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## The Needs for Teacher Development of Vocational Colleges in Thailand to Enhance Entrepreneurial Leadership

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### Abstract

Thailand has currently found itself at a pivotal juncture where the need for vocational workers converges with the ideals of entrepreneurial leadership. At its core, vocational teachers were the architects of this transformative process, imparting practical skills and knowledge to students. This research aimed to study the priority needs of teacher development to enhance entrepreneurial leadership among vocational college teachers. The informants were 416 consisting of vocational college directors, deputy vocational college directors, department heads, and vocational college teachers. Data were collected using a constructed questionnaire and were analyzed for frequency, percentage, mean, standard deviation and priority needs index. The overall results showed that both current state and desirable state were at high level: (i) The first priority needs for vocational college teachers' entrepreneurial leadership were *prediction logics* ( $PNI_{\text{modified}} = 0.139$ ) in the process of analyzing goals ( $PNI_{\text{modified}} = 0.131$ ), and *economic responsibility and sustainability* ( $PNI_{\text{modified}} = 0.141$ ) in the process of analyzing target audience ( $PNI_{\text{modified}} = 0.131$ ). (ii) In the design phase, the first priority needs of teacher entrepreneurial leadership were *social responsibility and sustainability* ( $PNI_{\text{modified}} = 0.160$ ). (iii) For teacher development methodologies, *coaching* yielded the highest frequency on-the-job development method, while *networking* or professional learning community yielded the second highest frequency on off-the-job development method. (iv) In the implementing phase, the first priority needs of teacher entrepreneurial leadership were *prediction logics* ( $PNI_{\text{modified}} = 0.144$ ). (v) In the evaluating phase, the first priority needs of vocational college teacher entrepreneurial leadership were *creation logics in innovation* ( $PNI_{\text{modified}} = 0.154$ ) in the process of evaluating the quality of learning resources ( $PNI_{\text{modified}} = 0.143$ ), and *economic responsibility and sustainability* ( $PNI_{\text{modified}} = 0.151$ ) in the evaluating process of the success of the operation ( $PNI_{\text{modified}} = 0.110$ ).

**Keywords:** Priority needs, teacher development, entrepreneurial leadership, vocational college

### 1. Introduction

Thailand is at a pivotal moment where the demand for vocational workers intersects with the need for entrepreneurial leadership, impacting its economic growth and sustainability. Traditionally, vocational workers were valued for technical skills, but as Thailand shifts toward an innovation-driven economy, blending technical proficiency with an entrepreneurial mindset is crucial. Sectors, such as automotive, electronics, and biotechnology highlight the necessity for

vocational workers to drive innovation and industry expansion. In the startup ecosystem, vocational workers contribute technical expertise to enhance product development and startup success. Given that Small and Medium Enterprises (SMEs) are vital to Thailand's economy, vocational workers with entrepreneurial attributes can offer innovative solutions and technical support. By prioritizing vocational education that fosters entrepreneurial thinking, Thailand can empower vocational workers to lead innovation, enhance SME competitiveness, and boost sustainable economic growth. (Tseng & Tang 2023; World Bank, 2022; Department of International Trade Promotion, 2022; Board of Investment of Thailand, 2021; Kuratko, 2020; Tidd & Bessant, 2018; Blenker et al., 2017.)

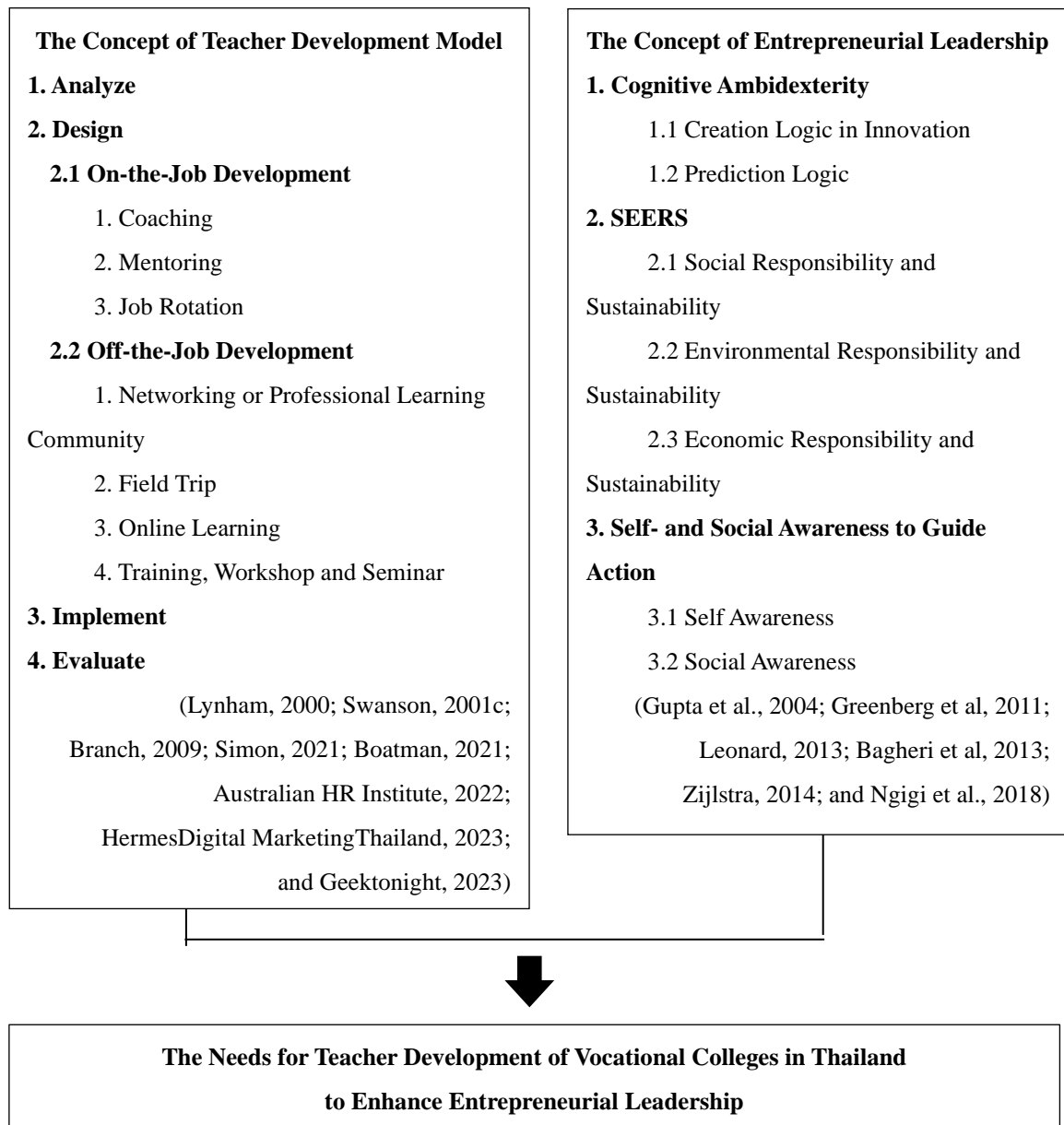
The Office of the Vocational Education Commission (VEC) in Thailand plays a crucial role in overseeing vocational education and training to meet industry demands and enhance workforce employability. VEC's initiatives, such as the Bureau of Personnel Competency Development and Vocational Entrepreneur Incubation Center, promote entrepreneurship and business knowledge among students. Vocational education is integral to Thailand's economic development, with vocational teachers imparting practical skills and industry-based knowledge. Thailand has invested significantly in vocational teacher development, focusing on technical expertise, effective teaching methods, and technology integration. Continuous professional enhancement through training programs and collaborations ensures vocational educators to remain updated with the industry trends. Additionally, vocational teacher development encourages research and innovation, fostering a culture of inquiry for continual improvement. Thailand's commitment to vocational teacher development aligns with its goal on preparing a skilled workforce for the evolving job market, contributing to sustainable economic growth. (Chaemchoy, 2022; Ministry of Education, 2021; Department of Skill Development, 2021; Office of the Higher Education Commission, 2019; Office of the Vocational Education Commission, 2019; World Bank, 2023.)

Therefore, it is important to study the needs for teacher development of vocational colleges in Thailand to enhance entrepreneurial leadership to obtain assessment results as guidelines for developing the human resources in educational institutions. This includes four phases: analyze, design, implement, and evaluate. These phases are to develop operational models that meet the needs of target groups, accessing these target groups, and using them to create new learning models aligned with the identified needs. The models are expected to promote gender intelligence, benefit learners, teachers, and school administrators, foster academic advancement and enhance the efficiency of school management. Promoting students with entrepreneurial leadership will be beneficial not only to the students themselves but also to teachers and school administrators. Such orientation, in turn, supports academic advancement and effectiveness in school management. The researchers of the present study identified these limitations as a background to conduct research into teacher development of vocational colleges in Thailand for the purpose of enhancing entrepreneurial leadership.

**2. Research Conceptual Framework**

The researchers created a conceptual framework for the study by adopting teacher development model according to Lynham (2000c), Swanson (2021), Branch (2009), Simon (2021), Boatman (2021), Australian HR Institute (2022), Hermes Digital MarketingThailand (2023), and Geektonight (2023) in 4 phases: (i) Analyze, (ii) Design, (iii) Implement, and (iv) Evaluate. By these principles, the researchers aimed at the Entrepreneurial Leadership according to the concept of Gupta et al. (2004), Greenberg et al. (2011), Leonard (2013), Bagheri et al. (2013), and Zijlstra (2014) in 3 elements as follows: (i) Cognitive Ambidexterity, (ii) SEERS, and (iii) Self- and Social Awareness to Guide Action. The research conceptual framework is shown in Figure 1.

**Figure 1:** Research Conceptual Framework



### **3. Research Objective**

The research objective was to analyze the needs for teacher development of vocational colleges in Thailand to enhance entrepreneurial leadership.

### **4. Research Methodology**

This study was quantitative in nature and conducted with descriptive research methods. The researchers aimed at analyzing the priority needs in teacher development for enhancing entrepreneurial leadership of vocational colleges.

#### **4.1 The Respondents**

The population of this study was 433 vocational colleges under the Office of the Vocational Education Commission in Thailand. At least 203 vocational colleges were selected for the study, using Krejcie & Morgan (1970) with an error of 5 percent. A sample of 203 vocational colleges was selected using multistage and stratified sampling, as well as convenience sampling. First, 2-part regions were randomly selected from each region (Bangkok and other regions). Second, stratified random and convenience sampling were used to select sample schools from vocational colleges. The respondents included vocational college directors, deputy vocational college directors, department heads, and teachers.

#### **4.2 Research Instrument**

To identify the needs of teacher development for enhancing entrepreneurial leadership of vocational colleges, the researchers used a constructed questionnaire. There were 2 sections: Section 1: Demographic information of the respondents in 6 checklist items on gender, age, education level, current position, work experience in the current position, and academic standing. Section 2: The current and desirable states and teacher development models for entrepreneurial leadership in 2 parts: Part I: The current and desirable states of teacher development for vocational colleges based on the concept of entrepreneurial leadership in 45 items. The questionnaire utilized a dual-response format with a 5-rating scale structure. And Part II: The teacher development methodologies for entrepreneurial leadership in 7 multiple-choice items.

As for the instrument's quality, five content experts were used, and Item Objective Congruence (IOC) index was calculated to examine the content validity. The items with the IOC index above 0.5 were regarded as good with no required revision. Cronbach's alpha co-efficient was 0.966, which indicated that the reliability of the questionnaire was at a very good level (Kanjanawasee, 2013).

#### **4.3 Data analysis**

The data obtained from the questionnaire were analyzed by using frequency, percentage, mean, standard deviation, and modified Priority Needs Index ( $PNI_{\text{modified}}$ ) (Wongwanit, 2016).

**5. Research Results**

The results of the respondents’ demographic variables showed a total of 416 individuals, comprising 216 males (51.92%) and 200 females (48.08%). The majority aged 41 to 50 years old, constituting 204 individuals (49.04%). Additionally, 206 participants (45.19%) possessed a master's degree as their highest educational qualification, while 122 individuals (29.33%) had work experience exceeding 21 years.

The results of the current state, desirable state and priority needs in teacher development for enhancing entrepreneurial leadership of vocational colleges are reported in Table 1.

**Table 1:** The Analyze Phase: The Current State, Desirable State and Priority Needs Analysis of Teacher Development of Vocational Colleges to Enhance Entrepreneurial Leadership

Entrepreneurial Leadership	Current State			Desirable State			PNI <sup>modified</sup>	Rank
	<i>M</i>	<i>SD</i>	Level	<i>M</i>	<i>SD</i>	Level		
<b>Analyze Phase</b>								
<b>1. Analyzing the Goals</b>	<b>3.75</b>	<b>0.867</b>	<b>High</b>	<b>4.24</b>	<b>0.743</b>	<b>High</b>	<b>0.131</b>	<b>1</b>
1.1 Prediction Logics	3.67	0.899	High	4.18	0.728	High	0.139	(1)
1.2 Creation Logics in Innovation	3.67	0.862	High	4.17	0.778	High	0.138	(2)
1.3 Social Responsibility and Sustainability	3.70	0.895	High	4.18	0.788	High	0.128	(4)
1.4 Environmental Responsibility and Sustainability	3.78	0.846	High	4.26	0.744	High	0.126	(5)
1.5 Economic Responsibility and Sustainability	3.70	0.837	High	4.21	0.720	High	0.137	(3)
1.6 Self-Awareness	3.86	0.855	High	4.35	0.712	High	0.125	(6)
1.7 Social Awareness	3.85	0.853	High	4.34	0.709	High	0.128	(4)

Entrepreneurial Leadership	Current State			Desirable State			PNI <sub>modified</sub>	Rank
	M	SD	Level	M	SD	Level		
<b>2. Analyzing Target Audience</b>	<b>3.79</b>	<b>0.859</b>	<b>High</b>	<b>4.28</b>	<b>0.683</b>	<b>High</b>	<b>0.131</b>	<b>1</b>
2.1 Prediction Logics	3.75	0.863	High	4.28	0.698	High	0.140	(2)
2.2 Creation Logics in Innovation	3.69	0.856	High	4.18	0.686	High	0.134	(4)
2.3 Social Responsibility and Sustainability	3.78	0.839	High	4.30	0.678	High	0.137	(3)
2.4 Environmental Responsibility and Sustainability	3.81	0.855	High	4.29	0.678	High	0.124	(6)
2.5 Economic Responsibility and Sustainability	3.73	0.862	High	4.25	0.675	High	0.141	(1)
2.6 Self-Awareness	3.89	0.849	High	4.35	0.677	High	0.117	(7)
2.7 Social Awareness	3.83	0.875	High	4.32	0.681	High	0.127	(5)
<b>3. Analyzing Required Resources</b>	<b>3.81</b>	<b>0.871</b>	<b>High</b>	<b>4.31</b>	<b>0.702</b>	<b>High</b>	<b>0.131</b>	<b>1</b>
3.1 Prediction Logics	3.79	0.886	High	4.33	0.693	High	0.143	(2)
3.2 Creation Logics in Innovation	3.74	0.853	High	4.27	0.703	High	0.141	(3)
3.3 Social Responsibility and Sustainability	3.80	0.852	High	4.30	0.699	High	0.132	(4)
3.4 Environmental Responsibility and Sustainability	3.84	0.856	High	4.31	0.674	High	0.122	(6)
3.5 Economic Responsibility and Sustainability	3.77	0.874	High	4.32	0.692	High	0.145	(1)
3.6 Self-Awareness	3.90	0.890	High	4.34	0.706	High	0.112	(7)
3.7 Social Awareness	3.81	0.884	High	4.29	0.748	High	0.127	(5)
<b>Total</b>	<b>3.78</b>	<b>0.866</b>	<b>High</b>	<b>4.28</b>	<b>0.710</b>	<b>High</b>	<b>0.131</b>	

Table 1 indicates that the overall aspects in current state of the analyze phase to develop vocational college teachers for enhancing entrepreneurial leadership were at high level (M=3.78, SD=0.866). Regarding the subdimensions of the analyze phase, analyzing required resources was at the highest average (M=3.81, SD=0.867). As for the dimensions of entrepreneurial

leadership, self-awareness was the highest average ( $M=3.90$ ,  $SD=0.890$ ), followed by environmental responsibility and sustainability ( $M=3.84$ ,  $SD=0.856$ ), and creation logics in innovation as the lowest average ( $M=3.74$ ,  $SD=0.853$ ), respectively. In the subdimensions of the analyze phase, analyzing target audience was at the second highest average ( $M=3.79$ ,  $SD=0.859$ ). In the dimensions of entrepreneurial leadership, self-awareness was the highest average ( $M=3.89$ ,  $SD=0.849$ ), followed by social awareness ( $M=3.83$ ,  $SD=0.875$ ), and creation logics in innovation as the lowest average ( $M=3.69$ ,  $SD=0.856$ ), respectively. As for the subdimensions of the analyze phase, analyzing the goals was at the lowest average ( $M=3.81$ ,  $SD=0.871$ ). In the dimensions of entrepreneurial leadership, self-awareness was the highest average ( $M=3.86$ ,  $SD=0.855$ ), followed by social awareness ( $M=3.85$ ,  $SD=0.853$ ), and prediction logics and creation logics in innovation as the lowest average ( $M=3.67$ ,  $SD=0.899$ ,  $0.862$ ), respectively.

The overall aspects in desirable state of the analyze phase to develop vocational college teachers for enhancing entrepreneurial leadership were at high level ( $M=4.28$ ,  $SD=0.710$ ). In the subdimensions of the analyze phase, analyzing required resources was at the highest average ( $M=4.31$ ,  $SD=0.702$ ). As for the dimensions of entrepreneurial leadership, self-awareness was the highest average ( $M=4.34$ ,  $SD=0.706$ ), followed by prediction logics ( $M=4.33$ ,  $SD=0.693$ ), and creation logics in innovation as the lowest average ( $M=4.27$ ,  $SD=0.703$ ), respectively. In the subdimensions of the analyze phase, analyzing target audience was at the second highest average ( $M=4.28$ ,  $SD=0.683$ ), while in the dimensions of entrepreneurial leadership, self-awareness was the highest average ( $M=4.35$ ,  $SD=0.677$ ), followed by social awareness ( $M=4.32$ ,  $SD=0.681$ ), and creation logics in innovation as the lowest average ( $M=4.18$ ,  $SD=0.686$ ), respectively. Also in the subdimensions of the analyze phase, analyzing the goals was at the lowest average ( $M=4.24$ ,  $SD=0.743$ ), but self-awareness was the highest average ( $M=4.35$ ,  $SD=0.712$ ), followed by social awareness ( $M=4.34$ ,  $SD=0.709$ ), and creation logics in innovation as the lowest average ( $M=4.17$ ,  $SD=0.778$ ), respectively.

In required resources, analyzing target audience, and analyzing the goals were the same priority needs ( $PNI_{\text{modified}} = 0.131$ ). Regarding the dimensions of entrepreneurial leadership on analyzing the goals, the first priority needs was prediction logics ( $PNI_{\text{modified}} = 0.139$ ), followed by creation logics in innovation ( $PNI_{\text{modified}} = 0.138$ ), and the last priority needs as self-awareness ( $PNI_{\text{modified}} = 0.125$ ). In the dimensions of entrepreneurial leadership on analyzing target audience, the first priority needs was economic responsibility and sustainability ( $PNI_{\text{modified}} = 0.141$ ), followed by prediction logics ( $PNI_{\text{modified}} = 0.140$ ), and the last priority needs as self-awareness ( $PNI_{\text{modified}} = 0.117$ ). In the dimensions of entrepreneurial leadership on analyzing required resources, the first priority needs was economic responsibility and sustainability ( $PNI_{\text{modified}} = 0.145$ ), followed by prediction logics ( $PNI_{\text{modified}} = 0.143$ ), and the last priority needs as self-awareness ( $PNI_{\text{modified}} = 0.112$ ).

**Table 2:** The Design Phase: The Current State, Desirable State and Priority Needs Analysis of Teacher Development to Enhance Entrepreneurial Leadership of Vocational Colleges

Entrepreneurial Leadership Design Phase	Current State			Desirable State			PNI <sub>modified</sub>	Rank
	M	SD	Result	M	SD	Result		
2.1 Prediction Logics	3.68	0.891	High	4.21	0.750	High	0.146	(2)
2.2 Creation Logics in Innovation	3.75	0.882	High	4.27	0.725	High	0.138	(5)
2.3 Social Responsibility and Sustainability	3.73	0.822	High	4.32	0.679	High	0.160	(1)
2.4 Environmental Responsibility and Sustainability	3.78	0.832	High	4.33	0.685	High	0.146	(2)
2.5 Economic Responsibility and Sustainability	3.77	0.864	High	4.31	0.696	High	0.143	(4)
2.6 Self-Awareness	3.85	0.848	High	4.37	0.696	High	0.135	(6)
2.7 Social Awareness	3.83	0.855	High	4.38	0.705	High	0.145	(3)
<b>Total</b>	<b>3.77</b>	<b>0.857</b>	<b>High</b>	<b>4.32</b>	<b>0.707</b>	<b>High</b>	<b>0.145</b>	

Table 2 reveals the overall aspects in the current state of the design phase to develop vocational college teachers for enhancing entrepreneurial leadership, at high level (M=3.77, SD=0.857). In the dimensions of entrepreneurial leadership, self-awareness was the highest average (M=3.85, SD=0.848), followed by social awareness (M=3.83, SD= 0.855), and prediction logics as the lowest average (M=3.68, SD=0.891), respectively.

The overall aspects in the desirable state of the design phase to develop vocational college teachers for enhancing entrepreneurial leadership were at high level (M=4.32, SD=0.707). In the dimensions of entrepreneurial leadership, social awareness was the highest average (M=4.38, SD=0.705), followed by self-awareness (M=4.37, SD=0.696), and prediction logics as the lowest average (M=4.21, SD=0.750), respectively.

As for the dimensions of entrepreneurial leadership, the first priority needs were social responsibility and sustainability (PNI<sub>modified</sub> = 0.160), followed by prediction logics and environmental responsibility and sustainability (PNI<sub>modified</sub> = 0.146), and the last priority needs as self-awareness (PNI<sub>modified</sub> = 0.135).



**Table 3:** The Development Methodologies in Entrepreneurial Leadership of Vocational Colleges in Thailand by Frequency (f), and Percentage (p)

Entrepreneurial Leadership	Issue	On the Job Development				Off the Job Development				Total
		Coaching	Mentoring	Job rotation	Total	Networking or Professional Learning Community	Field Trip	Online Learning	Training, workshop, and Seminar	
<b>1. Prediction Logics</b> (PNI <sub>modified</sub> = 0.146)	f	152	34	23	209	35	44	21	49	149
	p	42.46	9.50	6.42	58.38	9.78	12.29	5.87	13.69	41.62
<b>2. Creation Logics in Innovation</b> (PNI <sub>modified</sub> = 0.138)	f	128	40	28	196	57	33	23	40	153
	p	36.68	11.46	8.02	56.16	16.33	9.46	6.59	11.46	43.84
<b>3. Social Responsibility and Sustainability</b> (PNI <sub>modified</sub> = 0.160)	f	120	37	24	181	52	36	24	34	146
	p	36.70	11.31	7.34	55.35	15.90	11.01	7.34	10.40	44.65
<b>4. Environmental Responsibility and Sustainability</b> (PNI <sub>modified</sub> = 0.146)	f	114	35	30	179	42	35	27	39	143
	p	35.40	10.87	9.32	55.59	13.04	10.87	8.39	12.11	44.41
<b>5. Economic Responsibility and Sustainability</b> (PNI <sub>modified</sub> = 0.143)	f	111	41	29	181	47	29	25	51	152
	p	33.33	12.31	8.71	54.35	14.11	8.71	7.51	15.32	45.65

Entrepreneurial Leadership	Issue	On the Job Development				Off the Job Development				
		Coaching	Mentoring	Job rotation	Total	Networking or Professional Learning Community	Field Trip	Online Learning	Training, workshop, and Seminar	Total
<b>6. Self-Awareness</b>	f	102	50	28	180	44	36	29	51	160
(PNI <sub>modified</sub> = 0.135)	p	30.00	14.71	8.24	52.94	12.94	10.59	8.53	15.00	47.06
<b>7. Social Awareness</b>	f	108	40	30	178	57	28	22	52	159
(PNI <sub>modified</sub> = 0.145)	p	32.05	11.87	8.90	52.82	16.91	8.31	6.53	15.43	47.18
<b>Total</b>	f	835	277	192	1304	334	241	171	316	1062
	p	35.29	11.71	8.11	55.11	14.12	10.19	7.23	13.36	44.89

Table 3 reports the methods for developing entrepreneurial leadership of vocational college teachers in Thailand. The highest frequency overall in the teacher development methods to enhance entrepreneurial leadership was coaching for on-the-job development, while networking or professional learning communities was favored for off-the-job development.

In the subdimensions of entrepreneurial leadership, coaching to cultivate prediction logics had the highest frequency 152 (42.46%), followed by training, workshop, and seminar frequency 49 (13.69%), and field trip frequency 44 (12.29%), respectively. As for creation logics in innovation, coaching had the highest frequency 128 (36.68%), followed by networking or professional learning communities frequency 57 (16.33%), and mentoring and training, workshop, and seminar with frequency 40 (11.46%), respectively. In social responsibility and sustainability, coaching to cultivate prediction logics had the highest frequency 120 (36.70%), followed by networking or professional learning communities with frequency 52 (15.90%), and mentoring frequency 37 (11.31%), respectively. In terms of environmental responsibility and sustainability, coaching had the highest frequency 114 (35.40%), followed by networking or professional learning communities with frequency 42 (13.04%), and training, workshop, and seminar frequency 39 (12.11%), respectively. As for economic responsibility and sustainability, coaching had the highest frequency 111 (33.33%), followed by training, workshop, and seminar frequency 51 (15.32%), and networking or professional learning communities with frequency 47 (14.11%), respectively. In self-awareness, coaching had the highest frequency 102 (30.00%),

followed by training, workshop, and seminar frequency 51 (15.00%), and mentoring frequency 50 (14.71%), respectively. In social awareness, coaching had the highest frequency 108 (32.05%), followed by networking or professional learning communities frequency 57 (16.91%), and training, workshop, and seminar frequency 52 (15.43%), respectively.

**Table 4:** The Implementing Phase: The Current State, Desirable State and Priority Needs Analysis of Teacher Development to Enhance Entrepreneurial Leadership of Vocational Colleges

Entrepreneurial Leadership	Current State			Desirable State			PNI <sup>modified</sup>	Rank
	M	SD	Result	M	SD	Result		
<b>3. Implementing Phase</b>								
3.1 Prediction Logics	3.76	0.837	High	4.31	0.708	High	0.144	(1)
3.2 Creation Logics in Innovation	3.76	0.820	High	4.29	0.682	High	0.139	(3)
3.3 Social Responsibility and Sustainability	3.81	0.832	High	4.31	0.691	High	0.129	(5)
3.4 Environmental Responsibility and Sustainability	3.77	0.825	High	4.29	0.688	High	0.138	(4)
3.5 Economic Responsibility and Sustainability	3.77	0.844	High	4.30	0.688	High	0.140	(2)
3.6 Self-Awareness	3.86	0.836	High	4.35	0.659	High	0.126	(7)
3.7 Social Awareness	3.85	0.854	High	4.34	0.697	High	0.128	(6)
<b>Total</b>	<b>3.80</b>	<b>0.836</b>	<b>High</b>	<b>4.31</b>	<b>0.688</b>	<b>High</b>	<b>0.135</b>	

Table 4 illustrates the overall aspects in the current state of the implementing phase to develop vocational college teachers for enhancing entrepreneurial leadership, at a high level (M=3.80, SD=0.836). In the dimensions of entrepreneurial leadership, self-awareness was the highest average (M=3.86, S=0.836), followed by social awareness (M=3.85, SD=0.854), and prediction logics and creation logics in innovation as the lowest average (M=3.76, SD=0.837, 0.820), respectively.

The overall aspects in the desirable state of the implementing phase to develop vocational college teachers for enhancing entrepreneurial leadership were at a high level (M=4.31, SD=0.688). In the dimensions of entrepreneurial leadership, self-awareness was the highest average (M=4.35, SD=0.659), followed by social awareness (M=4.34, SD=0.697), and creation logics in innovation and environmental responsibility and sustainability as the lowest average (M=4.29, SD=0.682, 0.688), respectively.

As for the dimensions of entrepreneurial leadership, the first priority needs were prediction logics ( $PNI_{\text{modified}} = 0.144$ ), followed by economic responsibility and sustainability ( $PNI_{\text{modified}} = 0.140$ ), and the last priority needs as self-awareness ( $PNI_{\text{modified}} = 0.126$ ).

**Table 5:** The Evaluating Phase: The Current State, Desirable State and Priority Needs Analysis of Teacher Development to Enhance Entrepreneurial Leadership of Vocational Colleges

Entrepreneurial Leadership	Current State			Desirable State			$PNI_{\text{modified}}$	Rank
	<i>M</i>	<i>SD</i>	Result	<i>M</i>	<i>SD</i>	Result		
<b>4. Evaluation Phase</b>								
<b>4.1 Evaluating the success of the operation</b>	<b>3.77</b>	<b>0.844</b>	<b>High</b>	<b>4.31</b>	<b>0.698</b>	<b>High</b>	<b>0.140</b>	<b>2</b>
4.1.1 Prediction Logics	3.72	0.873	High	4.25	0.700	High	0.143	(3)
4.1.2 Creation Logics in Innovation	3.75	0.863	High	4.29	0.703	High	0.145	(2)
4.1.3 Social Responsibility and Sustainability	3.81	0.842	High	4.35	0.705	High	0.141	(4)
4.1.4 Environmental Responsibility and Sustainability	3.79	0.824	High	4.29	0.699	High	0.132	(7)
4.1.5 Economic Responsibility and Sustainability	3.74	0.839	High	4.31	0.705	High	0.151	(1)
4.1.6 Self-Awareness	3.82	0.815	High	4.34	0.683	High	0.137	(5)
4.1.7 Social Awareness	3.82	0.849	High	4.33	0.691	High	0.133	(6)
<b>4.2 Evaluating the quality of learning resources</b>	<b>3.77</b>	<b>0.832</b>	<b>High</b>	<b>4.31</b>	<b>0.707</b>	<b>High</b>	<b>0.143</b>	<b>1</b>
4.2.1 Prediction Logics	3.75	0.814	High	4.28	0.686	High	0.139	(5)
4.2.2 Creation Logics in Innovation	3.71	0.818	High	4.28	0.694	High	0.154	(1)
4.2.3 Social Responsibility and Sustainability	3.79	0.842	High	4.32	0.719	High	0.139	(5)
4.2.4 Environmental Responsibility and Sustainability	3.78	0.819	High	4.30	0.713	High	0.138	(6)

Entrepreneurial Leadership	Current State			Desirable State			PNI <sub>modified</sub>	Rank
	M	SD	Result	M	SD	Result		
4.2.5 Economic Responsibility and Sustainability	3.75	0.833	High	4.29	0.697	High	0.144	(3)
4.2.6 Self-Awareness	3.82	0.845	High	4.37	0.707	High	0.145	(2)
4.2.7 Social Awareness	3.79	0.851	High	4.33	0.728	High	0.142	(4)
<b>Total</b>	<b>3.77</b>	<b>0.838</b>	<b>High</b>	<b>4.31</b>	<b>0.702</b>	<b>High</b>	<b>0.142</b>	

Table 5 reveals that the overall aspects in the current state of the evaluating phase to develop vocational college teachers for enhancing entrepreneurial leadership were at a high level (M=3.77, SD=0.838). Regarding the subdimensions of the evaluating phase, evaluating the success of the operation and evaluating the quality of learning resources were at the same average (M=3.77, SD=0.844, 0.832). In the dimensions of entrepreneurial leadership on evaluating the success of the operation, self-awareness and social awareness were the highest average (M=3.82, SD 0.845, 0.849), followed by social responsibility and sustainability (M=3.81, SD=0.842), and prediction logics as the lowest average (M=3.72, SD=0.873), respectively. In the dimensions of entrepreneurial leadership on evaluating the quality of learning resources, self-awareness was the highest average (M=3.82, SD=0.845), followed by social responsibility and sustainability and social awareness (M=3.79, SD=0.842, 0.851) and creation logics in innovation as the lowest average (M=3.71, SD=0.818), respectively.

The overall aspects in the desirable state of the evaluating phase to develop vocational college teachers for enhancing entrepreneurial leadership were at a high level (= 4.31, SD=0.702). In the subdimensions of the evaluating phase, evaluating the success of the operation and evaluating the quality of learning resources were at the same average (M=4.31, SD=0.698, 0.707). In the dimensions of entrepreneurial leadership on evaluating the success of the operation, social responsibility and sustainability was the highest average (M=4.35, SD=0.705), followed by self-awareness (M=4.34, SD=0.683), and creation logics in innovation and environmental responsibility and sustainability as the lowest average (M=4.29, SD=0.703, 0.699), respectively. As for the dimensions of entrepreneurial leadership on evaluating the quality of learning resources, self-awareness was the highest average (M=4.37, SD=0.707), followed by social awareness (M=4.33, SD=0.728) and

prediction logics and creation logics in innovation as the lowest average ( $M=4.28$ ,  $SD=0.686$ ,  $0.694$ ), respectively.

The evaluating quality of learning resources was the first priority needs ( $PNI_{\text{modified}} = 0.131$ ). In the dimensions of entrepreneurial leadership, the first priority needs were creation logics in innovation ( $PNI_{\text{modified}} = 0.154$ ), followed by self-awareness ( $PNI_{\text{modified}} = 0.145$ ), and the last priority needs as environmental responsibility and sustainability ( $PNI_{\text{modified}} = 0.138$ ). The evaluating success of the operation was the last priority needs ( $PNI_{\text{modified}} = 0.140$ ). In the dimensions of entrepreneurial leadership, the first priority needs were economic responsibility and sustainability ( $PNI_{\text{modified}} = 0.151$ ), followed by creation logics in innovation ( $PNI_{\text{modified}} = 0.145$ ), and the last priority needs as environmental responsibility and sustainability ( $PNI_{\text{modified}} = 0.132$ ).

## 6. Discussion of Major Findings

The current state of teacher development to enhance entrepreneurial leadership for vocational colleges indicated prediction logics and creation logics in innovation with the lowest average among teacher development subdimensions. This corresponds with the research conducted by Zijlstra (2014), highlighting that prediction logics and creation logics in innovation signify leaders' ability to generate innovative and valuable ideas, as well as their proficiency in identifying opportunities, optimizing resources, and overcoming challenges. This could stem from vocational colleges not providing sufficient training for teachers to enhance their innovation skills.

The desirable state of teacher development to enhance entrepreneurial leadership for vocational colleges revealed self-awareness with the highest average among teacher development subdimensions. This point has been emphasized by the Ministry of Education (2021) that understanding oneself and respecting others can foster leadership qualities. The result appears to suggest that vocational colleges may not be adequately promoting self-understanding among teachers.

The findings regarding the priority needs of teacher development to enhance entrepreneurial leadership in vocational colleges highlighted the significance of economic responsibility and sustainability. Specifically, analyzing the target audience and analyzing required resources were emphasized within the analyze phase sub-dimension. Particularly, evaluating the success of operations was emphasized within the evaluating phase sub-dimension. This result appears in line with the finding of Greenberg et al. (2011) in that vocational teachers should engage themselves in discussions regarding purpose, prioritization of multiple

stakeholders, performance measurement metrics, and implementing strategies in economic matters. The result as such could involve vocational college administrators not adequately focusing on the college's curriculum and needed teacher training.

## **7. Conclusion and Implications of the Study**

In the analyze phase, this study found that analyzing the goals within prediction logics, and analyzing target audience and analyzing required resources for economic responsibility and sustainability were identified as the most crucial requirements for improving entrepreneurial leadership. In this regard, vocational college administrators, department heads, and teachers are advised to collectively analyze the objectives of teacher development.

In the design phase, coaching was identified as the most frequent method for developing teachers to enhance entrepreneurial leadership, particularly in cultivating prediction logics. As a result, vocational college administrators, department heads, and teachers are encouraged to collaborate in designing teacher development methodologies.

In the implementing phase, prioritizing the implementation of teacher methodologies, specifically for developing prediction logics, was of utmost importance. Consequently, vocational college administrators and department heads should urge teachers to participate in teacher development programs on enhancing entrepreneurial leadership.

In the evaluating phase, evaluating the quality of learning resources for economic responsibility and sustainability was the most critical requirement for enhancing entrepreneurial leadership. Therefore, vocational college administrators, department heads, and teachers should prioritize evaluating the quality of learning resources as part of teacher development initiatives.

## **8. Recommendations for Further Research**

Based on the major findings, vocational colleges should focus on teacher development guideline to enhance teachers' entrepreneurial leadership. Further investigation into teachers' entrepreneurial leadership should be warranted under diverse conditions, including various agencies or affiliations, different grade levels, and across different learning subjects. Such exploration could help identify how needs and requirements vary under different circumstances, ultimately leading to the development of appropriate and effective guidelines for enhancing vocational college teachers' entrepreneurial leadership as responsive to the specific needs.

## 9. The Authors

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