Factors fostering vocational students' workplace learning success in the real workplace environment

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Abstract

The present paper proposes a conceptual model in which both personal and perceived workplace-related factors affect vocational students' workplace learning success in real workplace environments, with workplace learning success constituted by students' professional learning and satisfaction. We empirically tested the proposed model in two survey datasets (N = 242 and N = 88) collected from Finnish final-year vocational students and their workplace instructors using structural equation modelling (SEM) based on partial least squares (PLS). The results show that supportive climate, interpersonal trust in the workplace, and students' self-efficacy all have a significant and positive impact on vocational students' subjective workplace learning success. The results differ based on whether the professional learning is evaluated subjectively by the student or objectively by the workplace instructor. We discuss the implications of the findings for theory and practice.

Keywords: vocational; professional learning; workplace learning satisfaction; supportive climate; interpersonal trust; self-efficacy, learning-goal orientation

Introduction

Workplaces are playing a greater role and one of greater responsibility in vocational students' education (Streumer and Kho 2006; Virtanen, Tynjälä, and Eteläpelto 2014) and, more specifically, in the Vocational Education and Training (VET). This is because formal educational institutions cannot respond fast enough to the needs of rapidly changing contemporary working life (e.g., Hakkarainen et al. 2004; Tynjälä and Gijbels 2012). In Finland, the new Act on VET came into effect at the beginning of 2018 (HE39/2017). This reform changed the VET system radically and calls for students'

professional learning increasingly to occur in authentic working environments to ensure that vocational students' skills meet future working life needs. The growing role of workplaces in students' learning poses challenges for organisations (workplaces), vocational education, as well as for vocational students, but surprisingly little is known about the factors specifically affecting vocational students' workplace learning. A pioneering study by Virtanen, Tynjälä, and Eteleäpelto (2014) shows that both individual aspects and workplace social contexts affect students' workplace learning. Hence, to provide adequate workplace learning environments and effective workplace learning for vocational students, it is important to understand the circumstances under which vocational students learn best in real workplaces.

The workplace as a learning environment appears differently to the students than to employees because the students are neither employees nor they are familiar with the organisation in which they conduct their workplace learning. However, students are expected to obey the general rules of working life along with those of the specific organisations. Further, students' entering professions often represent younger generations (Gens Y and Z), which distinguish from older generations (e.g., Kim, Knight, and Crutsinger 2009). For instance, although members of the younger generations seek meaningful work to utilise their abilities and talents and to develop professionally, they also more easily leave a workplace that does not fulfil or satisfy their needs. Given that students' expectations and perceptions of the workplace likely differ from those of organisational members and nevertheless play a central role in students' workplace learning success, it is important to shed light on the factors that particularly affect students' workplace learning success.

Learning a specific profession involves learning the skillful and knowledgeable actions of that profession (Kock and Ellström 2011; Pascarella and Tesrenzini 1980). Although professional learning best occurs in a real workplace environment in close interaction between students (novices) and experienced co-workers (Billett 2004), students' learning in the workplace is inherently individual learning (e.g., Virtanen, Tynjälä, and Collin 2009). In the workplace, the students' are expected to generate contextualised and personalised 'how to' knowledge involving the implementation of professional skills and expertise to conduct their work (Eraut 2000). Notable is that this type of learning largely relies on individuals' own interest and personal resources (e.g., Noe et al. 2013).

To advance our understanding of vocational students' workplace learning, we introduce a construct, namely *students' workplace learning success*, which is comprised of two aspects: professional learning and satisfaction. *Professional learning* involves the application of the students' perceived professional development,[1] that is, advances in her or his professional skills, acquired practices, and identity. The evaluation of the students' advances in professional learning is often conducted via commonly used VET metrics by others (objective), the student (self-rated/subjective), or both. In contrast, *satisfaction* represents a student's subjective experience of the degree to which she or he experiences satisfaction about her or his job during workplace learning[2] (analogous to job satisfaction, e.g., Hackmann and Oldham 1976; Warr, Cook, and Wall 1979). We argue that satisfaction is an important indicator of students' professional learning, future career

[1] In the rest of the article, we use the term *professional learning* to refer to *the students' perceived professional development*

[2] In the rest of the article we use term *satisfaction* to refer to students' satisfaction with her or his job during workplace learning

development, and employment as it considers students' subjective and emotional perspective on workplace learning. Indeed, positive early work experiences, such as perceived supportive work environment (Westerman and Yamamura 2007) and experienced career advancement (Wong, Gardiner, Lang, and Coulon 2008), are important for work and career development among members of younger generations (Kjeldsen and Jacobsen 2013). Students with higher scores for satisfaction report positive work experiences and are likely to advance in their careers. However, past studies have paid less attention to students' workplace learning in terms of both professional learning outcomes and satisfaction.

In our examination of students' workplace learning success, we address both individual and situational (workplace) types of antecedents. Specifically, we investigate the impact of individual aspects of self-efficacy and learning-goal orientation and perceived learning opportunities based on a supportive climate and interpersonal trust on students' workplace learning success in real workplaces. We shall address the following research question: which individual- and workplace-related factors explain students' workplace learning success? In the following, we shall introduce the theoretical background and our research model to explain vocational students' workplace learning success.

Theoretical background

To build our research model, we draw on earlier research on employees' and students' workplace learning and job satisfaction and apply it to vocational students' workplace learning success, which comprises both the students' professional learning and workplace learning satisfaction. In doing so, we rely on the interactionist perspective of Banduras'

(1991) Social Cognitive Theory (SCT), which emphasises that both individual and contextual factors affect individuals' behaviour and performance. Several scholars confirm this in employees' learning (Li et al. 2009), professional development (Billett 2006; Eteläpelto and Collin 2004; Tynjälä 2008; Virtanen et al. 2014), work performance (Luthans et al. 2007; Luthanset al. 2008; Peterson et al. 2011), and job satisfaction (Luthans et al. 2008). In addition, SCT posits that through their self-efficacy beliefs, individuals are able to master their goals and performance (Bandura 1991). SCT has been used to explain vocational behaviour and performance (e.g., Hackett and Betz 1981; Bez 2000) as well as in explaining the impact of various self-concepts related to work performance and the satisfaction of employees (e.g., Judge and Bono 2001). Its use is therefore also likely appropriate in explaining vocational students' professional learning and satisfaction.

To investigate factors affecting students' workplace learning success, we employ students' personal resources (individual-level factors) and their perceptions of the learning opportunities provided by the workplace (contextual factors). First, a job demand model (Hobfoll 1989) presents employees' personal resources (Wingerden, Derks, and Bakker 2015; Xanthopoulou et al. 2009) as central determinants in adapting work environments. Likewise, positive organisation behaviour represents employees psychological capital (Luthans et al. 2008; Luthans et al. 2007), that is, strengths that are central in engaging and adapting to the work environment and that impact on employees' workplace learning, work performance, and job satisfaction. It is also likely that they are important for students' professional learning and satisfaction. Second, research indicates that adequate workplace circumstances provide learning opportunities (e.g., Watkins and Marscik 1993; Clarke 2005) and thereby improve employees' learning (Clarke 2005; Cronin 2014; Eraut 2007) and job satisfaction (Luthans et al. 2008), which is likely to be

true for vocational students' workplace learning as well. Hence, we believe that the students' perceptions of the learning opportunities that occur indirectly based on supportive climate and emerge in interactions between students and workplace members are fundamental in allowing students to generate professional skills and knowledgeability. This is because students are individual learners with different personalities and personal resources and they differ in both how they perceive their work environment and how they contribute to it (Tett and Burnett 2003). We next discuss perceived learning opportunities and personal resources in terms of students' professional learning and satisfaction and posit our hypotheses (see Figure 1).

Perceived learning opportunities: Supportive climate and interpersonal trust

Based on previous literature, supportive workplace climate (Luthans et al. 2008; Renn and Vandenberg 1995) and interpersonal trust among co-workers (Confessore and Kops 1998) together build adequate learning circumstances, provide learning opportunities (Watkins and Marscik 1993; Clarke 2005), and thereby improve employees' learning (Clarke 2005; Croning 2014, Eraut 2007) and job satisfaction (Luthans et al. 2008). This is likely to be true for vocational students' workplace learning and satisfaction as well.

A supportive climate entails individuals' subjective perceptions regarding the atmosphere and levels of support and encouragement inherent in their working environment (Luthans et al. 2008; Rhoades, Eisenberger, and Armeli 2001; West 1990). Scholars have found that such a climate fosters employee learning (Carrim and Basson 2013; West 1990; Hannah and Lester 2009; Hurley 2002; Laurillard 1999; Confessore and Kops 1998) and work performance (Luthans et al. 2008; Renn and Vandenberg 1995). More specifically, a positive and stimulating atmosphere and the support of workplace members (Eraut 2007; West 1990; Yu, Yu, and Yu 2013) provide

opportunities for learners to generate and implement new approaches to their work tasks (Hoe 2011; Luthans et al. 2008; Stone et al. 2007; West 1990). These studies provide us with a basis from which to argue that perceived supportive workplace climate improves students' professional learning as it encourages initiative taking, experimentation, and active learning-by-doing, which are central to students' professional development. There is evidence that a supportive climate also influences employees' job satisfaction (Luthans et al. 2008), an argument which is likely to be valid when applied to students' satisfaction in the workplace learning as well. Hence, the higher the perceived supportive climate is, the higher the level of satisfaction among vocational students is likely to be. Therefore, we hypothesise as follows:

Hypothesis 1. A perceived supportive organisational climate relates positively to (a) students' professional learning and (b) workplace learning satisfaction.

Learning professional practices in the workplace with co-workers is social learning in which highly open and trusting communication is a prerequisite for individuals to acquire knowledge and share their points of views openly (Holste and Fields 2010; Levin and Cross 2004), learn (Dymock 1999; Sankowska 2013) and experience satisfaction in their work (Dirks and Ferrin 2002). Trust concerns an individual's subjective perceptions of other persons' trustworthiness in the sense of competence, goodwill (McAllister 1995; Nahapiet and Ghoshal 1998), fairness, and reliability (Tsai and Ghoshal 1998; Mäkelä and Brewster 2009). Thus, interpersonal trust, that is, a students' (knowledge seeker's) trust in a knowledge source (experienced co-worker) provides opportunities for learning as it increases knowledge sharing and the willingness of the individual to take in and use the acquired knowledge in practice (Holste and Fields 2010; Levin and Cross 2004; Levin, Cross, and Abrams 2002). Earlier studies show that

highly trusting relationships among individuals working together have a positive impact on deep learning (Confessore and Kops 1998) and work performance (Levin and Cross 2004; Cunningham and MacGregor 2000). To apply this to a vocational student context, it follows that trusting relationships in the workplace are likely to improve students' professional learning. In addition, there is evidence that interpersonal trust relates to employees' job satisfaction (Braun et al. 2013; Cunningham and MacGregor 2000; Dirks and Ferrin 2002; Kramer 1999; Levin and Cross 2004), meaning that students' higher levels of trust in co-workers relate to higher levels of workplace learning satisfaction. Hence, it is likely that students' trust in co-workers is important for their workplace learning satisfaction particularly. We propose the following hypothesis:

Hypothesis 2. Interpersonal trust relates positively to (a) students' professional learning and (b) workplace learning satisfaction.

Students' personal resources: Self-efficacy and learning-goal orientation

The individual nature of students' workplace learning (Virtanen, Tynjälä, and Collin 2009) becomes apparent when it is considered that students' interests and personal resources are important drivers in professional development (Noe et al. 2013). These personal resources (Luthans et al. 2008; Wingerden et al. 2015; Xanthopoulou et al. 2009) are individuals' dynamic attributes, through which they are able to master the balance between the situational and personal aspects (Wingerden et al. 2015), push the envelope of the given circumstances (Bakker and Demerouti 2014) and achieve improved performance (Bakker, Tims, and Derks 2012). Although personal attributes and environment together shape individuals' behaviour, the individuals themselves set their goals and direct their behaviour towards the desired outcomes (Bandura 1991). Hence,

we propose that both self-efficacy and learning-goal orientation are important individual attributes and determinants of vocational students' workplace success.

Wood and Bandura (1989, 408) define general self-efficacy as 'beliefs in one's capabilities to mobilise the motivation, cognitive resources, and courses of action needed to meet given situational demands'. In past research, self-efficacy has been attached to individuals' acquisition of skills (Downey and Zeltmann 2009; Grundlach et al. 2003), learning (Noe et al. 2013), and work performance (e.g., Bandura 1986, 1997; Luthans et al. 2007; Stajkovic and Luthans 1998; VandeWalle, Cron, and Slocum 2001). Self-efficacious individuals work harder, put more effort into achieving their goals, are motivated to learn (Zimmermann 2000), and engaged in work (Luthans and Stajkovic 1998). Chen, Gully, and Eden (2001) observed that a high degree of general self-efficacy relates to one's overall competence to cope with various changing and challenging situations. This is particularly important for students' professional learning in the workplace environment because as novices and newcomers they are unfamiliar with their physical and social work environments. We therefore assume that self-efficacy is an important personal resource that enhances students' professional learning because it promotes individuals' acquisition of knowledge and skills in the workplace environment. Several scholars have also connected self-efficacy with improved job satisfaction (e.g., Judge and Bono 2001; Saari and Judge 2004; Saks 1995), and there is evidence that self-efficacy positively relates to college students' satisfaction (DeWitz and Walsh 2002) and life satisfaction among undergraduate students (Duffy et al. 2012). Therefore, we propose the following hypothesis:

Hypothesis 3. Self-efficacy relates positively to (a) students' professional learning and (b) workplace learning satisfaction.

Learning-goal orientation refers to an individual's interest in learning and increasing his or her level of competence (VandeWalle et al. 2001), which is also known as mastery orientation (Janssen and Van Yperen 2004). Orvis and Leffler (2011) found learning-goal orientation to be related to employee self-development in the workplace. There is evidence that individuals with high learning-goal orientation try new things in practice (Elliott and Dweck 1988) and explore novel approaches while conducting their daily work tasks (Button, Mathieu, and Zajak 1996). Likewise, they prefer challenging tasks (Sujan et al. 1994) and consider negative feedback as an opportunity to learn (Button et al. 1996). Thereby, they are able to develop work-related knowledge and use it in authentic situations, which enhances an individual's skills and promotes mastery of given tasks. Previous studies have shown that an individual's learning-goal orientation increases learning (Kozlowski et al. 2001) and positively affects performance (Cellar et al. 2011; Janssen and Yperen 2004; Kozlowski et al. 2001; VandeWalle et al. 2001). In terms of students' learning, learning-goal orientation is likely to be important for students' learning in the workplace as well. Further, learning-goal orientation also affects satisfaction, as mastery-oriented individuals derive satisfaction from their efforts to achieve goals (Harackiewicz et al. 1997; Van Yperen and Janssen 2002). Therefore, we propose the following hypothesis:

Hypothesis 4. Learning-goal orientation relates positively to (a) students' professional learning and (b) workplace learning satisfaction.

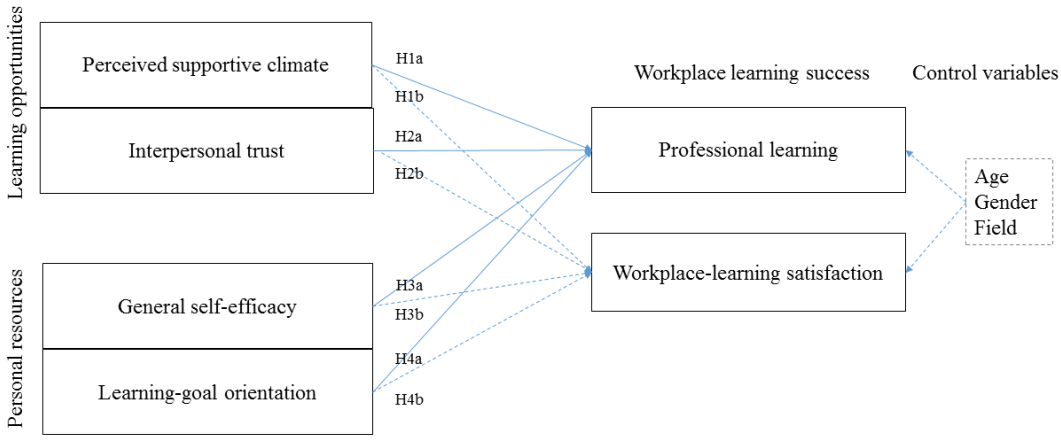

Figure 1. Research model

Methods

Students' workplace learning in Finland

The Finnish contemporary VET entails three years of full-time studies that include workplace learning periods in organisations. Since every vocational student participates in workplace learning during the VET studies, workplace learning is an intrinsic part of the Finnish VET. In Finland, approximately 126,900 new students began studies leading to a vocational qualification in 2017 (Statistics Finland 2018). Reasons for the popularity of vocational studies among young people include, for example, the possibility to proceed quickly to working life and to apply to a university of applied sciences or other university after finishing VET studies.

The subjects of this study were vocational students who were conducting their final workplace-learning period before graduating. The vocational students undergo a period of at least six months of curriculum-based mandatory learning in an authentic environment during their studies. The length of a single period is normally eight weeks

(2012). The students' workplace learning proceeds systematically through stages that include a contract, learning goals, a nominated workplace instructor, and assessment.

Sample and data collection

This study employed a survey research strategy to test the research hypotheses. We collected data for this study via a web-based questionnaire between February and May 2012 as follows. An internet-based questionnaire was sent via e-mail to 600 graduating students in two Finnish vocational colleges. The colleges were chosen on the basis that they were middle-sized vocational colleges according to the Finnish standard and they provided a wide range of vocational qualifications. Hence, the respondents represented various vocational upper secondary qualifications. We chose survey data collection as it enables the capture of both individual aspects and individuals' perceptions of the workplace environment. Specifically, in our study, we acknowledge students' perceptions as situations are rooted in one's social environment and situational factors are contingent on an individual's subjective interpretation of a situation.

Sampling

For Sample 1, we collected survey data from the vocational students directly after the end of their workplace-learning period. The questions on the survey covered the entire learning period. We sent the survey to 600 graduating students and received 289 responses, of which 242 were usable for structural model analysis. We used SmartPLS3 and its mean replacement software to handling missing data (Hair et al. 2017), because in our dataset (N=242) any indicator exceeded the cut off value (5 percent per indicator) for mean replacement option is SmartPLS3.

Of Sample 1 (N=242), 59.9 (N=145) per cent were women and 40.1 (N=97) per cent men. A total of 82.6 per cent (N=200) of the students were between the ages of 18

and 22 and represent Generation Y (born 1977–1994); 10.8 per cent (N=26) were between the ages of 23 and 32 (born 1970–1979), and 6.6 per cent (N=16) were over 32 years old (born 1969 or earlier). Table 1 displays the distribution of the respondents within the vocational education fields. In Sample 1, the students' self-rated their professional learning (subjective learning performance).

For Sample 2, we collected data from the students' workplace instructors directly after the students' workplace period ended. We sent the questionnaire to 358 workplace instructors and received 156 responses. Thereafter, we connected each workplace instructor's response to the respective student's response and obtained a dataset of 100 responses, of which 88 responses were applicable for the structural model analysis. This dataset comprises Sample 2.

In Sample 2, 62.5 per cent of the sample were female and 37.5 per cent male. A total of 87.5 per cent (N=77) of the respondents were between the ages of 18 and 22 (born 1980 and later), 10.2 per cent (N=9) were between the ages of 23 and 32 (born 1970-1979), and 2.3 per cent (N=2) were 33 years old or older (born 1969 or earlier). Table 1 displays the distribution of the respondents within the vocational education fields. In this sample, students' professional learning was evaluated by the workplace instructor (objective learning performance).

Table 1: Vocational education field of respondents

Vocational education field	Sample 1 %	Sample 1 N	Sample 2 %	Sample 2 N
1. Culture	16.1	39	20.5	18
2. Natural Sciences	5.0	12	6.8	6
3. Technology and Transport	19.8	48	20.4	18
4. Natural Resources and the Environment	6.2	15	-	-
5. Social Services, Health and Sport	16.9	41	11.4	10
6. Tourism, Catering and Domestic Services	17.4	42	19.3	17
7. Sociology, Business and Administration	18.6	45	21.6	19
Total	100.0	242	100.0	88

Measures

In our study, we used multi-item constructs based on existing measures in the prior literature (Appendix 1). The respondents had to score the all measured items on a six-point Likert scale *(1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, 6 = strongly agree).*

Students' *professional learning* was measured via both an objective and a subjective evaluation as follows: In Sample 1, the students self-rated their *professional learning (α=0.872***)** using an item set in which four items were adapted from Pascarella and Terenzini (1980) and two items from Kock and Ellström (2011). In Sample 2, *students' professional learning (α=0.856***)** was assessed by the workplace instructor and was measured with six items which consist of four items by Ellström (1997) and Kock and Ellström (2011), one item by Hurley (2002), and one item by Nikolova et al. (2014). Because there is a lack of established, common, and coherent (Sandal, Smith, and Wangensteen 2014) metrics to evaluate workplace instructors' opinions concerning the

vocational students' workplace learning, we adopted a set that is used in Finnish vocational institutions. In accordance with that metric, the workplace instructors assessed the students' performance in terms of the following objectives: whether the students performed tasks given to them in professional manner, the students' ability to perform versatile tasks, adjustment to the work community, fluency of the students' practical work, and ability to utilise feedback received from seniors (Ellström 1997; Hurley 2002).

Students' *workplace learning satisfaction* (*α=0.927*) was measured with six items, which consist of four items by Warr et al. (1979) and two items by Tsui et al. (1997). The respondents scored the items (on a scale from *1 = very dissatisfied* to *6 = very satisfied*). *Perceived supportive climate (α=0.897)* was measured using the scale by Stone et al. (2007), which consists of five items. *Interpersonal trust* **(***α=0.879)* was measured with six items. Four items to assess benevolence (goodwill) trust were adapted from Levin and Cross (2004). In addition, we involved two items by Mäkelä and Brewster (2009) that relate to interpersonal knowledge sharing critical for workplace learning. *Learning-goal orientation* (*α=0.824)* was assessed with the five items by Sujan et al. (1994). Finally, *general self-efficacy (α=0.876)* was measured with the five-item scale by Chen, Gully, and Eden (2001).

Demographic variables of age and gender were included as control variables. In addition, we controlled for the vocational education field because previous studies have found differences between vocational fields (e.g., Tynjälä et al. 2014; Collin, Paloniemi, Virtanen, and Eteläpelto 2008).

Measurement model, reliability, and validity

First, we tested the measurement model using confirmatory factor analysis (CFA). Then, to test the hypotheses, we used PLS (version 3.3.7 of SmartPLS; see Ringle et al. 2015)

because our model encompasses two dependent variables and PLS enables the investigation of such relationships simultaneously (Hair, Hult, Ringle, and Sarsted 2016). In addition, PLS modelling is specifically appropriate to analyse smaller data samples (Hair et al. 2014).

The model's internal consistency and discriminant validity were assessed to test the measurement model, after which the structural model was used to test the hypotheses. Internal consistency is comprised of composite reliability and convergent validity. Composite reliability (CR) of the constructs were all well above the cut-off value of 0.80 (Nunnally and Bernstein 1994) and demonstrated high levels of internal consistency (Table 2) in both samples. To test the convergent validity, the average variance extracted (AVE) and factor loadings were analysed. The AVE values of the constructs (Table 2) varied in Sample 1 between 0.586–0.735 and in Sample 2 between 0.526–0.650, which exceeded the cut-off (0.50; Fornell and Larcker 1981). Loadings of all items were statistically significant and sufficiently high (>.60) (Appendix).

Table 2. Construct statistics

	SAMPLE 1					SAMPLE 2				
Constructs	**Mean**	**Std**	**α**	**AVE**	**CR**	**Mean**	**Std**	**α**	**AVE**	**CR**
1. Supportive climate	4,463	.9728	.897	.710	.924	4,536	1.0980	.872	.650	.903
2. Interpersonal trust	4,705	.7951	.879	.677	.912	4,772	.8601	.818	.526	.868
3. Learning goal orientation	4,845	.6544	.824	.586	.876	4,977	.6240	.824	.579	.846
4. Self-efficacy	4,648	.6450	.876	.668	.910	4,644	.5726	.783	.531	.849
5. Satisfaction	4,872	.8763	.927	.735	.943	4,929	.8038	.857	.585	.893
6. Professional learning *	4,781	.7538	.872	.612	.904	5,108	.718	.856	.582	.892

*) Subjective in Sample 1; Objective in Sample 2

Discriminant validity was assessed via the Fornell-Larcker (1981) criterion. We compared the square root of the AVE values (on the diagonal in Table 3) with the correlations between the latent constructs. All the square root values of AVE were higher than the correlations between latent constructs; therefore, discriminant validity was established. This result means that each construct shares more variance with its measures than it shares with the other constructs of the model (Fornell and Larcker 1981).

Table 3. Correlation matrix and discriminant validity assessment

SAMPLE 1 **Construct**	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**
1. Supportive climate	**0.842**					
2. Interpersonal trust	0.523**	**0.823**				
3. Learning goal orientation	0.310**	0.476**	**0.766**			
4. Self-efficacy	0.293**	0.418**	0.548**	**0.817**		
5. Satisfaction	0.490**	0.638**	0.480**	0.484**	**0.857**	
6. Professional learning (subj)	0.543**	0.527**	0.430**	0.491**	0.643**	**0.783**
SAMPLE 2 **Construct**	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**
1. Supportive climate	**0.806**					
2. Interpersonal trust	0.532**	**0.725**				
3. Learning goal orientation	0.158	0.483**	**0.761**			
4. Self-efficacy	0.129	0.309*	0.484**	**0.729**		
5. Satisfaction	0.450**	0.581**	0.532**	0.383**	**0.765**	
6. Professional learning (obj.)	0.174	0.318**	0.181**	0.202*	0.317**	**0.763**

**. Correlation is significant at the 0.01 level (one-tailed).

Notes: The square roots of the AVE values are shown in the diagonal of the table

Results

To assess the model's predictive accuracy (R^2) and the significance of the structural paths, we conducted the PLS bootstrapping procedure. Table 4 displays the results of that procedure, and we will discuss it in more detail below.

Sample 1

As the data in this sample relied on a self-reported measure regarding independent and dependent variables, we assessed the possible common method bias with Harman's one-factor test (Podsakoff et al. 2003). We conducted principal component analysis by incorporating all the items from all the constructs. The largest factor accounted for was 38.53 per cent, which suggests that common method bias was not a concern in this sample.

The model was able to explain 51.2 per cent of the variance in student's self-rated *professional learning* and 47.1 per cent of the variance in students' *workplace learning satisfaction*. First, the model examined the hypothesised paths from workplace-related variables of perceived *supportive climate* (H1a) and *interpersonal trust* (H2a) and from personal factors of *self-efficacy* (H3a) and *learning-goal orientation* (H4a) to the students' self-rated *professional learning*. The results showed statistical significance in the hypothesised structural paths as follows (Table 4): *supportive climate* (H1a: β=0.355, $p<0.005$), *interpersonal trust* (H2a: β=0.220, $p<0.005$), *self-efficacy* (H3a: β=0.257, $p<0.005$) to students' *professional learning.* Therefore, the hypotheses H1a, H2a, and H3a were supported, whereas the hypothesis H4a was rejected. Of the control variables, *age* (0.113, $p<0.05$) was significant.

The hypothesised paths from perceived *supportive climate* (H1b), *interpersonal trust* (H2b), *self-efficacy* (H3b), and *learning-goal orientation* (H4b) to the students'

satisfaction showed statistical significance as follows (Table 4): *supportive climate* (H1b: β=0.199, p<0.005), *interpersonal trust* (H2b: *β*=0.408, p<0.005), *self-efficacy* (H3b: β=0.192, p<0.005) and *learning-goal orientation* (H4b, *β*=0.116, p<0.10) to students' *workplace learning satisfaction.* Therefore, the hypotheses H1b, H2b, H3b, and H4b were supported, with H4b at the 10 per cent level.

Sample 2

The model was able to explain 50.0 per cent of the variance in *students' workplace learning satisfaction* and 13.3 per cent of the variance in *student's professional learning,* assessed by workplace instructor. The model tested the hypothesised paths from workplace-related variables of perceived *supportive climate* (H1a) and *interpersonal trust* (H2a) and from personal factors of *self-efficacy (H3a)* and *learning-goal orientation* (H4a) to the students' *professional learning* assessed by workplace instructor (objective). First, the results showed statistical significance only for *interpersonal trust* (H2a: β=0.142, p<0.10). The rest of the hypothesised structural paths related to *students' professional learning* were non-significant (Table 4); therefore, the hypotheses H1a, H3a, and H4a were rejected. Of the control variables, only *age* (*β=0*.161, p<0.05) was significant.

Second, the hypothesised paths showed statistical significance as follows (Table 4): *supportive climate* (H1b: β=0.250, p<0.005), *interpersonal trust* (H2b: β=0.274, p<0.005), *learning-goal orientation* (H4b: β=0.340, p<0.005) to *students' workplace learning satisfaction.* The hypotheses H1b, H2b, and H4b were supported, whereas the hypothesis H3b was not.

Table 4. Testing the research model

	SAMPLE 1 (N=242)			SAMPLE 2 (N=88)		
Hypothesis: Path	**β**	**SD**	**T-value**	**β**	**SD**	**T-value**
H1a: Supportive climate > Professional learning	0.355	0.073	5.315***	0.131	0.146	0.884
H2a: Interpersonal trust > Professional learning	0.220	0.089	2.707***	0.142	0.179	1.737*
H3a: Self-efficacy > Professional learning	0.257	0.061	4.256***	0.133	0.187	1.156
H4a: Learning goal orientation > Professional learning	0.056	0.074	0.755	0.094	0.182	0.098
Age > Professional learning	0.113	0.054	2.063**	0.161	0.081	1.959*
Field > Professional learning	-0.070	0.047	1.436	-0.096	0.122	0.791
Gender > Professional learning	-0.002	0.046	0.040	0.021	0.129	0.155
	R^2=0.512			**R^2=0.133**		
H1b: Supportive climate > Satisfaction	0.199	0.058	3.592***	0.250	0.095	2.706***
H2b: Interpersonal trust > Satisfaction	0.408	0.075	6.102***	0.274	0.112	2.449**
H3b: Self-efficacy > Satisfaction	0.192	0.063	3.040***	0.113	0.107	1.065
H4b: Learning goal orientation > Satisfaction	0.116	0.083	1.692*	0.340	0.120	2.838***
Age > Professional learning	0.054	0.041	1.565	0.087	0.094	0.942
Field > Professional learning	-0.075	0.045	1.638	-0.039	0.072	0.546
Gender > Professional learning	0.042	0.044	1.008	0.139	0.082	1.672
	R^2=0.471			**R^2=0.500**		

The significance of the *t*-values (one-tailed)

*** Significant at the 0.005 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Discussion

Our results show that both personal aspects and perceived learning opportunities are important for vocational students' workplace learning success (comprised of professional

learning and workplace learning satisfaction) in the workplace from the perspective of students.

First, we found that the perceived learning opportunities offered by supportive climate and interpersonal trust are important for students' in learning and developing professional practices in the workplace environment. Even though the students involved in their workplace learning period are not employed members of the organisation, their subjective perceptions about the workplace environment and of learning opportunities in the workplaces are central to their professional learning. This finding is important in the sense that it supports the view that the same aspects are important for young vocational students entering workplaces as for organisational members in general. In this regard, our study aligns with the study by Wong et al. (2007), who found only minor differences between generations in terms of employee personality and motivations in the workplace. Specifically, our finding is in line with the findings of previous studies among organisational members suggesting that perceived supportive climate (Confessore and Kops 1998; Eraut 2007; Laurillard 1999) and interpersonal trust (Confessore and Kops 1998; Cunningham and MacGregor 2000; Levin and Cross 2004) are important for employees' workplace learning. Thus, it is favourable for professional learning if a student as a newcomer feels that the workplace climate is encouraging, there is support available, and there are experienced co-workers who can be trusted (Dymock 1999; Sankowska 2013).

Second, regarding personal aspects, our results show that self-efficacy is important and contributes positively to students' professional learning in the workplace. This finding aligns with previous findings among employees by VandeWalle et al. (2001), Stajkovic and Luthans (1998), Luthans et al. (2007), Wingerdern et al. (2015), Wood and Bandura (1989), and Bandura (1986), as well as with the studies conducted among

newcomers to a workplace (e.g., Saks 1995). Self-efficacy is one of the most studied personal resource variables (Wingerden et al. 2015; Luthans et al. 2007) through which an individual can respond, expand, and influence her or his work environment successfully (Bakker and Demerouti 2014; Wingerden et al. 2015) by mobilising her or his motivation and skills *in situ* (Stajkovic and Luthans 1988). Self-efficacy is especially important for vocational students in the workplace because they enter a new organisational context and work community where the practices and co-workers are unfamiliar. A high level of confidence enables students to cope by balancing between their skills and the demands of unfamiliar workplace circumstances, which enhances their professional learning and development.

Contrary to our expectations, we found that learning-goal orientation was not related to professional learning in the workplace. This finding differs from that of previous studies (Dweck and Henderson 1989; Janssen and Van Yperen 2004; VandeWalle et al. 2001), and it is likely that the influence of learning-goal orientation is indirect, that is, mediating, on professional learning. This assumption is supported by earlier research in which Gong et al. (2009) found that self-efficacy mediated between employee learning orientation and creativity.

It is notable that the results differ depending on whether the professional learning is evaluated by the student (subjective) or by her/his workplace instructor (objective). First, the importance of interpersonal trust is greater for students' self-rated professional learning than for professional learning assessed by a workplace instructor. Second, perceived supportive climate and impact of self-efficacy is greater for students' self-rated professional learning but non-significant when evaluated by a workplace instructor. The differences in results may derive from the differences in the assessment, that is, students

and workplace instructors evaluate different aspects and look at workplace learning from different perspectives. In their study on vocational students' experiences with workplace learning assessment, Sandal, Smith, and Wangensteen (2014) point out that there is a wide variety of assessment practices, many stakeholders (students, instructors, and teachers) involved in evaluation, and a lack of a shared view of learning goals and assessment among stakeholders. Further, it is likely that there are differences in results between students whose views parallel those of workplace instructors versus students whose views vary or differ significantly from the views of workplace instructors.

Regarding vocational students' workplace learning satisfaction, our findings for both samples show that perceived learning opportunities based on supportive climate and interpersonal trust influence positively students' satisfaction in real workplace environments. This result is in line with previous studies showing that a supportive organisational climate (Luthans et al. 2008) and interpersonal trust (Braun et al. 2013; Cunningham and McGregor 2000; Dirks and Ferring 2002; Robinson and Rousseau 1994) contribute to employees' job satisfaction. The present study reveals that this is also valid for vocational students' workplace learning satisfaction. Previous studies that have examined the impact of workplace-related factors on students' workplace learning (e.g., Virtanen et al. 2014) have not considered satisfaction as an outcome. Further, our results show that self-efficacy is an important aspect of students' workplace learning satisfaction in Sample 1. This result aligns with previous studies conducted among organisational members (Judge and Bono 2001) and among newcomers (e.g., Jones 1986; Saks 1995). However, in Sample 2, self-efficacy was not related to students' workplace learning satisfaction, which may be the result of the relatively small sample size. Further, our results show that learning-goal orientation is important to students' workplace learning satisfaction. This result was the same for both samples, although the influence was

stronger in Sample 2. Therefore, our study aligns with previous studies, which indicate that achievement- and mastery-oriented individuals derive satisfaction from their efforts to achieve goals (Harackiewicz et al. 1997; Van Yperen and Janssen 2002).

Conclusions

The present study assumed a students' perspective and investigated factors affecting vocational students' workplace learning success during their VET workplace-learning period. The main conclusion drawn from this study regards the key roles played by students' personal resources and students' subjective perceptions of the workplace-learning environment in their workplace learning success. In our research, workplace-learning success was comprised of students' professional learning and workplace learning satisfaction, both of which are critical indicators and aspects of students' future career development and employment. The study yields novel results and empirical evidence for an area of growing interest: understanding the factors affecting vocational students' learning in the contemporary workplace environment.

The main theoretical contribution of our study to the literature on vocational students' workplace learning is the introduction of the construct of *workplace learning success*, which comprises both students' professional learning and workplace learning satisfaction. We theorised and demonstrated that students' personal resources and perceived learning opportunities affect their workplace learning success. To the best of our knowledge, the present study is one of the first studies to have proposed the construct of *students' workplace learning success*. The study by Virtanen and colleagues (2014) found that both individual (invention orientation and learning orientation) and workplace social context factors influenced students' self-rated workplace learning. Even though their study investigated students' subjective learning outcomes, they did not consider

students' workplace learning satisfaction. The concept of workplace learning success provides a more holistic view of students' workplace learning (e.g., Velde and Cooper 2000) as it captures both students' professional development and experience (satisfaction). This is particularly important in assessing the workplace learning success of younger generations, who are willing to not only develop professionally by using their capacities through meaningful work but also express their dissatisfaction if their needs are not satisfied (e.g. Martin 2005). Likewise, our results contribute to the debate on students' experiences of workplace learning assessment (e.g., Sandal et al. 2014) by showing that there exist differences between students' and workplace instructors' views in terms of assessment as well as assessment metrics.

For vocational students, one practical implication of our findings is that personal resources and development of them will be increasingly important for student's professional learning in the fast-changing workplace environment as well as for their future employment and career development. It follows, that vocational education should devote more attention not only to professional development but also to the development of students' personal resources, through which students can mobilise their abilities and motivation and learn to learn. A practical implication of our findings for organisations is that an adequate learning environment really matters and leads to better professional learning and workplace learning satisfaction. It follows that in order to nurture learning among diverse actors in a situational manner, organisations must pay attention to the management of their organisational learning environment. Ultimately, workplaces are responsible for vocational students' learning and learning satisfaction; thus, they should foster sufficient human resource management practices to support the growth of vocational workplace learning.

The study is subject to certain limitations. In the present study, we base our research on Banduras' (1991) Social Cognitive Theory (SCT), in line with many earlier studies. Particularly, several vocational studies (e.g., Hackett and Betz 1981; Bez 2000; DeWitz and Walsh 2002; Judge and Bono 2001) have used it in explaining the link between positive self-concept, employees' work performance, and work satisfaction. Applying it to students' professional learning (performance) and workplace learning satisfaction is therefore appropriate. Certainly, there are various other perspectives from which to study and explain factors affecting students' workplace learning success. Qualitative studies would be appropriate when scholars' interest is focussed on the formation and development of students' confidence and personal resources within a workplace-learning period. From the perspective of sociology, scholars' would do well to pay more attention to social factors, such as students' socio-economic background, and shed light on the influence of sociological factors on students' workplace learning.

Another limitation of our study is that we investigated direct relationships between the independent and dependent variables and ignored mediation relationships. As mediation and moderation relationships between the constructs are likely, future studies should adopt a broader theoretical basis and research models to explain students' workplace learning success. For instance, the link between workplace learning satisfaction and students' professional learning is very likely. This is because job satisfaction can be viewed as both positive performance and as a predictor of work performance (Luthans et al. 2010; Luthans et al. 2008). Future studies should address this research void and investigate the mediation and/or moderation relationships between positive self-concepts and students' workplace learning success.

Our primary goal was to investigate factors affecting students' professional learning. However, while reviewing the literature, we found that studies investigating employees' work performance also included job satisfaction as an outcome variable. We considered it appropriate for students' workplace learning as well and, based on theoretical support, included satisfaction in the research model. The limitation is that this part of the research model is explorative and not as deep as it could have been in a study focusing purely on vocational students' workplace learning satisfaction. We also limit satisfaction to SCT and ignore other theoretical roots of vocational students' workplace learning satisfaction. However, we found sufficient support in the literature for our model and believe that this is an appropriate choice for a nascent research model and when applying theories from employee contexts to vocational students' workplace learning context. Consequently, students' workplace learning satisfaction provides fruitful avenues for future studies.

Regarding the personal resources construct, the scope of the study was limited as it involved only the construct of self-efficacy among the four key personal resources (Luthans et al. 2008). However, in this study, the achievement related construct of learning-goal orientation was included among personal attributes because it refers to one's interest in increasing one's task competence (Dweck and Henderson 1989; VandeWalle et al. 2001) and therefore predicts students' professional learning as it reflects the desire to progress towards professional mastery. Future research should expand the personal resources point of view by involving all four (self-efficacy, hope, optimism, and resilience) personal resource variables. Further, as learning-goal orientation was found to have a non-significant impact on professional learning, it is likely that there were either mediation or moderation effects between the variables, which should be considered in future studies. Overall, an interesting future avenue is to study

personal resources (Luthans et al. 2008) as a mediating and moderating variable between a supportive organisation and students' workplace success. Finally, an important research avenue is to study assessment and evaluation of workplace learning success, that is, to obtain an understanding of the assessment of both professional advancement and students' satisfaction as the two reflect students' future employment and professional career potential. In addition, the development of coherent practices for workplace-learning assessment demands attention, specifically when the role of workplaces in vocational education expands. For example, our findings indicate that the differences between students and workplace instructors' perspectives require specific attention in vocational education research.

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APPENDIX

Table: Factor and item loadings

Construct/Items	**SAMPLE 1 (N=242)**	**N**	**SAMPLE 2 (N=88)**	**N**
Perceived supportive climate				
My on-the-job learning firm				
…encourages me to find new ways around old problems	0.799	237	0.825	87
…encourages me to develop my own ideas	0.864	241	0.867	88
…encourages me to improve upon its methods	0.854	242	0.790	86
…talks up new ways of doing things	0.802	239	0.770	88
…likes me to try new ways of doing things	0.889	242	0.776	86
Workplace learning satisfaction				
How satisfied/dissatisfied were you with				
…the freedom to choose your own method of working.	0.721	239	0.753	87
… your workplace instructor.	0.856	240	0.801	87
…the amount of responsibility you were given.	0.859	240	0.704	88
…the work task you were given.	0.913	240	0.921	88
…the diversity of tasks.	0.875	238	0.707	87
…workplace learning environment in general.	0.906	239	0.678	88
Interpersonal trust				
When guiding me seniors took into account my individual level of knowledge	0.721	238	0.776	87
Seniors were always trustworthy	0.810	238	0.622	88
I knew how seniors were going to act.	0.721	237	0.759	88
It was clear to me that seniors would always look out for my interest.	0.853	238	0.770	85
It was clear to me that seniors would go out of their way to make sure that I was not harmed.	0.855	237	0.782	86
I felt that seniors cared what happened to me.	0.808	238	0.620	88
Learning goal orientation				
A real professional is continually improving his/her skills and know-how.	0.825	239	0.757	87
Making mistakes is just part of the learning process.	0.742	238	0.755	88
Doing demanding tasks is satisfying.	0.681	240	0.768	88
I am always learning something new about my work.	0.810	241	0.701	86
It is worth spending time learning new approaches to tasks	0.762	239	0.501 *)	87

*)item dropped				
Self-efficacy (general)				
I am good in my work.	0.822	242	0.715	85
I know how to conduct various work tasks.	0.822	242	0.658	86
When facing difficult tasks, I am certain that I will accomplish them.	0.812	240	0.771	87
I believe I can succeed in almost any endeavor that I put my mind to.	0.801	239	0.721	88
I am confident that I can perform effectively on many different tasks.	0.830	238	0.773	88
Professional learning (self-rated)				
I am satisfied with the extent of my professional skills development since entering this on-the-job learning period.	0.836	242		
My on-the-job learning period experience has had a positive influence on my professional growth.	0.832	242		
I am satisfied with my work experience at this on-the-job learning period.	0.693	237		
My interest in the industry has increased since coming to this on-the-job learning firm.	0.774	242		
I learned to understand how my work is linked to the whole.	0.758	241		
I learned abilities to manage new work tasks.	0.773	240		
Professional learning (assessed by workplace instructor				
The student showed initiative.			0.739	88
The student had the ability to perform versatile tasks.			0.788	88
The student adapted him/herself well to the work community.			0.755	88
The student's practical work was fluent.			0.852	88
The student was able to utilize the feedback he/she received in performing tasks.			0.776	88
After orientation, the student performed the tasks given to him/her in a professional manner.			0.721	88