



UNDERSTANDING VOCATIONAL BUSINESS STUDENTS' SUSTAINABILITY CONSCIOUSNESS

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ABSTRACT

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This study aims to investigate the factors influencing vocational business students' sustainability consciousness. We surveyed 1,007 business students in a vocational college in China. We found that although both formal class learning and informal learning outside the classroom were positively related to students' sustainability consciousness, formal class learning was more influential than the latter. Female vocational business students tended to have a higher level of sustainability consciousness than male students did. Second-year vocational business students tended to have a higher level of sustainability consciousness than first-year students did. Our study not only contributes to the prior literature but also provides implications for improving sustainability education in vocational colleges.

Contribution/Originality: This study contributes to the existing literature by exploring factors that influence vocational business students' sustainability consciousness using a survey study.

1. INTRODUCTION

Education and training are essential to improve students' awareness of sustainability globally (UN, 1992; UNESCO, 2005) and to achieve sustainable development (SD) objectives effectively. Vocational education and training (VET) is an important avenue in promoting SD by alleviating poverty, conserving the environment, promoting peace, and improving the life quality for all (Marope, Chakroun, & Holmes, 2015; Rieckmann, 2018; UNESCO, 2004; Union, 2007; von Kotze, 2008). Two calls in Chapter 36 of Agenda 21 (UN., 1992) specifically aim to incorporate SD in VET and reflect economic, environmental, and social sustainability in VET curricula.

In recent years, China has realized the importance of promoting sustainability in economic development and environmental protection (Dauvergne & Lister, 2012; Geng, Zhang, Ulgiati, & Sarkis, 2010; He, Zhao, Zhu, Darko, & Gou, 2018). To promote education for sustainable development (ESD) (UNESCO-UNEP, 1996), the Chinese government has issued a series of official documents (e.g., *Implementation Plan on National Vocational Education Reform*) to encourage integrating sustainability into the curricula of higher education, including VET.

Despite the importance of improving sustainability education in VET, very little research has explored the influence of educational policies, learning strategies, and pedagogical approaches on student learning in VET in China (Liu et al., 2020; Stewart, 2015). Sustainability education in China's vocational colleges is still underdeveloped and understudied (Hao, Fu, & Fei, 2017). To fill this research gap, this study aims to explore factors that influence vocational students' sustainability consciousness (SC) because understanding students' SC is important for educators to design learning strategies and approaches (Olsson & Gericke, 2016).

Our study extends prior research by examining an important educational outcome, individual's SC, which was emphasized by UN's action plan Agenda 21 (UN, 1992). Students' SC becomes increasingly important in education because students' SC significantly influences their pro-environmental behaviors and ability to sustain social development (Duerden & Witt, 2010; Ghauri, Awan, & Bashir, 2011; Zsóka, Szerényi, Széchy, & Kocsis, 2013). To our knowledge, our study is the first study that explores SC among vocational business students in China. The findings add to the existing literature by providing research evidence of higher vocational students' SC in the context of a developing country. This paper also provides research evidence by investigating the implementation of ESD in a vocational college, which contributes to the discussion of ESD in business pedagogy. Furthermore, the findings of this study shed light on educators regarding developing different pedagogical teaching strategies to influence business students' SC.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Sustainability Consciousness (SC)

UNESCO (2005) pointed out that the educational approach in ESD should not only provide students with the knowledge but also empower them with attitudes and awareness of SD. Several previous studies on ESD have focused on SC (Ahmad, Noor, & Ismail, 2015; Aminrad, Zakariya, Hadi, & Sakari, 2013; Biasutti & Frate, 2017) because SC influences students' attitudes toward sustainability and their pro-environmental behaviors (Figueredo & Tsarenko, 2013; Tucker & Izadpanahi, 2017). Based on the UN's concept, Gericke, Boeve-de Pauw, Berglund, and Olsson (2019) defined SC as "an individual's experience and awareness of sustainable development", and "individuals' SC involves three components – sustainability knowingness, attitudes, and behaviors."

Many prior studies have demonstrated that ESD implementation was related to the three components of SC (Fung, 2017; Olsson, 2018; Zhu, Yin, Liu, & Lai, 2014). Zsóka et al. (2013) found that the intensity of environmental education was significantly related to the environmental knowledge of students. Vicente-Molina, Fernández-Sáinz, and Izagirre-Olaizola (2013) confirmed the role of environmental education in changing and addressing lifestyles and attitudes related to sustainability. Similarly, Boeve-de Pauw, Gericke, Olsson, and Berglund (2015) emphasized the positive influence of ESD on students' SC.

Goldney, Murphy, Fien, and Kent (2007) pointed out that educators in VET faced a great challenge in altering their focus from technical competency to incorporating more generic cognitive and behavioral skills for the future labor market, due to the push for VET to adopt sustainability. One of the fundamental behavioral changes is to improve students' awareness and attitudes toward sustainability issues (Gifford & Nilsson, 2014). Improving SC, therefore, is a crucial objective in vocational education (Cherdymova, Kuznetcov, Machnev, Solovova, & Sarbaeva, 2017; Gu, Gomes, & Brizuela, 2011).

2.2. Hypotheses

The existing literature suggests that gender is one of the most vital factors to influence the differences in students' perceptions and attitudes toward sustainability (Jeong, Jung, & Koo, 2015). Zelezny, Chua, and Aldrich (2000) studied gender differences in environmental attitudes and behaviors through 14 countries and discovered females expressed stronger environmentalism than males did. Olsson and Gericke (2017) found that the influence of gender differences on students' SC became more salient with ages and there's a wider gender gap in schools with ESD-certification than those non-certified ones. Vicente-Molina et al. (2013) and Vicente-Molina, Fernández-Sáinz, and Izagirre-Olaizola (2018) proposed that gender might affect both environmental knowingness and behavior. Male students were less likely to involve in pro-environmental behavior, whereas females had an intention to take more pro-environmental actions in their daily behaviors. Based on prior studies, gender differences are likely to influence the three dimensions (i.e., behaviors, attitudes, and knowledge) of students' SC (Varoglu, Temel, & Yilmaz, 2018). Based on the foregoing, we hypothesized:

H1: Female vocational business students are more likely to show a higher level of SC than male vocational business students do.

Another variable that has been examined in prior literature is educational level, which was found to explain students' perceptions and attitudes of sustainability (Michalos et al., 2012; Varoglu et al., 2018; Zsóka et al., 2013). The level of education had a significant influence on students' knowledge, attitudes, and behaviors concerning SD (Michalos et al., 2012). Students with a higher educational level tended to be more positive in the economic and social aspects of SC, as compared to entry-level students (Considine & Zappalà, 2002). Likewise, Wiek, Xiong, Brundiers, and Van Der Leeuw (2014) found that senior students were more likely to have pro-environmental attitudes and avoid environmental harm. Educational levels play a critical role in developing students' environmental consciousness because people usually have more awareness and assume more responsibilities along with more education (Zsóka et al., 2013). Based on the foregoing, we hypothesized:

H2: Second-year vocational business students are more likely to show a higher level of SC than first-year vocational business students do.

A review of the sustainability pedagogy literature (Hazelton & Haigh, 2010; Swaim, Maloni, Napshin, & Henley, 2014; Zsóka et al., 2013) emphasized the significance of attitude changing via education. Based on the teaching experience in the course of "Business and Sustainability", Springett (2005) emphasized the significance of pedagogical approaches in student learning. Collins and Kearins (2007) designed in-class stakeholder negotiation exercises to increase students' critical reflection and engagement in SD. Their study demonstrated the effectiveness of in-class learning experiences in improving students' understanding of environmental, economic, and social sustainability issues. Hazelton and Haigh (2010) incorporated ESD into accounting course teaching and found effective learning outcomes could be gained from sustainability materials interrelated with employment-related skills. Using Problem- & Project-Based Learning (PPBL) in sustainable programs at Arizona State University, Wiek et al. (2014) found students' SC could be motivated through various ways of incorporating PPBL into the curriculum in the classroom and academic settings. Considering the previous research, we propose that there may be a positive correlation between class learning and SC. Based on the foregoing, we hypothesized:

H3: Class learning will positively influence vocational business students' SC.

Higher education institutions also implement ESD through the informal curriculum (Hopkinson, Hughes, & Layer, 2008). Informal learning without definite learning goals or processes may also contribute to student learning (Vavoula & Sharples, 2009). Informal learning is defined as course-related activities undertaken individually and collaboratively outside the classroom and does not directly involve classroom teachers (Jamieson, 2009). Ballantyne and Packer (2005) distinguished formal versus informal learning. They found that informal educational settings were relevant to promote environmentally sustainable attitudes and behaviors, especially combined with formal environmental learning experiences. For example, Kassens-Noor (2012) found that an informal teaching practice using Twitter enhanced student learning in sustainability. Informal learning plays a critical role in developing key competencies for SD in higher education (Barth, Godemann, Rieckmann, & Stoltenberg, 2007) and will be more popular with students in promoting sustainable education (Winter & Cotton, 2012). Based on the foregoing, we hypothesized:

H4: Informal learning outside the classroom will positively influence vocational business students' SC.

3. METHODOLOGY

We surveyed business students enrolled in Shandong Foreign Trade Vocational College (SFTVC) in North China. We used Gericke et al. (2019) 49-item sustainability consciousness questionnaire (SCQ) to measure students' SC. This questionnaire measures sustainability consciousness (i.e., sustainability knowingness, attitudes, and behavior) on the dimensions of environmental, economic, and social sustainability.

Before distributing the questionnaires, students were informed the participation was voluntary and their responses were anonymous. A total of 1,077 students participated in the survey, and 1,007 completed questionnaires were received, including 180 males and 827 females. The participants had an average age of 19.73 (SD = 1.72) years old. Besides, 74.5% of the participants indicated that they had learned sustainability knowledge through class learning, and 88.7% of the participants indicated that they had encountered sustainability information outside the classroom such as through the internet, social activities, and public information. Table 1 shows the demographic information.

Table-1. Demographic characteristics.

		Frequency (N)	Percentage (%)
Gender	Female	827	82.1%
	Male	180	17.9%
Major	International Business	409	40.6%
	Accounting/Finance	403	40.0%
	E-commerce/Logistics	31	3.1%
	Marketing	12	1.2%
	Other	152	15.1%
	Academic Level	1 st Year	562
	2 nd Year	445	44.2%
Class learning	Yes	750	74.5%
	No	257	25.5%
Learning outside the classroom	Yes	893	88.7%
	No	114	11.3%
Total		1,007	100%

4. RESULTS

Table 2 shows the descriptive statistics, correlations, and reliability coefficients of the variables. To test hypotheses, we performed regression analyses. The dependent variables were the average scores of the environmental, social, and economic dimensions on SC (i.e., sustainability behavior, attitudes, and knowingness). The independent variables included gender, educational level, age, formal class learning, and informal learning outside the classroom. We also included the participants' sustainability knowledge and employment intention to engage in sustainability-related jobs as control variables. Table 3 shows the regression analysis results.

As shown in Table 3, we found that female students showed statistically significant higher SC with regard to their environmental attitudes ($\beta = -0.121, p < 0.001$), economic attitudes ($\beta = -0.063, p < 0.05$), and social behavior ($\beta = -0.062, p < 0.05$). Therefore, H1 was supported in the environmental and economic dimensions of sustainability attitudes, and the social dimension of sustainability behavior.

We also found that second-year students showed statistically significant higher SC in environmental attitudes ($\beta = 0.127, p < 0.001$) and economic behavior ($\beta = 0.082, p < 0.05$). Therefore, H2 was supported in the environmental dimension of sustainability attitudes and the economic dimension of sustainability behavior.

Furthermore, we found that class learning had a positive influence on social knowingness ($\beta = 0.063, p = 0.05$), economic knowingness ($\beta = 0.083, p = 0.01$), environmental attitudes ($\beta = 0.068, p < 0.05$), economic attitudes ($\beta = 0.068, p < 0.05$), environmental behavior ($\beta = 0.103, p = 0.001$), social behavior ($\beta = 0.080, p < 0.05$), and economic behavior ($\beta = 0.083, p < 0.05$). Therefore, H3 was supported in the economic and social dimensions of sustainability knowingness, the environmental and economic dimensions of sustainability attitudes, and all three dimensions of sustainability behavior. Finally, we found that informal learning outside the classroom only influenced environmental knowingness ($\beta = 0.070, p < 0.05$). Therefore, H4 was only supported in the environmental dimension of sustainability knowingness.

Table-2. Descriptive statistics and correlations (n =1,007).

Variables	Mean	SD	EK	SK	CK	EA	SA	CA	EB	SB	CB	Age	Gender
EK	4.222	0.569	(0.785)										
SK	3.958	0.568	0.499***	(0.897)									
CK	3.882	0.640	0.399***	0.765***	(0.853)								
EA	3.892	0.851	0.370***	0.247***	0.144***	(0.840)							
SA	3.949	0.623	0.385***	0.598***	0.560***	0.376***	(0.872)						
CA	4.015	0.602	0.403***	0.588***	0.567***	0.351***	0.767***	(0.811)					
EB	3.919	0.581	0.373***	0.562***	0.521***	0.259***	0.488***	0.559***	(0.914)				
SB	4.019	0.577	0.385***	0.512***	0.446***	0.324***	0.489***	0.529***	0.792***	(0.884)			
CB	3.570	0.634	0.169***	0.311***	0.312***	0.075**	0.296***	0.311***	0.497***	0.450***	(0.743)		
Age	19.729	1.719	0.034	0.038	0.046	0.078*	0.063	0.070*	0.019	0.005	0.060		
Gender			-0.052	0.004	0.028	-0.115***	-0.025	-0.043	-0.001	-0.051	0.054*	0.087**	
Academic level			0.020	0.002	0.014	0.127***	0.034	0.032	-0.015	-0.038	0.107***	0.289***	-0.029

Note: EK=Environmental knowlgness; SK=Social knowlgness; CK=Economic knowlgness; EA=Environmental attitudes; SA=Social attitudes; CA=Economic attitudes; EB=Environmental behavior; SB=Social behavior; CB=Economic behavior.

Gender is coded as female = 0 and male = 1. Academic level is coded as 1st year = 0 and 2nd year = 1.

***, **, *, significant at 0.001, 0.01, 0.05 level, respectively. All p-values were two-tailed.

Cronbach's alpha reliability coefficients are in parentheses on the diagonals.

Table-3. Summary of regression results (n =1,007).

	EK	SK	CK	EA	SA	CA	EB	SB	CB
Gender	-0.006	-0.015	0.013	-0.121***	-0.038	-0.063*	-0.010	-0.062*	-0.008
Academic level	0.054	0.020	0.029	0.127***	0.039	0.038	-0.007	-0.032	0.082*
Age	0.034	0.043	0.044	0.059	0.059	0.074*	0.033	0.032	0.040
Class learning	0.045	0.063*	0.083**	0.068*	0.049	0.068*	0.103***	0.080*	0.083*
Learning outside the classroom	0.070*	0.018	0.024	0.055	0.035	0.015	0.049	0.060	0.034
Sustainability knowledge	0.074*	0.066*	0.033	-0.002	0.051	0.071*	0.065*	0.077*	0.107***
Employment intention	0.161***	0.184***	0.159***	0.144***	0.121***	0.139***	0.194***	0.201***	0.069*
F (7, 999)	7.013***	7.766***	6.022***	9.036***	4.287***	6.459***	9.980***	11.033***	5.158***
Adjusted R ²	0.040	0.045	0.034	0.053	0.022	0.037	0.059	0.065	0.028

Note: Gender is coded as female = 0 and male = 1. Academic level is coded as 1st year = 0 and 2nd year = 1.

***, **, *, significant at 0.001, 0.01, 0.05 level, respectively. All p-values were two-tailed.

5. DISCUSSION

Our findings make a novel and unique contribution by exploring factors that influence the SC of business students enrolled in China's vocational colleges. Our results demonstrate that vocational business students have different perceptions of the three dimensions of sustainability. The results raise some key issues to consider which sustainability dimensions need to be emphasized and how to strengthen those dimensions in business programs at a vocational education level. For example, the results show that vocational business students' SC significantly relates to their employment intention, suggesting it is necessary to make course contents directly related to the requirements of work practice, adjust the specialized curricular contents of vocational colleges according to professional standards, and ultimately improve students' employment qualifications (Brookfield, 2018).

Our study responds to the call for research to investigate the implementation of ESD at a VET level (Bedi & Germein, 2014). To our knowledge, this study is the first one to show that formal class learning is more influential than informal learning outside the classroom in enhancing vocational business students' SC. This result is consistent with Kift (2004) study, which emphasized the important role of formal learning in student learning. Our finding implies that it is critical to foster students' SC continuously and systematically through a formal curriculum design and application. A recommendation for improving SC in VET would be focusing on revising course curricula, which aims to building up students' sustainability knowledge, promoting their favorable attitudes toward sustainability, and fostering their pro-sustainability behavior (Boeve-de Pauw et al., 2015; Neaman, Otto, & Vinokur, 2018).

6. LIMITATIONS AND FUTURE RESEARCH

Our study has the following limitations. First, we used a convenient sample from one vocational college. Although using a convenient sample controls the influence of other contextual factors, further research is necessary to replicate the results with different samples and extend the generalizability of the results to a context with different cultural backgrounds. Second, our study used self-reported data collected from students. The results may be subject to social desirability bias. We attempt to control this bias by informing participants that the responses were fully confidential. Third, this study only focused on vocational business students' SC. Further studies may investigate whether the SC level of students in other majors will be different.

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