

BLA07408

## Examining the significance of different conceptions of learning

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### **Abstract**

*Since the 1990s the system-wide introduction of vocational learning programs into schools has created the need for students to blend their learning experiences gained from previously discretely organised institutions such as schools, TAFEs, and workplaces. This has created new challenges to how learning needs to be conceived by students as they are exposed to potentially different conceptions of learning held by each of these institutions. This paper explores the significance of differing institutional conceptions of learning for the students who undertake these pathways. It examines potentially conflicting messages about learning that students must overcome if they are to be successful. The paper concludes by proposing that engagement with and understanding of a broader set of conceptions of learning is an opportunity for the enhancement of student experience.*

### **Introduction**

The governments of many nations are looking to vocational education and training (VET) as a key strategy to increase the skill profiles of their workforces and remain competitive in a globalised economy (Dawkins & Holding, 1987; DEST, 2005). VET reforms in nations such as Australia, the United Kingdom and the United States of America have sought to improve the quality of vocational education and training and increase access to VET programs for a diverse range of age groups. Most recently the governments of China and India announced substantial increases in funding to develop further the VET systems of those nations (DEST, 2007). While the scale of these developing nations' workforces are massive compared to Australia, as are the challenges they face, the emphasis on reforming their VET systems remains similar: to improve the skills profiles of their workforces, re-integrate many of their unemployed citizens back into the work, engage young people in productive learning experiences, and remain economically competitive in a global market economy.

A key strategy in VET reform has included the introduction and expansion of VET programs made available to secondary school students completing their later years of schooling. Australia has achieved very significant levels of growth in this nation's VET in Schools enrolments across the states. In 2004 there were 211,885 Australian secondary school students enrolled in VET in School programs (MCEETYA, 2004).

This figure represented approximately 49% of all secondary school students in that year. The significance of this figure becomes more obvious when compared to the previous figures of 60,000 VET in School enrolments in 1996 and 153,616 enrolments in 2000 (MCEETYA, 2004 p. 5). In 2006 nearly all schools offering a senior secondary certificate offer VET in Schools programs as a part of the senior school curriculum. On this point, the Victorian Office of Training and Tertiary Education (OTTE) noted that:

*VET in Schools programs aim to engage students and retain them at school by providing interesting, relevant and individualised applied learning opportunities. They are particularly attractive and valuable for students who prefer applied learning approaches. Equally, many students who do general academic study also value the work orientation and practical application of VET studies as part of a balanced [Victorian Certificate of Education ] VCE program.*

(OTTE, 2006 p. 35)

The expansion of VET into schools is a strategy responding directly to the economic survey conducted by the Organisation for Economic Co-operation and Development (OECD, 2004) that estimated Australia's per capita gross domestic product could be increased by between 4% and 7% by increasing the education levels of the nation's working population by 10%. By improving young peoples' access to entry-level VET programs within the nation's secondary school systems, there is also the likelihood that young people will have improved experiences of transition into workplaces (Woods, 2007) and post school learning in VET (OTTE, 2006).

Achieving increased and improved access to VET for young Australians in their later years of schooling has also resulted in the redevelopment of the nation's apprenticeship and traineeship schemes to be more accommodating of students completing higher school certificates in secondary schools. This importance is reflected in the development of the new Australian Technical Colleges (ATC) introduced by the Australian government in 2004, and Technical Centres introduced more recently by the Victorian government. Additionally, the introduction of the Victorian Certificate of Applied Learning (VCAL) into that state's senior curriculum offerings has undergone very rapid expansion since its first introduction in 2002. The Victorian Curriculum and Assessment Authority (VCAA) notes growth in the VCAL from 546 students in 2002, to 10227 students in 2005 (VCAA, 2007). It has been estimated by VCAA that approximately 15,000 VCAL students are enrolled in 2007. The VCAL allows VET in School students greater flexibility to combine school-based studies with VET studies and work-based learning. In short, there is a lot happening in this space.

But while there appears to be a strong economic logic to the system-wide introduction of VET into secondary schooling there is room to question the compatibility of different conceptions of learning that secondary school students are exposed to as they move between these schools, VET providers and workplaces as part of their weekly programs of study.

In this paper we report research with VET in Schools students that indicates that there are indeed different conceptions of learning demanded in the different contexts. Our

research also indicates to us that there is much to be done in exploring these differences more systematically and developing responses that can assist students and their teachers in understanding these differences, assisting in the migration between them, and in leveraging off the value that combinations of conceptions of learning can bring to a program and its participants.

## **Considering different conceptions of learning**

### ***Learning intents as conceptions of learning***

Lai and Chan (2005 pp. 3) have succinctly suggested that ‘Conceptions of learning refer to the beliefs and understanding held by learners about learning’. Over the last couple of decades there has been an interest in identifying and defining a number of different conceptions of learning. An influential taxonomy proposed by Marton, Dall’Alba, and Beaty (1993) identified six hierarchically related conceptions of learning: (i) Learning as increasing one’s knowledge – the consumption of already existing information; (ii) Learning as memorising and reproducing – for a purpose such as a test; (iii) Learning as applying, where the learner applies what is learned as the need arises – such as driving skills or manual tasks; (iv) Learning as understanding and the abstraction of meaning – developing meaning from learning, developing a point of view; (v) Learning as seeing something in a different way, an interpretative process aiming at understanding reality; (vi) Learning is ‘changing as a person’.

Working with South African students, Cliff (1998) further identified a ‘learning as social/moral obligation’ conception, which he attributed to the ‘communalist’ cultural backgrounds of the participants in his research. There are connections between that conception and what Hyland (2006) has suggested as the therapeutic role of vocational education in providing the development of personal qualities that will be needed to weather a life of uncertainty and risk (Furedi, 2003). Similarly, Blake’s (2004) notion of education as risk management, whereby learners acquire knowledge, skills and qualifications to offset economic risks that are increasingly individualised by labour market reforms and globalisation, develops the conception of learning as a form of personal ‘insurance’. This form of learning intent that is associated with learning for successful life participation forms a potential further conception of learning.

### ***Conceptions of learning and approaches to learning***

Marton (1988) and Van Rossum and Schenck (1984) have suggested relationships between conception of learning and approaches to learning. The suggestion here is that a conception of learning as increasing knowledge, or as reproduction, are associated with a surface approach; while learning as understanding and developing insight is associated with deep approach. In a study with Hong Kong teacher education students, Lai and Chan (2005) showed that the learning as an increase in knowledge conception was associated with socially oriented achievement motivation, deep strategy and surface strategy; while learning as personal fulfilment was associated with an individual oriented achievement motivation, and negatively associated with social achievement motivation

Eklund-Myrskog (1996), using Marton’s conceptions of learning showed that, among teacher education students in Sweden, there was evidence that students had been socialised into some common conceptions of learning but that, at the same time,

students independently selected conceptions of learning that they believed suited the context and their learning intent. This is a particularly important idea for this current paper and its focus.

Discussing learning styles, Djerking (1989) has proposed that learners adapt their style to suit the context or situation; while others have proposed that learners can be helped to develop more adaptive styles (see for example Smith, 2000); and Sadler-Smith and Riding (1999) have proposed that learners leverage off their learning style or strategy strengths to develop new ones as they become necessary. In other words, using meta-cognitive processes, learners react to learning situations and contexts in ways that adjust their learning to suit, and they can develop their adaptiveness over time. The study by Eklund-Myrskog (1996) indicates that this sort of adaptiveness and development can also apply to conceptions of learning. A study by Burnett, Pillay and Dart (2003) showed that high school students who adopted a deep approach liked learning new things and displayed a conception of learning as personal development, and a conception of instruction as experiential involving social interaction. Importantly, the authors suggest that teachers can develop practices to assist students to move towards those conceptions and to view learning as personal development.

### ***Contrasting conceptions of learning in practice***

Lindberg (2003) has explored the notion of vocational knowing and vocational education in schools, as a source of tension. Her findings suggest that ‘vocational knowing’ is situated judgment that consists of a language that is appropriate to the vocation, and that tacit knowledge connects these. She contrasts this with ‘knowing in school’ that is described as developing the capacities to learn in different contexts. Similarly, Harris, Willis, Simons and Underwood (1998) have pointed to different orientations towards learning that occur between apprentices, their VET teachers, and their employers. Employers tended to have a behaviourist conception that was largely interested in performance on the job, teachers were more characterised by a humanistic orientation that was interested in personal development for the apprentice as well as skills development, while the apprentices tended towards a cognitive view that was interested in the processes through which they learned. Dalton and Smith (2004) also noted significant pedagogical and epistemological challenges to secondary school teachers who were involved in teaching VET subjects.

In their review of the introduction of competency based training to VET in the Netherlands, Biemans, Nieuwenhuis, Poell, Mulder, and Wesselink (2004) indirectly pointed to the challenge to some conceptions of learning that mainly emphasised understanding and reflection on what is learnt. The challenge will arise particularly in environments where Competency Based Training (CBT) is seen as the unquestioned acquisition of knowledge to be reproduced to demonstrate competence, or to be applied in narrowly defined situations. In the Australian VET context, Foley and Smith (2002) noted the same tension as teachers moved from a curriculum approach to a package approach in training.

Similarly, different forms of learning and knowledge have been recognised in the work of cognitive psychologists, and several taxonomies have been developed (Anderson, 1982; Billett, 1993; Gott, 1989; Mezirow, 1991; Smith, 2003). The proposers of these taxonomies varyingly describe them as conceptions of knowledge or as conceptions of learning. Smith’s taxonomy, developed for workplace learning

and workplace knowledge, combined the Billett (1993) and the Gott (1989) taxonomies to yield the following: Propositional knowledge (knowledge about something); Procedural knowledge (knowledge how to do something); Dispositional knowledge (values and attitudes); Strategic knowledge (knowledge about how to decide what to do and when).

However, Mezirow's taxonomy recognised two forms of learning that are different enough from Smith's formulation to be worth mentioning here: dialogic learning, which Mezirow saw as being learning about one's environment and place within it; and, self-reflective learning which relates to understanding oneself and identifying needs for change. A further distinction in conceptions of knowledge provided by Hofer and Pintrich (1997) divides conceptions of knowledge into 'absolute' beliefs about knowledge, where there are right and wrong answers; and 'relativistic' beliefs, where right or wrong depends upon a subjective interpretation of objective evidence.

Several implications can be drawn from the different taxonomies and conceptions of learning. They are: (i) Learning is about strengthening associative bonds in a passive way that yields knowledge and behaviour outcomes; (ii) Learning is an active process of constructing meaning on the way to enhancing knowledge and behaviour outcomes; (iii) There are different forms of learning such that the learner's intent varies and the outcomes sought are different in nature.

### ***Three student cases***

To explore the possibility of different conceptions of learning being experienced by students in VET in Schools programs, we have included three case studies of VET in Schools students. The data to generate the cases was collected from interviews with 15 Victorian students completing VET in School subjects as a part of their senior VCAL programs.

The three cases discussed in this paper provide examples of similar themes emerging throughout all of the 15 cases. All of the students were attending a large coeducational secondary college located in an outer Melbourne suburb. The students were selected for participation in the study on the basis of their enrolment in VET in schools subjects requiring them to complete studies in school settings, TAFE institutes and workplaces. Several of the students had considered leaving school in Year 10 and involvement in the VET in schools programs was also influential in several of the students' decisions to remain at school. The students were interviewed about their experiences of learning at school and in other contexts beyond school, including TAFEs, workplaces and community service settings.

#### **Case 1: Nick**

Nick was not enjoying school by the end of Year 10 and was contemplating leaving. His experience of schooling was complicated by the fact that many of his teachers were not actively encouraging him to stay. He was eventually encouraged to stay at school by one of his teachers and decided to study VET Building and Construction in Year 11 as part of his Industry Specific Strand (ISS) of the VCAL. The decision to stay at school was a significant one for both Nick and his family, who were unsure what he would do if he had left in Year 10. Reflecting on his experience at school Nick observes that:

*I'm not very academic; I don't like sitting in class and doing that sort of work. With this (VET building and Construction) I get to go out on a Tuesday afternoon [to TAFE] and a Wednesday all day on work experience.*

Nick was referring to the significant difference studying VET in Schools had made to his life. As a part of his study of building and construction Nick leaves the school grounds regularly, spending Tuesday afternoon studying a Certificate II in Building and Construction at the local TAFE. He also undertakes structured workplace learning (SWL) every Wednesday at a local cabinet maker's shop, where he feels he contributes to the workplace and learns at the same time. He reflects:

*I reckon I learn more than I learn at school...I learn about carpentry...how to do different joints and that. I can't sit down in a class all day and just listen because it is boring. At the TAFE I get to learn stuff that I can use in the workplace.*

Nick's experience of learning requires him to move between three different learning settings: the school setting, where he learns alongside his *academic* school friends and is taught by secondary teachers; the TAFE institute, where he is learning amongst adults and taught by industry-based trainers; and in the workplace, where he learns on-the-job with a potential employer whose primary business is not education, but making cabinets. But Nick's experience of learning across the institutions is not completely fluid and he struggles to reconcile his learning in the work place and TAFE contexts with learning in the school setting:

*And they [the academic students] just keep talking like 'well we're getting an education'. Well we [VET students] are not getting an education like they are, but we are getting experience in the workforce. Like, if you are just going to leave school and go straight into the work force you are going to get a big shock...They [the VCE students] just know how to come to school for six hours, have two breaks – they are not working one day a week like I am. The stuff they learn in their subjects doesn't really have much to do with what you really need in the workforce – they only learn stuff that the teachers think you need.*

## **Case 2: Sharni**

Sharni is in Year 11 and was also unlikely to have continued her schooling if she could not have studied the Certificate II in Community Services. Commenting on her decision to stay at school, Sharni notes:

*I don't think I would have been able to do the VCE because I don't like all of the tests and that sort of stuff. Most of the subjects in the VCE I didn't really need; I just needed English and maths and anything else that I might have got was an extra.*

Sharni wants to become a Kindergarten teacher and, like Nick, her study of the VET in school program takes her into a range learning setting through her school week. On Tuesday afternoons Sharni leaves the school at lunch time and travels to the nearby TAFE to study the Certificate II in Community Services. She does this with other students from a range of schools in the area. Every Wednesday, Sharni undertakes structured workplace learning in the local kindergarten, where her work is admired

and appreciated by the kindergarten teacher, although this is information that is seldom shared with her peers and teachers in the school setting. Sharni sees significant personal benefit in her learning of VET that she contrasts with her experience of study at school:

*...you get work related skills that you wouldn't get in the VCE. You get to go out and, say you want to do kindergarten teaching, you actually get to see what it is like. Where as with VCE, they sit in the classroom and say 'this is what I want to do and I'll take these subjects for that', but they don't get to see if they will like what they want to do or not. With VET you go out of school and there is hands on learning...it isn't like tests and text books, its like, just going out and doing the community service, or going into the work place. And you get to make choices about what you learn as well...The [VET] teachers don't go into the classroom and say 'open the page at blah, blah, blah' and so on. They bring stuff into the class to help us [using strategies] other than text books...I don't like textbooks...I think the worse teachers are always using a textbook and not letting you out of the classroom to learn; always making you sit down and not explaining things properly.*

### **Case 3: Paul**

Paul is studying VET Automotive in Year 11 and wants to become a mechanic. In addition to his study at school, Paul attends VET Automotive classes at the TAFE and completes one day per week learning on-the-job as an apprentice mechanic with the local dealership of a large car company. Although he did not consider leaving school in Year 10, he much prefers his experiences of learning in VET and VCAL and sees them as quite distinct from 'school-type' learning. Paul reflects:

*VET and VCAL is a lot different [to VCE], but you sort of get the same outcome; you get to go where you want. It is just a different way of learning and a different style. We do a lot of applied learning. Applied learning is just the style of how we learn. We go out and it keeps us interested in it, not just copying stuff. It seems to be easy, but when you look at it, it is not...It is just the different way you are doing things; the break during the day, and the VET allows you to be able to do a bit of what you actually want to do. It has helped me at home too because I have two cars that I'm working on...a VH and a mini station panel van.*

### **Towards a summary of the data**

Table 1 represents our attempt to summarise and systematize the contrasts in conceptions of learning that we have been able to draw from our data. Potential sites of conflict will correspond to situations where the different conceptions contradict each other. This Table is necessarily an early attempt and needs to be viewed as a work in progress. Apart from the fact that our data set is limited to our three cases here, although informed also by the other twelve cases in the broader study, we have not as yet been able to tease out reliable insights for TAFE and workplaces that would yield different, and perhaps more finely cut, contrasts in conceptions of learning. That is a task yet to do.

**Table 1: Contrasting conceptions of learning for the students**

| <b>Conceptions of learning</b>   | <b>School setting</b>   | <b>Workplace and TAFE</b>  |
|--|---|--|
| (i) Learning as increasing one's knowledge – the consumption of already existing information;                                      | VET students understood that learning involved increasing one's objective knowledge in the school setting, however they had limited use for the most 'valued knowledge' in this setting as it had limited relevance to them.<br><br>Collision sites: Devaluing of other forms of knowledge not valued in the school context.        | For the students, learning in these settings involved increasing one's knowledge and practical skills, as well as acquiring the right 'soft skills' associated with employment. The knowledge and skills valued had very specific applications and were valued for that purpose. |
| (ii) Learning as memorising and reproducing – for a purpose such as a test   | VET students perceived this was a significant part of learning at school. They did not value this conception of learning<br><br>Collision sites: Assessment using tests and exams   | They did not associate learning in these contexts with this conception of learning. Assessment was associated with practical demonstrations of knowledge and skill in specific contexts.   |
| (iii) Learning as applying, where the learner applies what is learned as the need arises – such as driving skills or manual tasks; | VET in school students did not associate this conception of learning with school-type learning. This conception of learning is considered 'alternative' in this setting.<br><br>Collision site: applied learning activities that emphasise application are undervalued in comparison to teaching strategies that are more abstract. | This conception of learning is understood to be a significant part of learning in these contexts and is highly valued by the students.   |
| (iv) Learning as understanding and the abstraction of meaning – developing meaning from learning, developing a point of view;      | This conception can be the starting point for learning in school contexts – highly valued by schools but not necessarily by the VET students. Learning is associated with capacity to generalize to other contexts.<br><br>Collision site: Activities that start by requiring students to work in more abstract ways.               | Not necessarily valued in the workplace context – learning is more situated and valued for local relevance rather than generalization.   |
| (v) Learning as seeing something in a different way, an interpretative process aiming at understanding reality;                    | This conception can be associated with higher order learning in the school setting and has a focus on developing generalisable understanding.   | This conception of learning may map into more context specific applications for the purpose of solving problems rather than increasing the 'stock of knowledge'.   |
| (vi) Learning is 'changing as a person'.   | VET students understood that changing as a person in the school context involved being directed by teachers for the purposes of personal development.   | Students understood changing as a person was more self-driven through self-motivation to achieve personal goals and personal growth. Personal growth was not associated with a program.  |

## ***Discussion - crossing the borders***

It was clear the students' experiences of VET in schools exposes them to different assumptions and approaches to learning in each of the different learning contexts included in their VET programs. The students in this study favoured learning in the adult and workplace learning contexts and understood the 'type' of learning they were doing in these settings to be very different to their experiences of school-based learning. The students' experiences of 'crossing the borders' between schools, TAFEs and workplaces has exposed them to the different conceptions of learning held within each of these institutions.

While many secondary students are eventually exposed to these different institutional conceptions of learning as they undertake a transition from school to work, TAFE or university, what is unique about VET in Schools students is the requirement that they confront the different conceptions all within the same week as a part of their regular senior school program. Complicating this phenomenon is the fact that many of the students were also considering leaving school and entered into VET studies not having a particularly high level of self esteem when it comes to their capacity to learn. Some of the students were even advised by the school counsellor to undertake VET studies because that was perceived to be the 'most achievable' pathway for them and were unlikely to succeed within the traditional school-based learning context alone. Ironically, the students are now required to make sense of three different learning contexts and their different institutional conceptions. Yet they appear to have experienced success in crossing the borders of these different institutions, and surviving. However, there is clearly a more sophisticated process of learning going on than they are frequently given credit for.

Interestingly, from the point of view of student ability to cope with multiple learning contexts, demands, and conceptions, students involved in this study demonstrated a meta-cognitive awareness that there were different conceptions of learning operating in each of the different contexts. They were also aware that participation in their senior schooling required them to respond differently in each learning context, although clearly they had created their own hierarchy of which type of learning was most valid. It was also clear that they understood their hierarchy of learning was different to that of their fellow 'academic' students, many of whom did not consider the VET in school students to be acquiring an 'education' in the same way that they were.

But to what extent do teachers and trainers assume there is homogeneity among the students' acceptance about each institutions dominant conception of learning? Importantly, what messages are the students receiving that either legitimates or invalidates each 'other' institution's conceptions of learning? The students in this research were receiving clear messages from their peers and teachers in schools that learning involving a focus on 'soft' employability skills and manual work was a 'lesser form of learning' and that did not constitute 'an education'. VET in school students are required to confront these conflicting messages about what constitutes valuable learning as a part of their senior school program. Hyland's (2006) notion of vocational learning as therapy may be useful here as perhaps some teachers in schools view VET as a form of therapy for students who are deficient within the traditional school-based academic conception of learning associated with the abstraction of meaning.

The data from our cases supports other evidence (Blake, 2004; 2006a; 2006b) that students who are unsuccessful in some learning contexts may be highly successful when greater consideration is given to the congruence between their individual conceptions of learning and the learning culture they are within. Learners are more likely to be considered 'at-risk' when there is a mismatch between their individual conceptions of learning and the learning culture of their education and training. For students in VET in schools programs there is the need to confront the mismatch they experience between conceptions of learning experienced in the school context and conceptions of learning they experience in TAFE and workplaces.

As demonstrated in each of our three cases, the interest in workplaces as a legitimate site for learning has also brought increasing demands for workplace-based learning experiences by secondary school VET students. However, the conceptions of learning held by personnel in workplaces have been shown to be different from those of teachers and learners in the formal education sectors (Harris et al., 1998). This has implications for effective structured work-based learning placements, but also for learning partnerships between education and enterprises. Adding to the potential for difference and confusion in these partnership understandings are the different conceptions of knowledge discussed earlier (eg. Billett, 1993; Gott, 1989; Smith, 2003) where the objectives of learning can be different in a context that the actors in each sector believe them to be the same. The work of Hofer and Pintrich (1997) on beliefs about knowledge also indicate differences between workplaces and school, and a potential zone for conflict emerges from these differences in beliefs about knowledge]

In considering the case examples of VET in schools provided above, the potential for students to experience conflicting understandings about learning has emerged alongside the policy to expand VET into schools. We argue it is now necessary to develop new theoretical understandings about learning that explain how successful learners, teachers and trainers are transcending older conventional conceptions of learning that were generated in a landscape where boundaries between secondary schools, TAFE, universities and workplaces were more clear and rigid than at present. Similarly, a new understanding must confront the capacity for learners, such as those undertaking VET in schools, to depart from the more linear pathways from school to university, and the conceptions of learning that have supported this paradigm. A new understanding must come to terms with students' ability to assemble a mosaic of learning experience as they cross the borders of different institutions and their conceptions of learning. We also argue that the time has come for institutions (teachers, trainers and managers) to develop a broader understanding and acceptance of a greater diversity of conceptions of learning. An approach to developing a new understanding can be achieved by examining the different conceptions of learning that are assumed in each of these settings and the potential for conflict and collisions to occur as students move between them.

Our data and the broader literature suggests that these students are required to simultaneously blend learning from multiple education and training institutions and to construct coherent knowledge captured across institutional boundaries that would have previously been more isolated silos. As an alternative to developing comfort

with different conceptions of learning, and also becoming adept at the meta-cognitive strategies required to migrate learning processes and knowledge outcomes from one context to another, it is possible that VET in school students simplify this by deciding to accept some conceptions of learning and reject others. There is a hint of this from time to time in our data, but whether that is simply the language of contrasts, or the language of acceptance and rejection, is not clear to us as yet. If choices of acceptance and rejection are being made, it is likely the students would reject the more traditional school-based conception of learning but assume they will be required to be 'compliant' in some situations to achieve success in their schooling. We suggest that where teachers/instructors and learners can develop a broad understanding of different conceptions of learning, their respective characteristics and value, and their different deployment (Eklund-Myrskog, 1996) there is a stronger possibility of a more coherent development of identity as learners within VET and workplaces, and a greater capacity to comfortably adapt to different demands (Djerking, 1989; Sadler-Smith & Riding, 1999; Smith, 2000).

Finally, we suggest that so far common understandings of conceptions of learning derive from long experience and familiarity with the formal education and training structures, such as schools, VET, and university. However, conventional conceptions of learning are not necessarily congruent with the mosaic of learning patterns and pathways experienced by VET in school students. Our inability in this study, as shown in Table 1, to find distinguishing conceptions of learning between workplaces and TAFE contexts may be, we suggest, because the conceptions of learning model we have used (Marton et al., 1993) has been developed from formal education settings – not those found in workplaces.

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