successful.

Ways to develop self-directed learning among students

- Acknowledge the need for teachers to build a platform for self-directed learning. Teachers at different Australian Qualification Framework 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.
- Include (as an overt and articulated aspect of the program) the discussion of learning styles and the value of becoming self-directed learners.
- Allow 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.
- Recognise the signs when students want to pursue their own interests within a topic or course and allow space for that to occur.
- Encourage and facilitate honest self-assessment by students of their self-directed learning capacities and their success in managing and monitoring their own learning.
- Allow 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 strong relationship between intrinsic motivation and the students' capacity for self-directed learning is well known. Motivation can be increased by bringing course delivery more in line with students' interests, learning styles and preferences. As teachers we use a range of strategies which, while not necessarily intentionally directed to this end, may have the effect of enhancing learner motivation. This in turn enhances their capacity for self-directed learning and helps them in the journey to becoming lifelong learners. These include:

- ✧ teachers working with students to identify what motivates them, and using 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
- ✧ enabling 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
- ✧ encouraging students to engage in ongoing self-evaluation, perhaps 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 using 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
- ✧ acknowledging students' life stages and adjusting delivery strategies accordingly. For example, the literature and the research indicate that students with greater maturity will often have more intrinsic motivation, be clearer about their goals and hence 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.

Summary

Understanding learning styles is becoming more important as VET clients become more diverse, and as options for delivering vocational education and training expand.

Knowing a little about your learners' styles and preferences for learning allows you to tailor your delivery to their needs. This can contribute to them getting the best possible experience from their VET training.

There are many tools at your disposal. You can pick and choose, to a large extent, and use the theories, tests, and practices that suit you, your learners and the learning environment.

However, a word of caution. Learning styles are but one of the things that characterise your students, so don't get carried away with them. Use them in such a way that they increase your interest and enjoyment, and that of your students.

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There are also a number of websites that focus on matters to do with learning styles. To access these it is most advisable to simply put 'learning style', 'learning preference', or 'learning strategies' into your search engine, and then select the sites that attract you and seem to be most useful to you.

Some of the tests available

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A very useful small test you can do for yourself and with your students, which is designed for a VET context, can be found at the Torrens Valley Institute of TAFE website. That test provides you with a short analysis of your own learning style. The website for the test is <http://www.tvtafe.sa.edu.au/linkup/learning_styles_result.cfm>.

The National Vocational Education and Training Research and Evaluation (NVETRE) program is coordinated and managed by the National Centre for Vocational Education Research, on behalf of the Australian Government and state and territory governments, with funding provided through the Department of Education, Science and Training.

This program is based upon priorities approved by ministers with the responsibility of vocational education and training (VET). This research aims to improve policy and practice in the VET sector.

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The *Getting to grips with …* series has been written for the general reader who wants to understand important trends in VET.

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