



Entrepreneurship education practices in VET: The roles of the teacher and the local region

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Abstract

This study focuses on entrepreneurship in vocational education and training (VET). Generally, teachers' operations in entrepreneurship education (EE) have been researched widely from the perspective of teaching and working practices and pedagogy. However, there are only a few studies of EE from the VET teacher's perspective. As a practice-oriented school, EE in VET is supposed to benefit from the hands-on experience of teachers as well as from the tight relationships with local businesses. The study applies quantitative methodology (n=795) and analyses the versatility of EE practices in VET and the roles that the teacher and the region play in determining EE practices. The findings indicate interesting new results especially on how the regional context influences practices. The research raises important topics for discussion concerning the teacher's role in regional development.

Keywords: entrepreneurship education, vocational teacher, vocational education and training (VET), teaching practices, region



Introduction

This study focuses on entrepreneurship education (EE) in vocational education and training (VET). Entrepreneurship studies are considered important for students in vocational education, because a large share of the students is likely to conduct their professional careers as entrepreneurs and self-employed. However, as a competence, entrepreneurship has set challenges to vocational education, as the teachers in vocational education are largely oriented towards educating professional skills (Fejes et al., 2019; Unwin, 2008). Fejes et al. (2019) noted that while the developmental aims of EE may align with other pedagogies, EE differs in terms of teaching activities, such as starting a business. In this paper, we suggest that more scrutiny of those teaching activities through which EE is carried out in VET is needed.

So far, only few EE studies have been carried out on VET. Frank et al. (2005) studied the factors influencing entrepreneurial thinking and attitudes towards entrepreneurship in Austrian VET. They analysed the responses from 900 Austrian VET students and found that the education process can influence the students' entrepreneurial orientation and inclinations to start up business ventures. They conclude that teachers are likely to have a central role as their didactic style may either promote or hamper the students' development of independence and their ability to plan, cooperate and communicate. Besides the development of competences, Johansen and Schanke (2014) showed that EE also has direct impacts on VET students. They suggest that EE, implemented as practical, experiential learning, results in higher academic performance in lower secondary education (cf. Moberg, 2014). Johansen and Schanke (2014) conclude that to utilise this effect, more emphasis should be put on those entrepreneurship projects that are well connected with competence aims in teaching subjects and focused on stimulating personal qualities.

Some studies have taken a special focus on the VET teacher. For example, Birdthistle et al. (2007) applied a multi-stakeholder perspective for analysing the perceptions and attitudes towards EE at the secondary level in Ireland. They suggest that to promote EE programmes in VET, formal recognition, accreditation, teacher training and programme development are needed. Furthermore, they suggest that mainstreaming EE supports the students' self-employment, entrepreneurial behaviour and competency development. Winarno (2016) found in his research into Indonesian VET that teachers concentrate on teaching the theory of entrepreneurship, they have difficulties in their implementation, and they have minimal network connection to businesses. Further, neither new curriculum nor entrepreneurial strategy are enough to boost the entrepreneurial values of students. Winarno (2016) suggests that implementation of EE is dependent on the diversity of the entrepreneurial skills of the teacher. Johansen and Schanke (2013) made an inventory of EE in Norwegian VET. They focused especially on two

types of EE: company programmes and student enterprises. In their analysis, they showed that the emphasis on teachers pays off as the progress in offering EE programmes seems to be related with the offering of entrepreneurship training for the VET teachers.

While earlier research has recognised the impact of EE on the learning outcomes of VET students and the role of the teacher as guiding the learning process, the perspective on the actual EE teaching activities in VET has been rather limited. Yet, Fiet (2001a), Gibb (2005) and Solomon (2007) have suggested a wide range of teaching practices available and suitable for EE. From a pedagogical perspective, Fiet (2001b) and Ruskovaara and Pihkala (2015) suggest that teachers should adopt a wide variety of working practices for EE. In that sense, the development of EE would not be about finding the one best solution for implementing it in schools but increasing both the versatility of its practices and the teachers' abilities to apply the different practices effectively.

The delivery of versatile practices would benefit from the use of outside resources. Dodd and Hynes (2012) argue that the impact of regional context on EE should be considered carefully. They point out that regions differ in their entrepreneurship types, and that would have consequences on the EE carried out in the schools. Furthermore, in their study on VET teachers' networking activities, Ruskovaara et al. (2015) suggested that there is a multitude of resources available to support EE. The exploitation of these resources, however, is dependent on the teacher and their ability to operate with outside networks.

This paper progresses by discussing EE practices in VET and teachers' characteristics and their implementation of entrepreneurship in a certain area, in particular, noting the relevance of understanding the regional context. In this study, we argue that although the teacher's contribution to the practices used is clearly relevant, the impact of regional context upon EE should also be considered more closely. This study therefore aims to carry out a consideration of regional differences as a contextual influence upon used practices in EE in VET. This paper seeks to fill the gap by studying how regional context influences EE practices. Therefore, the research question is: How are VET teachers' background characteristics and regional context related to the versatility of EE?

EE tends to focus either on the traditional narrow perspective of entrepreneurship (Gibb, 2002), or the broader focus of EE (Axelsson, 2017). Under the narrow definition, Jones and Iredale (2008) place the primary emphasis of EE on learning how to start a company, plan a business venture and apply entrepreneurial skills and knowledge in a business context. The goal of EE, on the other hand, is to develop enterprising behaviour (showing initiative and resourcefulness) and skills that are also highly desirable outside the business environment. In this study, we apply the broad concept of EE as it has been adopted as the dominant

term in scientific literature and official guiding documents (European Commission, 2016; Ministry of Education, 2009; see also Fayolle & Gailly, 2008; Gibb, 2002; Haase & Lautenschläger, 2011; Onstenk, 2003).

This paper progresses by first discussing the pedagogy of EE, the teaching practices used, and the impact of teacher background factors on these. We highlight the impact of the surrounding business life and school operating environment on EE. Next, before explaining the findings, we explain the methodology by pointing out differences according to teachers' background characteristics and regional entrepreneurial differences presenting four hypotheses. In the discussion of our results, we will focus on how teachers' background and regional aspect affect the diversity of EE practices used by VET teachers.

Literature review and hypothesis formulating

In this section, a close examination is made of the relevant literature. The examination covers EE practices, EE-related teacher training, teachers' professional backgrounds and the role of region related to EE practices, and four hypotheses are constructed. Previous studies of regional cultural variations of entrepreneurship (Dodd & Hynes, 2012; Kotey, 2006; Walter & Dohse, 2012) have been used to construct a set of hypotheses to better understand which factors influence the diversity of practices used on EE. Figure 1 illustrates the relation between hypotheses and research question.

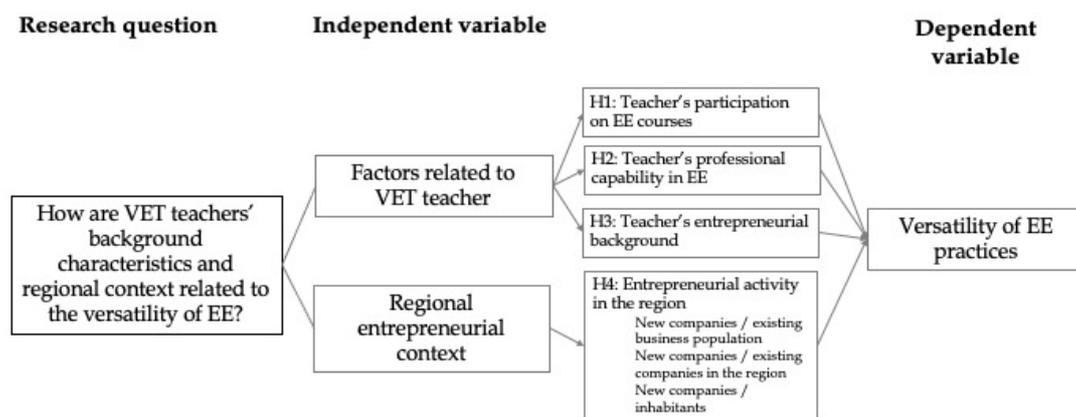


Figure 1. The relation between hypotheses and research question.

Pedagogy and EE practices

EE seeks to increase entrepreneurial awareness, thinking, and skills through pedagogical practices (Chen et al., 2015; Fayolle & Gailly, 2008; Fayolle et al., 2006). One of the central questions in a teacher's pedagogical decisions has been how to choose the appropriate teaching practice to achieve the needed entrepreneurial skills and objectives (Arasti et al., 2012; Arpiainen & Tynjälä, 2017; Ruskovaara & Pihkala, 2013).

In EE, visits to companies, entrepreneurs as school visitors and other kind of collaboration with external stakeholders are mentioned as suitable practices for EE. Further, the possibilities of using companies as authentic learning environments are also emphasised. (e.g., Cooper et al., 2004; Kickul et al., 2010; Solomon, 2007). Entrepreneurship is naturally connected to vocational education and is a part of VET curriculum in many countries, including Finland (Cedefop, n.d.). According to previous studies, teachers mainly teach EE in the classroom and use teacher-based practices (Bennett, 2006; Mwasalwiba, 2010). Further, EE is most effectively learned through active practices and in practical work (Arasti et al., 2012; Diegoli et al., 2018; Gibb, 2011; Nabi et al., 2017). Professional knowledge for an occupation, as needed in VET, requires learning knowledge, skills, and attitudes, which are best learned by combining different learning environments, including learning in companies and the workplace (Järvi, 2012; Ryökkyinen et al., 2020; Virtanen et al., 2009). However, combining various actors and learning environments is not always easy and it takes time to break the conventional silos separating the school institution and entrepreneurs (Oksanen-Ylikoski & Ylikoski, 2015).

Studies have shown that different discussions concerning entrepreneurship are easily organised, low-threshold practices (e.g., Gibb, 2002; Neck & Greene, 2011; Pittaway & Cope, 2007; Shepherd, 2004; Solomon, 2007) and teachers seem to quite often utilise them (Ruskovaara & Pihkala, 2013, 2015). Business idea assignments, entrepreneurship related exercises and stories about entrepreneurs are suggested to be practical teaching materials (e.g., Blenker et al., 2011; Fayolle & Gailly, 2008; Fletcher, 2007; Gartner, 2008; Gibb, 2002; Neck & Greene, 2011; Shepherd, 2004; Solomon, 2007), whereas practice enterprise and mini company exercises provide students with a very concrete experience as an entrepreneur (Neck & Greene, 2011).

The teacher's professional capability in EE

According to Hytti and O'Gorman (2004), the teacher's competence is a decisive factor when developing EE initiatives. A person who has self-efficacy believes he/she is capable of performing a task. If a person feels capable of a task, he/she will act (Boyd & Vozikis, 1994), and the act is based upon self-assessment and ability (Kruger & Dunning, 1999). An earlier study states that the higher the

teacher's assessment of his/her EE capability is, the more the teacher uses networks in EE (Ruskovaara et al., 2015).

In this study, we assume that teacher training about EE, such as initial teacher training, in-service training, or courses, increases teachers' knowledge of EE, their self-efficacy and ability to deliver versatile EE. Studies have suggested that teachers' EE training has a positive effect on teachers' EE practices (Birdthistle et al., 2007; Frank, 2007) and those teachers who have participated in EE training utilise practices that are more demanding and time constraining more frequently (Ruskovaara & Pihkala, 2013, 2015). The effect of teacher training is, however, likely to be gradual rather than sudden. Lombaerts et al. (2009) stressed that teachers need time to embed new practices, and changes in school culture take time. According to Fiet (2001b), teachers need encouragement to adopt novel approaches and wider variety of working practices in their EE. Bennett (2006) noticed that teachers' approach to EE differs between those teachers who have received formal teacher training and have business experience, and with those who do not have that experience. A trained teacher is more inclined than others to develop students' personal attributes, has a broader approach to entrepreneurship teaching and uses modern interactive teaching practices (Bennett, 2006). Therefore, we propose:

- Hypothesis 1. VET teacher participation in EE courses has a positive effect on the versatility of their EE practices.
- Hypothesis 2. The stronger the VET teacher's perceptions of their capabilities are, the more versatile EE practices they provide.

Teacher's entrepreneurial background

According to Mårtensson et al. (2019), a VET teacher with a solid professional background and strong connections to local companies uses external stakeholders more readily when planning their teaching environment and practices. In addition, Hytti and O'Gorman (2004) suggest that the stronger the teacher's business background is, the more the teacher uses external resources and action-based learning practices in EE. Still, external experts or new learning environments are used quite rarely in EE (Ruskovaara & Pihkala, 2013, 2015; Ruskovaara et al., 2015), although companies as authentic learning environments are of paramount importance in entrepreneurial learning (e.g., Cooper et al., 2004; Järvi, 2012; Kickul et al., 2010; Solomon, 2007).

As a role model in entrepreneurship a teacher can boost EE by acting enthusiastically and using creative teaching practices (Hocenski et al., 2019), and stimulating or inspiring others in entrepreneurship (Bosma et al., 2012; Davidsson et al., 1995). Students point out that teachers can increase entrepreneurial intentions and improve several attitudes and competences of students if they have previ-

ously started a business. On the other hand, teachers believe that having the characteristics of an entrepreneur is enough to be considered a role model and increase entrepreneurial intentions (San-Martín et al., 2019). In their study of how entrepreneurs learn, Zozimo et al. (2017) found that role models in social contexts influence entrepreneurship as well learning in action (Järvi, 2012; Pittaway et al., 2009). We assume that a teacher with personal experience as an entrepreneur is likely to have better connections with other entrepreneurs and thus it is easier for them to approach entrepreneurs and utilise their expertise in teaching.

- Hypothesis 3. Teachers' entrepreneurial experience impacts positively on the versatility of EE practices.

Regional entrepreneurial context and teachers' EE practices

Education is very much like its socio-cultural environment, i.e. the socio-cultural environment influences education (Dodd & Hynes, 2012; Kotey, 2006). Earlier research has shown that there is a strong relationship between education and entrepreneurship. Walter and Dohse (2012) state that the regional context has an effect on EE. Education and new firm formation have strong positive correlation (Davidsson et al., 1995) and prevailing socio-economic and political conditions have an effect on students' becoming entrepreneurs (Matlay, 2005). For VET, the regional presence of entrepreneurship is likely to play an important role in creating the platform for EE. According to a study of Ikävalko et al. (2009), the connection between EU and national guidelines for the activities of an individual teacher and the possible development of the region is weak.

Regional differences are significant in terms of the size and distances of the area, the number of inhabitants and companies, and the number of new businesses being created (Davidsson & Wiklund, 1997). Larger volumes of people and businesses create more opportunities, new businesses, and better possibilities for school-company cooperation. Already in 1986, Birley reported that the start-up rate is about 9–10% of the business population. In other words, business creates new business (Birley, 1986). This fact seems rather stable – in Finland the new business rate in a year is approximately 9–10% of the business population (European Commission, n.d.; Statistics Finland, 2018). However, this rate varies strongly on the regional level. From the perspective of inhabitants, the cultural differences between regions may cause different levels of entrepreneurial activity among the inhabitants. In their study on cultural effects on entrepreneurship in Sweden, Davidsson and Wiklund (1997) calculated the new firm formation rate for regions by counting the number of new company establishments per 1000 inhabitants and reported values between 5.7 and 14.8.

Carrying out EE, the VET teacher can decide the teaching practice, environment, and the use of external experts. We suggest that the more companies there are in the region, the easier it is for a teacher to collaborate with the companies

and use more versatile teaching practices. Implementing EE would be more effortless if there are companies in the vicinity of the educational institution and the teacher has good connections with the entrepreneurs in the area. Therefore, we propose:

- Hypothesis 4. The level of entrepreneurial activity in the region affects the versatility of EE practices positively.

Materials and methods

The context of the study

The study was carried out in Finland where entrepreneurship has been a part of vocational qualification requirement since 1995. In Finland, EE is an official part of Finnish VET education (Ministry of Education, 2009; Ministry of Education and Culture, 2017). In the national curriculum, EE appears as a cross-curricular theme, aiming to harmonise education and teaching. The goals of the theme are to help students to understand society at large from the perspective of different actors, develop the skills required for active citizenship, and to lay a foundation for entrepreneurial practices (Ministry of Education, 2009). Key competences of lifelong learning are part of the criteria, and the importance of entrepreneurship has been emphasised especially in the post-2015 period VET qualification requirements (Finnish National Agency for Education [EDUFI], 2019). Entrepreneurial competencies are included in the degree criteria either as cross-cutting competencies in all professional skills requirements of the degree components, as key competences for lifelong learning in common degree components, or as separate professional degree components (EDUFI, 2019; eRequirements, n.d.a, b).

Data collection and analysis

The Measurement Tool for Entrepreneurship Education (MTEE) was used for data gathering. MTEE is a constantly open online survey (www.lut.fi/mittaristo) and Finnish VET teachers have answered the survey voluntarily. Teachers were encouraged to respond, and the link was distributed through professional networks and different entrepreneurship promoters. The survey consists of approximately 140 questions, where teachers self-evaluate their teaching, its content and teaching practices used in EE, 14 of the questions are examined in this study (see Table 1).

The items in MTEE are based on earlier research on entrepreneurship and EE (see Table 1). In the development process of MTEE special care has been taken in this study to secure the overall quality of the study by formulating the questionnaire carefully, working together with a test group of teachers to improve the readability and clarity of the objects, and finally, tests and re-tests have ensured

the tool's reliability and validity (Ruskovaara et al., 2015). Common method bias needs to be taken into consideration when building on the self-reported data (Kamakura, 2010). To manage the effect of common method bias, we have included regional statistics as explanatory factors in the study.

Table 1. Items and their theoretical background (adopted from Ruskovaara & Pihkala, 2015).

Item	Source
Arranged a field trip to a business enterprise	Kickul, et al., 2010; Solomon, 2007
Discussed current financial news with learners	Gibb, 2002; Shepherd, 2004; Solomon, 2007
Discussed entrepreneurship related to hobbies	Gibb, 2002; Solomon, 2007
Discussed entrepreneurship related to the subject	Gibb, 2002; Neck & Greene, 2011; Solomon, 2007
Discussed the economic effects of different...	Gibb, 2002; Shepherd, 2004; Solomon, 2007
Enabled learners to create a practice enterprise...	Neck & Greene, 2011
Enabled learners to create marketing or other...	Cooper et al., 2004; Pittaway & Cope, 2007; Solomon, 2007
Guided learners to manage their own finances	Shepherd, 2004
Had learners complete a business idea assignment	Blenker et al., 2011; Gibb, 2002; Neck & Greene, 2011
Had students prepare entrepreneurship related calculation exercises, presentations, writings, ...	Fayolle & Gailly, 2008; Shepherd, 2004; Solomon, 2007
Introduced local businesses in teaching	Henderson & Robertson, 2000; Pittaway & Cope, 2007; Pittaway & Hannon, 2008
Invited an entrepreneur to present his/her work...	Pittaway & Hannon, 2008; Shepherd, 2004; Solomon, 2007
Invited entrepreneurs or representatives of the business world to take part in instruction	Cooper et al., 2004; Pittaway & Cope, 2007; Solomon, 2007
Used stories about entrepreneurs as teaching...	Fletcher, 2007; Gartner, 2008; Shepherd, 2004

Variables

Dependent variable

EE practices consist of 14 variables (see Table 1), each describing a practice that has been identified to carry out EE. The respondents selected a numerical value for each object to best describe the frequency of the use of each EE practice in the preceding six months. To study the versatility of used EE practices, we built a new sum measure of the teachers' use of EE practices. The sum measure, EE Versatility, describes how many different EE practices each teacher has used. The measure ranges from 0 to 14.

Independent variables

VET teachers' characteristics are measured with four variables. Descriptive statistics for these variables can be found in Table 2. The VET teachers' characteristics include the following variables:

- Gender: A dichotomous indicator for the sex of the respondent. The indicator is coded in the data as male = 0, female = 1.
- Teacher training courses on EE: An indicator depicting EE teacher's own perception of training as the number of EE courses the teacher has taken on a scale of no courses = 0, some courses = 1, many courses = 2.
- Teachers' experience as an entrepreneur: A dichotomous indicator of whether the VET teacher has gained work experience as an entrepreneur or not. The variable is coded as no experience = 0, experience as entrepreneur = 1.
- Self-assessment of EE capability: The teacher's assessment of his or her EE capability on a scale from weak = 0 to excellent = 4.

Regional characteristics include three measures. Descriptive statistics for these variables can be found in Table 3.

- New companies/business population: A measure describing the local companies' ability to create new business. The measure has been created by dividing the number of new registered active businesses by the volume of registered active companies in the region in 2018. Information collected from Statistics Finland.
- New companies/existing companies in the region: A measure describing new business rate in the region. The measure has been created by dividing the number of new registered businesses by the number of existing businesses the region in 2018. Information collected from Statistics Finland.
- New companies/inhabitants: A measure describing the local inhabitants' entrepreneurial activity. The measure has been created by dividing the number of new registered active businesses by the number of inhabitants in the region in 2018. Information collected from Statistics Finland.

Respondents

In this study, the data consisted of 795 VET teachers' responses (see Table 2). In the data, 473 (59.5%) of the respondents are women. In the survey, the teachers reported the amount of teacher training on EE they have received and assessed their capability to teach it. The share of teachers who had no training in EE was comparatively high at 40.3%. From this point of view, it seems that the data is not strongly biased toward VET teachers that are positively aware of entrepreneurship. Overall, the respondent profile corresponds well with the general characteristics of Finnish VET teachers (EDUFI, 2019).

Table 2. The characteristics of the respondents.

Category	n	%
All	795	
Gender		
Male	322	40.5
Female	473	59.5
Number of EE courses the teacher has taken		
None	320	40.3
Some	384	48.3
Many	91	11.4
Worked as an entrepreneur		
No	472	59.4
Yes	323	40.6
Self-assessment of EE capability		
Weak	103	13.0
Moderate	263	33.1
Quite good	214	26.9
Good	162	20.4
Excellent	53	6.7

The respondents represent all Finnish regional areas, in total 18 regions. The regions' structural characteristics are depicted in Table 3 below. The table shows that the number of businesses per population (business density) is highest in Southern Ostrobothnia, while Kymenlaakso and Northern Ostrobothnia rate lowest. On the other hand, in terms of new business rate per company population, Southern Ostrobothnia scores lowest while Uusimaa and Pirkanmaa, the largest regions in Finland, score highest. Finally, in terms of regions' entrepreneurial activity, that is the number of new companies per 1000 inhabitants, Uusimaa keeps its position as the most entrepreneurial region in the country, while Kymenlaakso and Kainuu score lowest.

Analysis methods

We used the SPSS statistical program to perform the analysis. First, we did descriptive statistics to describe how often (mean) the teacher has used the practices in the past 6 months and how many of the teachers have used (frequency) which practice (Table 4). Next in the analysis (Table 5) we apply three distinct measures to identify the regional effect on the versatility of EE. We generated four models from which we ran linear regression analyses. Using this method, we found out which of the background variables determine the use of the variety of practices (Table 5).

Table 3. Entrepreneurial activity in the Finnish regions 2018.

Region	Inhabitants	Companies	New companies	Business density*	New bus rate**	Entrepren. activity***
Uusimaa	1,671,024	114,267	13,597	0.068	0.119	8.14
Pirkanmaa	515,095	34,724	3,186	0.067	0.092	6.19
Southwest	478,582	36,854	3,155	0.077	0.086	6.59
Northern Ostrob.	412,161	25,843	2,146	0.063	0.083	5.21
Central Finland	275,521	19,024	1,536	0.069	0.081	5.57
North Savo	245,602	17,416	1,208	0.071	0.069	4.92
Satakunta	218,624	16,580	1,149	0.076	0.069	5.26
Päijät-Häme	200,629	13,649	1,046	0.068	0.077	5.21
Southern Ostrob.	189,715	17,864	893	0.094	0.050	4.71
Ostrobothnia	180,794	14,142	893	0.078	0.063	4.94
Lapland	178,522	12,506	1,000	0.070	0.080	5.60
Kymenlaakso	173,388	10,960	703	0.063	0.064	4.05
Kanta-Häme	171,364	12,005	906	0.070	0.075	5.29
North Karelia	162,240	11,105	671	0.068	0.060	4.14
South Savo	144,615	12,723	677	0.088	0.053	4.68
South-Karelia	128,756	8,713	593	0.068	0.068	4.61
Kainuu	73,061	4,844	285	0.066	0.059	3.90
Central Ostrob.	68,437	5,384	310	0.079	0.058	4.53

* The number of companies / the number of inhabitants.

** The number of new companies / the number of companies.

*** The number of new companies / 1000 inhabitants.

Results

In this study, the focus is on understanding the factors explaining VET teachers' use of versatile EE practices. The basic descriptive statistics suggest that a wide range of practices are used to implement EE in VET (see Table 4). Introducing local businesses to students was the most frequently used practice; 753 (94.7%) individual VET teachers had used it 13.19 times (mean value) during the previous six months. The most-applied practices were discussions about an entrepreneurship-related subject (11.77), economic effects (11.41), and current financial news (10.53). Approximately 90% of the teachers had used these practices. Also, entrepreneurship-related calculations (10.18) and entrepreneur stories (9.02) were among the most common EE practices used by VET teachers, with approximately 80% of teachers using this practice. Practices where a teacher utilised external experts were not used so often. For example, a field trip to a business enterprise (5.63), having entrepreneurs or representatives of the business world take part in

instruction (4.73), enabling learners to create materials for a business (4.19), and inviting an entrepreneur to present her or his work at the school (2.84) were used more seldom and only half of the teachers had used it.

Table 4. *Entrepreneurship education practices (n=795).*

Object	M	SD	f	%
Introduced local businesses in my teaching	13.19	10.56	753	94.7
Discussed entrepreneurship related to the subject with learners	11.77	10.64	716	90.1
Discussed the economic effects of different actions with learners	11.41	10.34	718	90.3
Discussed current financial news with learners	10.53	10.17	707	88.9
Had students prepare entrepreneurship-related calculation exercises [...]	10.18	10.84	630	79.2
Used stories about entrepreneurs as teaching material	9.02	10.09	664	83.5
Guided learners to manage their own finances	8.13	9.72	606	76.2
Discussed entrepreneurship related to hobbies	6.57	8.67	562	70.7
Had learners complete a business idea assignment	5.77	9.46	433	54.5
Arranged a field trip to a business enterprise	5.63	7.95	575	72.3
Invited entrepreneurs or representatives of the business world to take part [...]	4.73	7.21	534	67.2
Enabled learners to create marketing or other material for a business	4.19	7.93	371	46.7
Enabled learners to create a practice enterprise or a business of their own	3.75	7.78	350	44.0
Invited an entrepreneur to present his/her work in the school	2.84	5.74	420	52.8

It is slightly surprising that in VET, which should be close to real working life and is supposed to use action-based learning practices (see e.g., Oksanen-Ylikoski & Ylikoski, 2015; Vainio et al., 2017), teachers mainly implement EE through classroom discussions. Further, it seems that entrepreneurs are invited to the school very rarely and visits outside of the school are also used quite seldom compared to discussions in a classroom. This might be a reference to the traditional silo effect as Oksanen-Ylikoski and Ylikoski (2015) state in their research. Previous studies have stated that EE is carried out mainly in the classroom (Ruskovaara & Pihkala, 2013, 2015). It seems that this finding also fits VET; that is, EE seems to be very teacher-centred and implemented within the school environment. The reason for a teacher-led classroom instruction can also be motivated e.g., by the time or financial resources given to the teacher.

In this paper we suggest that VET students' entrepreneurial learning would be supported by the versatility of EE practices. Using the EE Versatility measure, we conducted regression analyses on how the VET teacher and the local region

affect EE Versatility (see Table 5). In the analysis, the explanatory variables covered in Tables 2 and 3 were included in the model.

The results indicate that teachers' gender, participation in EE courses, and self-assessment of their ability to implement EE have explanatory value on the versatility of EE practices. In all the analysed models, training the VET teachers in EE seems to be the most effective way of promoting EE (see also Hahs-Vaughn & Yanowitz, 2009; Ruskovaara & Pihkala, 2015). The analysis shows consistently high and significant betas for the EE courses and capability for all the examples. The more training a VET teacher has got and the more capable they feel, the more versatile teaching practices the VET teacher uses. The first hypothesis suggested that enterprise-related teacher training positively affects the versatility of EE practices the VET teacher utilises. Participating in training seems to affect the diversity of the used practices. Therefore, the first hypothesis is strongly supported. In sum, the more EE training a teacher has participated in, the more they use different teaching practices.

Table 5. Regression analyses on the versatility of entrepreneurship education.

	Model 1	Model 2	Model 3	Model 4
Constant	7.242***	6.209***	8.712***	8.585***
Gender	0.649**	0.658**	0.665***	0.669***
EE courses	1.073***	1.066***	1.050***	1.046***
Entrepreneurial background	0.345	0.345	0.314	0.316
Self-efficacy	0.904***	0.903***	0.907***	0.907***
Business density		14.573		
New business rate			-0.239***	
Entrepreneurial activity				-15.296***
R2	0.241***	0.242***	0.253***	0.253***

p < .01, *p < .001

The second hypothesis suggests that the stronger the VET teacher's perception of their own capabilities, the more versatile EE they provide. Our results indicate strong support for the second hypothesis. The data shows that teachers' choice of EE practices is dependent on how the teacher perceives their EE capability; the stronger the capability the more versatile EE practices the teacher utilises. This result is in line with earlier studies (e.g., Bennett, 2006; Birdthistle et al., 2007; Frank, 2007; Ruskovaara & Pihkala, 2013, 2015) and suggests that for the promotion of EE in VET, providing support and encouragement for teachers is likely to play a central role.

Somewhat surprisingly, the teacher's own entrepreneurial experience has no effect on the diversity of EE practices and our third hypothesis is refuted. The

result is contrary to previous studies (e.g., Mårtensson et al., 2019), which state that VET teacher's previous entrepreneurial experience makes it easier to utilise external experts in teaching. The result may be understood by the fact that EE is mainly carried out in classrooms and in these contexts the teacher's eventual entrepreneurial background is of little help and has little effect on the versatility of EE practices. Nevertheless, the fact that teachers' entrepreneurial experience would not have explanatory value on the versatility of EE, needs more careful consideration. In VET the teachers in general have a wide practical experience in the industry for the profession that they are teaching in VET. In the case of EE, this experience does not seem to add value.

The fourth hypothesis suggests that the level of entrepreneurial activity in the region affects the versatility of EE practices positively. In the analysis (Table 5) we apply three distinct measures to identify the regional effect on the versatility of EE. The analysis indicates very interesting results on the relationship between the region and EE. First, the business density measure does not reach a statistically significant beta. That is, the versatility of EE in VET seems independent of the number of companies in the region. This result is surprising as Dodd and Hynes (2012) have suggested that regional context offers capital to EE. In VET this does not seem to be important and could be understood as a result of the teacher-led EE practices (see also Ruskovaara & Pihkala, 2013, 2015). While teachers seem to mostly lean on class-room practices, the availability of businesses in the region plays no role in EE. From this point of view, the results do not lend support to our fourth hypothesis.

On the other hand, the new business rate and the entrepreneurial activity in the region reach statistically very significant loadings. Surprisingly, both measures show high negative betas. The new business rate, that is, the share of new businesses in the business population, seems to affect the versatility of EE negatively. That is, the lower the share of new businesses in the region, the higher the EE diversity. In line, the entrepreneurial activity of the inhabitants in the region also seems to affect the versatility of EE negatively. The results indicate that the less the inhabitants start new businesses the more diverse practices teachers use in EE.

Discussion

The present study set out to focus on the research question how VET teachers' background characteristics and regional context are related to the versatility of EE. The results of our study raise two important points for further consideration. First, based on the earlier research on the relationship between the region and EE (Davidsson et al., 1995; Dodd & Hynes, 2012; Walter & Dohse, 2012), we expected that the regions' entrepreneurial levels would have positive explanatory values for the versatility of EE in VET. E.g., Davidsson and Wiklund, (1997) stated that

entrepreneurship is a socio-cultural phenomenon and suggested that there would be a positive correlation between regional entrepreneurship and education. This would mean that EE would do better in the regions of high entrepreneurial rates. Our results seem contrary to earlier studies.

To understand this result we need to consider the VET teacher's special role in EE in a new way. If we regard the teacher as a mediator of regional entrepreneurship culture (Davidsson & Wiklund, 1997), the teachers would do less in less prosperous regions and would possibly wait for the circumstances to improve. The negative beta could be understood as the teacher instead taking an active role and striving to improve the situation in the region. In this way the teacher's EE activities could be understood as compensatory activities: as the region is doing badly in terms of entrepreneurship, teachers invest more in their teaching and thereby seek to promote entrepreneurship. We suggest that earlier research has approached the teacher's role in a too straightforward way. EE in VET does not take place in a vacuum but is affected by the context. However, the causal links between the different factors may work in unexpected ways. A number of new questions arise from this finding: what are the teacher's motivations driving the compensatory behaviour? Beliefs, attitudes, and self-efficacy, as well as motivation, affect a person's behaviour (Ajzen, 1991). That is, a teacher can be motivated because of the value of EE activity or because of external pressures, for example, VET requirements, legalisation, institutional policy, or regional reasons. Our findings support Winarno (2016), i.e., external factors cannot influence the development of students' entrepreneurial values, but ultimately, the key factor is the teacher and their competence. It seems that regional reasons or pressures do not function as direct motivators for teachers' EE practices. This may result from, for example, teacher autonomy, or characteristics specific of the curricula, or the institution. Further, it is possible that external circumstances affect the EE indirectly, e.g., through regional policy, VET resources, or availability of different fields of study. These indirect influences warrant for further studies. What is the role of the VET working community in supporting teachers' compensatory behaviour? How do teachers collect resources for their EE if the level of local entrepreneurial activities is low? We suggest that more research is needed to focus on this behavioural pattern as it is likely to have important implications for policy and practice.

Second, the analysis suggests that in VET, teacher-centred practices are still very much used although new EE practices have also been introduced in some vocational educational institutions (see Oksanen-Ylikoski & Ylikoski, 2015; Vainio et al., 2017). This fact is disappointing as entrepreneurship could be seen as a very practice-oriented competence that would flourish in the VET – a school aiming at providing students with practical vocational skills and competences. Normally, the teacher-centred emphasis would be answered with increased support and encouragement for VET teachers to cooperate with the local businesses

(Fiet, 2001b). Furthermore, these challenges could be dealt with the development of VET school culture (see Mårtensson et al., 2019) and could be addressed through professional teacher training (see also Lombaerts et al., 2009; Ruskovaara & Pihkala, 2015). However, our results also suggest that even if the teachers have entrepreneurial experience – and thereby access to cooperation with businesses – the experience does not seem to have any explanatory value for the versatility of EE. This result is puzzling. If the teacher-centred teaching approaches to EE are not a sign of the lack of EE training for teachers, or the lack of teachers' courage to approach local businesses, the reasons for using them grow from other sources. Entrepreneurship subjects in common and/or in professional optional units in VET are taught mainly by teachers who have graduated from a university with a Master of Business Administration degree. Unlike in professional compulsory and more hands-on units, subjects are mainly taught by persons with practical experience and specialists of the field who have a vocational and a polytechnic degree. Do the resources given to a teacher have an effect on teacher-centred teaching practices? Does the teacher's background training and their own learning experiences affect the used practices? Is it a question of the professional identity of a teacher which practice to use or something else? We suggest that this aspect warrants further studies.

This study has some obvious policy implications. First, our study confirms that the teachers have a decisive role in implementing EE in VET. However, the analysis provides new understanding of the factors affecting the teacher's provision of EE. As previously known, teacher training in EE is a strong contributor to advance EE. To promote EE in VET, a more systematic provision of EE studies in professional initial teacher training would make a powerful tool. Second, the profiling and curricula of VET in regions have largely followed the local circumstances and the needs of the local businesses. This relationship between VET and the region has been regarded as tight and elementary. For EE, this relationship seems to be more complicated. Policy makers would be wise to consider the role of VET in promoting entrepreneurship in the regions and notice that VET teachers are likely to react to the local development trajectories. In this sense, regional promotion of entrepreneurship seems to have more autonomous factors affecting the development of entrepreneurship than previously thought.

Limitations and further research

The study obviously has some limitations. The study was conducted in Finland and therefore the generalisability of the results internationally is unknown. However, the international research on EE is in general built of national studies and international theorising on the local results. In this sense, our study does not differ largely from the earlier ones. We believe that our results built on national findings would be of interest also to a wider international readership.

Despite the large research data, the method of quantitative research obviously has its limitations. When considering the validity aspects of research, it is always good to assess whether all respondents have understood the purpose of the questions and answered them reliably. Reliability could have been deepened by conducting a qualitative interview with a smaller sample. We encourage further research using qualitative research. In terms of research ethics, the MTEE was built especially from the perspective of securing the anonymity, security and possibilities for learning and development of the respondents. No ethical issues have emerged in the use of the data.

As a research topic, VET remains under-researched. For our study this has caused a need to use research findings also from EE research conducted at different educational levels. For this reason, the level of theorising may stay blurred and the accumulation of theoretical knowledge on EE in VET is slow. In general, more research is needed on EE in the VET context. As a further research topic, it would be worth re-examining previous research and looking at what they claim about the teachers' role in cooperating with local and regional partners.

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